



universität
wien

MASTER THESIS

Titel der Master Thesis / Title of the Master's Thesis

„Mind the Gap! The northern North Atlantic, the GIUK Gap, and Russia“

verfasst von / submitted by

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angestrebter akademischer Grad / in partial fulfilment of the requirements for the degree of
Master of European Studies (M.E.S.)

Wien, 2018 / Vienna 2018

Studienkennzahl lt. Studienblatt /
Postgraduate programme code as it appears on
the student record sheet:

A 992 959

Universitätslehrgang lt. Studienblatt /
Postgraduate programme as it appears on
the student record sheet:

Europäische Studien /
European Studies

Betreut von / Supervisor:

Univ.-Prof. Mag. Dr. Wolfgang Mueller

Mind the Gap!

**The northern North Atlantic,
the GIUK Gap,
and Russia**

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Zusammenfassung

In Europa sind viele geostrategische Brennpunkte Nadelöhre, in welchen Geographie und politische Situation gebündelt einen Hauptfaktor für ökonomische und militärische Strategien ergeben. Diese Arbeit fokussiert auf das Nadelöhr Grönland-Island-Großbritannien (United Kingdom)-Lücke (GIUK-Lücke) im nördlichen Nordatlantik und die diesbezüglichen Strategien der nordischen North Atlantic Treaty Organization (NATO)-Mitgliedstaaten einerseits und Russlands andererseits.

Sowohl die NATO als auch Russland richten ihre jeweilige Aufmerksamkeit wieder vermehrt auf die GIUK-Lücke, welche die zentrale Verbindung zwischen der Arktis und dem Atlantik darstellt. Diese Arbeit identifiziert ein steigendes Bewusstsein der GIUK-Lücke sowohl geostrategisch als auch ökonomisch.

Ökonomisch erfährt die GIUK-Lücke zunehmende Bedeutung im Norden durch die aufkommende wirtschaftliche Erschließung der Arktis und die zukünftige reguläre Beschiffung der Nordostpassage und im Süden durch die maritimen Kommunikationswege und die Tiefseekabel.

Geostrategisch zielt einerseits die NATO darauf, die GIUK-Lücke abzusichern, um den ungehinderten Verlauf der atlantischen maritimen Kommunikationswege zu garantieren und ihre Nordflanke zu sichern. In dieser Arbeit wird dabei der Fokus auf die Rolle der nordischen NATO-Mitgliedstaaten Island, Grönland (Dänemark) und Norwegen in den strategischen Planungen der NATO gelegt. Andererseits ist die Durchfahrt durch maritime Nadelöhre wie die GIUK-Lücke essentiell für Russland, das durch seine geographische Lage nur eingeschränkten Zugang zu den Weltmeeren hat. In dieser Arbeit werden drei zentrale Säulen des geostrategischen Zugangs Russlands zum nördlichen Nordatlantik identifiziert: die maritime hybride Kriegsführung, die Russische Eismeerflotte auf der Halbinsel Kola und die russische nordische strategische Bastion.

Der Interessenskonflikt zwischen der NATO und Russland in der GIUK-Lücke bringt diese – einen beinahe vergessenen Brennpunkt des Kalten Krieges – wieder in das geostrategische Rampenlicht Europas.

Abstract

Within Europe, many of the geostrategic hotspots are choke points where the geography of the landscape combined with the political situation creates opportunities for economic and military strategies. This thesis focuses on the choke point of the Greenland-Iceland-United Kingdom Gap (GIUK Gap) in the northern North Atlantic and the associated strategies of the Nordic North Atlantic Treaty Organization (NATO) member countries and Russia.

Both NATO and Russia have started to raise awareness again of the GIUK Gap as the connecting chokepoint between the Arctic and the broader Atlantic Ocean. This study finds a rising awareness of the GIUK Gap in geostrategy as well as in economy.

Economically, the increasing significance of the GIUK Gap derives in the north from the up-coming exploitation of the Arctic and the future use of the Northeast Passage for shipping traffic, and in the south from the sea lines of communication and the submarine cables.

Geostrategically, NATO aims to secure the GIUK Gap to guarantee the unfettered functioning of the Atlantic sea lines of communications and the coverage of NATO's northern flank. This thesis concentrates on the role of the Nordic NATO member countries Iceland, Greenland (Denmark), and Norway in NATO's strategic plans. To Russia, securing passage rights through naval choke points like the GIUK Gap is important, given its geographically limited access to the world's oceans. This thesis identifies three main pillars of Russia's geostrategic approach to the northern North Atlantic: maritime hybrid warfare, the Russia's Northern Fleet at the Kola Peninsula, and Russia's Northern Strategic Bastion.

The colliding interests of NATO and Russia slowly bring the GIUK Gap – a near-forgotten hotspot of the Cold War – into spotlight again.

Introduction

‘There is nothing which is not the subject of debate [...]’
David Hume: A Treatise on Human Nature, 1739-1740.¹

It is a devastating news headline which wakes the political elite in April 2019: the Ukraine crisis has escalated; the Donbass region has been invaded by regular Russian troops; the Ukrainian leadership is unprepared, and their forces are quickly overrun by the attack.

The Baltic North Atlantic Treaty Organization (NATO) member countries immediately contact their allies and announce their preparations for an expected attack by Russia as a manifestation of the year-long threat that has been lingering in the Baltic region since the end of the Cold War. The United States of America (USA) Air Force immediately recalls former Air Force Secretary Deborah James’ prediction in 2016: *‘This is where the accident [...] would more likely occur’*².

NATO reacts: By May 2019, a small fleet is deployed in the Baltic Sea accompanied by worldwide press coverage, to show presence and support for the Baltic member countries. Headlines circulate citing NATO leaders: *‘Consistency and strength [...] That, Russia understands’*³. Additionally, NATO deploys a major fleet including submarines in the Norwegian Sea to ensure that Russia’s Northern Fleet is not sailing from its home base at the Kola Peninsula. The threats by both sides are evident, commanding personnel are under constant pressure, and the press is in clamour.

Within this tense situation, Russia threatens the NATO fleet deployed in the Baltic Sea with close flybys. During a flyby on May 17th, 2019, two Russian aircraft very closely approach a NATO frigate. The ship’s commanding officer classifies the aggressive manoeuvre as an attack and gives orders to open fire. One Russian aircraft is destroyed, but the NATO ship is badly damaged by missiles fired by the second Russian plane. Official NATO press releases speak of several wounded personnel. NATO and Russian officials immediately exchange recriminations, claiming that the respective other side had attacked them. The press cites NATO leadership: *‘Russia has chosen to be an adversary’*⁴.

¹ Hume, David: A Treatise on Human Nature: Being an Attempt to Introduce the Experimental Method of Reasoning Into Moral Subjects. Reprint. Waiheke Island 2009, p. 6.

² James, Deborah, cited in Shinkman, Paul D.: NATO’s ‘Northern Flank’ Vulnerable to Russia. Norway, Sweden and Finland are out in the cold against a rise in Moscow’s aggressive activity. In: U.S. News, November 3rd, 2016. In: <https://www.usnews.com/news/world/articles/2016-11-03/natos-northern-flank-vulnerable-to-russia> on September 26th, 2018.

³ James, Deborah, cited in Shinkman, Paul D.: NATO’s ‘Northern Flank’ Vulnerable to Russia. Norway, Sweden and Finland are out in the cold against a rise in Moscow’s aggressive activity. In: U.S. News, November 3rd, 2016. In: <https://www.usnews.com/news/world/articles/2016-11-03/natos-northern-flank-vulnerable-to-russia> on September 26th, 2018.

⁴ Breedlove, Philip, cited in Vandiver, John: Breedlove: US Must Rebuild Forces in Europe to Confront Russia. In: Military.com, February 26th, 2016. In: <https://www.military.com/daily-news/2016/02/26/breedlove-us-must-rebuild-forces-in-europe-to-confront-russia.html> on August 28th, 2018.

Consequently, NATO takes steps to defend its allies and its fleet. Four days after the flyby incident, the NATO fleet in the Baltic Sea launches a volley of conventional cruise missiles against Russian military airfields, destroying several Russian aircraft. To evade a potential counterstrike, it then retreats to Denmark and takes position in the choke point south of the Øresund to confine the Russian Baltic Fleet to the Baltic Sea. Russia's immediate reaction is the activation of the Northern Strategic Bastion as it fears a direct missile attack against the Kola Peninsula and its Northern Fleet. Following a strategy of sea denial, Russian forces conduct heavy attacks against the NATO fleet in the Norwegian Sea. The attacks force the NATO fleet to retreat. It re-positions to the Greenland-Iceland-United Kingdom (UK) (GIUK) Gap, blocking Russian access to the North Atlantic. Securing the sea lines of communication (SLOC) in the North Atlantic is crucial to NATO as equipment and personnel are being shipped from the USA and Canada to Europe in preparation for an expected escalation of the conflict in continental Europe.

In June 2019, Russian submarines start probing the blockade in the GIUK Gap, looking for ways to disrupt the SLOC in the North Atlantic. NATO massively increases air- and ship-borne anti-submarine operations in the GIUK Gap, and by mid-June 2019, manages to secure the water south of the GIUK Gap and thus the SLOC.

Naval manoeuvring between NATO and Russia reaches a stalemate in the GIUK Gap, making it a stable frontline.

War games and follow-up tabletop exercises are a common tool within military units and organizations to prepare and improve different military strategies to practise for conflicts. Some publications cited in this thesis report the results of tabletop exercises (Smith / Hendrix 2017, Expert Commission on Norwegian Security and Defence Policy 2015), while others invent war games to illustrate the explosive nature of the topic (Stavridis 2016). All their envisioned scenarios share a focus on geostrategic hotspots thought to be crucial points of success or failure in case of conflict.

Within the European history of the 20th and 21st century, many of these hotspots are choke points where the geography of the landscape combined with the political situation creates opportunities for military strategies. These choke points are often referred to as gaps. They are identified as the most probable spot of an attack on the enemy. Consequently, focusing on geostrategic gaps in Europe is substantial for military strategy policies. Already during the Cold War, war games and geostrategic concepts concentrated on gaps. Some of these gaps became obsolete after the Cold War, such as the Fulda Gap, formerly the most likely point of military encounter between Western countries and the Eastern Bloc, today inexistent due to the unification of West and East Germany.⁵ Some of them only

⁵ Kronauer, Jörg: *Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg*. Köln 2018, p. 180.

emerged within the past decades due to the new political situation in Europe after the dissolution of the Soviet Union, such as the Baltic Gap and the Suwalki Gap. The Baltic Gap plays an important role in naval strategies and is created by the complicated situation between countries adjacent to the Baltic Sea.⁶ The Suwalki Gap on the Lithuania-Poland border is considered to be the most likely point of a Russian land-attack on NATO member countries in Europe. The border between Lithuania and Poland being the only one that connects the Baltic states to another NATO member state, is surrounded by Commonwealth of Independent States (CIS) countries (Belarus in the east and the Russian enclave Kaliningrad in the west), and an occupation of the Suwalki Gap would cut the Baltic countries off from other NATO member countries on land.⁷ Some of them were of importance during the Cold War and are still today such as the North Cape-Bear Island Gap marking the border between the Barents Sea and the Norwegian Sea.⁸ And one of them seemed to have vanished after the Cold War but has seen a resurgence in the past years: the Greenland-Iceland-United Kingdom (UK) Gap, GIUK Gap for short.

Perceptions of highly vulnerable areas in Europe have changed since the end of the Cold War. Central European countries such as Germany or Austria are no longer the focus of geostrategic disputes between the Western countries and the Eastern Bloc, as the Iron Curtain has fallen and the former Warsaw Pact member countries on its other side have changed from adversaries to allies and partners. With the *'reappearance of Russia'*, for the past years the focus has not only shifted to the east and the southeast of Europe (Ukraine, Georgia) but also to the northern North Atlantic, the High North, and the Nordic NATO member countries which are situated in the region connecting Russia and the Arctic to the Atlantic Ocean through the GIUK Gap. Over the last years several geostrategic concepts have assumed that a military engagement between Russia and NATO would likely not occur at land – as it was presumed during the Cold War – but at sea, covered by air support. Maritime warfare has become the main focus in geostrategic planning. Several maritime hotspots can be identified in Europe: the Baltic Sea, the Mediterranean Sea, and the Black Sea. However, for both sides the importance of the northern North Atlantic around the GIUK Gap is growing. To Europe and North America, the northern North Atlantic is *'the lifeline of cooperation between the continents'*¹⁰, the transatlantic bridge which needs to be secured geostrategically and economically as it is the backbone of the most strongly integrated region worldwide. Securing the GIUK Gap guarantees the unfettered functioning of the

⁶ Mueller, Karl: Filling the Baltic Gap. Or How I Learned to Stop Worrying and Love the d6. Paper Wargames and Policy Making In: Battles Magazine, Vol. 11/2016, p. 53-57.

⁷ Maceda, Jim: Why the Suwalki Gap Keeps Top U.S. General in Europe Up at Night. In: NBS News, December 7th, 2015. In: <https://www.nbcnews.com/news/world/why-suwalki-gap-keeps-top-u-s-general-europe-night-n469471> on October 11th, 2018.

⁸ Åtland, Kristian: The Introduction, Adoption and Implementation of Russia's 'Northern Strategic Bastion' Concept, 1992-1999. In: Journal of Slavic Military Studies, Vol. 20/4/2007, p. 522.

⁹ Gärtner, Heinz: USA – Weltmacht auf neuen Wegen. Berlin 2010, p. 123.

¹⁰ Stavridis, James: The United States, the North Atlantic and Maritime Hybrid Warfare. In: Whitehall Papers, Vol. 87/1/2016, p. 100.

Atlantic sea lines of communications and the coverage of NATO's northern flank.¹¹ For Russia, access for its maritime forces and trading ships to the broader Atlantic Ocean is necessary in geostrategic as well as economic planning, especially as the exploitation of the Arctic and the usage of the Northeast Passage will increase significantly in the upcoming decades. This access can only be gained – as during the Cold War – through the GIUK Gap.¹²

Consequently, the current importance of the GIUK Gap has to be elaborated on. This thesis aims to answer the following questions: How did the northern North Atlantic develop historically? How did the GIUK Gap develop historically? What is the current economic and geostrategic significance of the northern North Atlantic? What is the current economic and geostrategic significance of the GIUK Gap? What is the approach of the Nordic NATO member countries Iceland, Greenland (Denmark), and Norway to the GIUK Gap? What is the Russian approach to the GIUK Gap? What are the particular economic and geostrategic interests of Russia in the northern North Atlantic and the GIUK Gap?

To answer these questions, this thesis is divided into four chapters. All chapters follow the same structure: In the first part, general information on the chapter's main topic is given; the second part provides an overview on the historical development of the chapter's main topic; the third part focuses on the significance of the chapter's main topic in economic and geostrategic terms. The main topic of the thesis is approached deductively: starting from an elaboration on the broader region of the northern North Atlantic (chapter 1), a closer look into the region of the GIUK Gap is given (chapter 2), followed by a discussion of the specific economic and geostrategic approaches of the Nordic NATO member countries Iceland, Greenland (Denmark), and Norway (chapter 3), and Russia (chapter 4). The main economic aspect for Russia this thesis focusses on is the increasing importance of an exploitable Arctic, while the three main geostrategic aspects discussed are the concept of maritime hybrid warfare, Russia's Northern Fleet stationed at the Kola Peninsula, and the concept of the Northern Strategic Bastion.

Within the parts elaborating on historical developments, various publications of historians are cited. Amongst others, Afflerbach 2001, Benz / Graml / Weiß 2001, and Braun / Lausch / Marquart 2001 are the main sources for chapter 1 about the northern North Atlantic; Goette 2005, Kaplan 2007, Perdelwitz 1980, and Schmid 2007 for chapter 2 about the GIUK Gap; in chapter 3, Hjalmarsson 1993 and Whitehead 2000 for Iceland, Braukmüller 1990 and Knauer 2015 for Greenland, and

¹¹ Allport, Rowan: NATO needs a new Maritime Strategy for its Northern Flank. In: UK Defence Journal, February 12th, 2018. In: <https://ukdefencejournal.org.uk/nato-needs-new-maritime-strategy-northern-flank/> on August 28th, 2018.

¹² Nordenman, Magnus: Russian Subs Are Reheating a Cold War Chokepoint. In: Defense One, March 4th, 2016. In: <http://www.defenseone.com/ideas/2016/03/russian-subs-are-reheating-cold-war-chokepoint/126428/> on April 27th, 2018.

Knoller 2013 and Petrick 2002 for Norway; and in chapter 4 about Russia Altrichter 2013, Brubaker / Østreng 1999, Cecire 2013, Cohen / Hamilton 2011, Förster / Schmid 2014, Goehrke 2010, Quiring 2008, and Trenin 2006.

To elaborate on the economic and geostrategic significance, publications from geostrategy experts and reports from international institutes are cited. Amongst others, these are mainly Hamre / Conley 2016 and Stavridis 2016 in chapter 1 about the northern North Atlantic; Allport 2017, Nordenman 2017, Olsen 2016, and Weir 2005 in chapter 2 about the GIUK Gap; in chapter 3, Kochis / Slattery 2016 and Smith / Hendrix 2017 for Iceland, Wezeman 2016 for Greenland, and Efstestad 2016 and Shinkman 2016 for Norway; and in chapter 4 about Russia Åtland 2011, Felgenhauer 2018, Foxall 2017, Gärtner 2010, Hicks / Metrick / Sawyer Samp / Weinberger 2016, Ingimundarson 2014, Janjevic 2018, Payne / Foster 2017, Richardson 2018, Shchelin 2016, Tamnes 2016, and Trenin 2017.

Abbreviations and acronyms

A.D.	Anno Domini (= in the year of the Lord)
ACE	Arctic Challenge Exercise
AGS	Alliance Ground Surveillance
ASW	anti-submarine warfare
AWACS	Airborne Early Warning and Control Aircraft
B.C.	Before Christ
BMD	ballistic missile defence
BMS	Bluebird Marine Systems Ltd
C	Celsius
CAX/CPX	Computer-Assisted Command Post Exercise
CIA	Central Intelligence Agency
CIS	Commonwealth of Independent States
cm	centimetre/s
CSIS	Center for Strategic and International Studies
D.C.	District of Columbia
DRAPES	Deep Reliable Acoustic Path Exploitation System
e.g.	exempli gratia (= for example)
EAEU	Eurasian Economic Union
EAPC	Euro-Atlantic Partnership Council
ed.	editor/s
EDI	European Deterrence Initiative
EEZ	Exclusive economically zone
EFTA	European Free Trade Association
EPAA	European Phased Adaptive Approach
ERAP	External Research Associates Program
EU	European Union
Fig. / fig.	Figure / figure
FYROM	The Former Yugoslav Republic of Macedonia
GCHQ	Government Communications Headquarters
GDP	gross domestic product
GDR	German Democratic Republic
Gen.	General

GIFRC	Greenland-Iceland-Faroe Ridge Complex
GIUK Gap	Greenland-Iceland-UK Gap
GME	Greenland Minerals and Energy
GRT	gross register ton/s
HAPAG	Hamburg-Amerikanische-Packetfahrt-Aktiengesellschaft
i.e.	id est (= that is to say)
ICBM	intercontinental ballistic missiles
IISS	International Institute for Strategic Studies
IMF	International Monetary Fund
INF	Intermediate-Range Nuclear Forces
ISA	International Seabed Authority
ISR	intelligence, surveillance, and reconnaissance
IUSS	Integrated Undersea Surveillance System
JISR	NATO Joint Intelligence, Surveillance & Reconnaissance
km	kilometre/s
km ²	square kilometre/s
LIVEX	Live Exercise
Ltd	Limited
LTDP	Long Term Defence Programme
m	metre/s
MAR	Mid-Atlantic Ridge
MARCOM	NATO Allied Maritime Command
MSC	Munich Security Conference
N.N.	nomen nominandum (= the name of the author is not mentioned)
NACC	North Atlantic Cooperation Council
NAEW&C	NATO Airborne Early Warning & Control
NAS	Naval Air Station
NATO	North Atlantic Treaty Organization
NATO IAMD	NATO Integrated Air and Missile Defence
NATS	National Air Traffic Services
NORAD	North American Aerospace Defense Command
NRC	NATO-Russia Council
NSB	Northern Strategic Bastion
OCA	Oceanic Control Area
OCTA	Association of the Overseas Countries and Territories of the EU

OECD	Organisation for Economic Co-operation and Development
OTS	Organized Track System
p.	page
PfP	Partnership for Peace
PJC	Permanent Joint Council
RPA	remotely piloted aircraft
RRC	Rapid Reinforcement Concept
RUSI	Royal United Services Institute
SAP	State Armament Program
SAR	Search and Rescue
SeaMeWe-4	South-East-Asia-Middle-East-West-Europe 4
SIPRI	Stockholm International Peace Research Institute
SLOC	sea lines of communication
SOFREP	Special Operations Forces Report
SOSUS	Sound Surveillance System
SPRN	Sistema Preduprezhdeniya o Raketnom Napadnii
SRBM	short-range ballistic missiles
SSA	auxiliary diesel-electric submarines
SSAN	auxiliary nuclear-powered submarines
SSBN	strategic nuclear ballistic missile submarines
SSGN	nuclear-powered cruise missile submarines
SSI	Strategic Studies Institute
SSK	diesel-electric submarines
SSN	nuclear-powered attack submarines
SURTASS	Surveillance Towed Array Sensor System
TSF	The Superfins
U.S.	United States (of America)
UEWR	Upgraded Early Warning Radar
UK	United Kingdom
UNCLOS	United Nations Convention on the Law of the Sea
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States (of America)
USA	United States of America
USCGC	United States Coast Guard Cutter
USS	United States Ship

USSR	Union of Soviet Socialist Republics
VLR	very-long-range
Vol.	Volume
WMO	World Meteorological Organization
WTO	World Trade Organization
ZATO	Zakrytye Administrativno-Territorial'nye Obrazovaniya

1. The northern North Atlantic

1.1 General information

Perseus flew from the deserts in Libya to the west and finally landed to rest in the kingdom of the giant Atlas. Atlas owned a field of golden fruits and Perseus asked for shelter and food. As Atlas feared to lose his golden estate, he remorselessly forbade Perseus to even enter his palace. Perseus, enraged, took Medusa's head out of his bag and directed it straight to king Atlas. The ruthless king looked at it and immediately metamorphosed into a gigantic mountain, his beard and hair became woods, his shoulders, hands, and bones ridges, and his head the main peak.

The myth of Perseus, extract, ancient Greek mythology¹³

The term 'Atlantic' derives from the ancient Greek word 'Atlantikos' meaning 'of Atlas', the giant in Greek mythology, and implies 'of or pertaining to the sea off the west coast of Africa' referring to the Atlas Mountains in northern Africa.¹⁴ In the 16th century the term started to apply to the ocean between Europe and Africa in the east and the Americas in the west.¹⁵ Bernhard Varen (Varenius) (1622-1650) was the first to use the term 'Atlantic' to describe the ocean as known today in his major opus 'Geographia generalis' in 1650. He even divided the Atlantic Ocean into North and South Atlantic. But only in 1893 was the ocean officially named the 'Atlantic Ocean' by the Royal Geographical Society.¹⁶

The Atlantic Ocean is the second largest of the planet Earth's five oceans after the Pacific Ocean. It is located between the continents of North and South America, Africa, and Europe, and is essentially a basin stretching from the Arctic Ocean in the north to the Southern Ocean (Antarctic Ocean¹⁷) in the south.¹⁸ Since the International Hydrographic Organization decided in spring 2000 to remove the portion of the Atlantic Ocean south of 60 degrees south latitude when delimiting the Southern Ocean as the fifth world ocean, the Atlantic Ocean does not reach the Antarctica anymore. Including the Baltic Sea, the Black Sea, the Caribbean Sea, the Davis Strait, a part of the Drake Passage, the Gulf of Mexico, the Labrador Sea, the Mediterranean Sea, the North Sea, the Norwegian Sea, and the Scotia Sea, the Atlantic Ocean covers a total area of 76.762 million km² (approximately 1/5 of the

¹³ Schwab, Gustav: Sagen des klassischen Altertums. Wien 1974, p. 44.

¹⁴ Thomas, Simon: How the oceans got their names. In: Oxford Dictionaries, June 8th, 2015. In: <https://blog.oxforddictionaries.com/2015/06/08/water-water-everywhere-ocean-names/> on July 25th, 2018.

¹⁵ <https://www.etymonline.com/word/atlantic> on July 25th, 2018.

¹⁶ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 22-23.

¹⁷ Thomas, Simon: How the oceans got their names. In: Oxford Dictionaries, June 8th, 2015. In: <https://blog.oxforddictionaries.com/2015/06/08/water-water-everywhere-ocean-names/> on July 25th, 2018.

¹⁸ N.N.: Atlantic Ocean. In: Earth Eclipse, undated. In: <https://www.earthclipse.com/geography/atlantic-ocean.html> on July 25th, 2018.

Earth's surface¹⁹) and has a coast line of 111,866 km.²⁰ The mean depth of the Atlantic Ocean is -3,646 m, the lowest point is the Milwaukee Deep in the Puerto Rico Trench with -8,605 m.²¹ The Atlantic Ocean is crossed by the UNESCO World Heritage Mid-Atlantic Ridge (MAR) from the Arctic Ocean in the north to the Bouvet Island in the south, which forms the largest mountain range on Earth with its length of about 70,000 km²². It rises to about 3 km above the ocean floor and is 1,000 to 1,500 km wide. Its discovery in the 1950ies led to the general acceptance of German geophysicist Alfred Wegener's (1880-1930) theory of continental drift. He divided Earth in tectonic plates and claimed they were and still are in movement during the geological eras of the planet.²³ Along the MAR, the North American Plate and the Eurasian Plate in the North Atlantic, and the South American Plate and the African Plate in the South Atlantic are moving apart at a rate of about 2.5 cm per year in an east-west direction due to the high grade of volcanic activity at the ridge caused by the seafloor spreading.²⁴

The Atlantic Ocean is divided by the equator in the artificial sections North Atlantic and South Atlantic.²⁵ One of the major elements of the Atlantic Ocean are its two large gyres, a clockwise one in the North Atlantic and a counterclockwise one in the South Atlantic. The warm Gulf Stream, considered to '*keep[...] Europe warmer than it really should be*'²⁶, is a part of the clockwise North Atlantic Gyre.²⁷ The North Atlantic stretches from the Arctic Ocean in the north to the Equator in the south and includes all of the Atlantic Ocean's marginal seas (fig. 1). The northern North Atlantic is the region between the Arctic Ocean, Greenland, North America, and Europe from 35 to 75 degrees north latitude including the Greenland Sea, the Norwegian Sea, the North Sea, the Labrador Sea, and the Baffin Bay (fig. 2).

¹⁹ Peace, Connor: Atlantic Ocean. From the Bottom to the Top. Atlantic Facts. 2009. In: http://faculty.montgomerycollege.edu/growth/FP_examples/student_examples/connor_peace/finalproject.html on July 25th, 2018.

²⁰ Central Intelligence Agency (CIA): Oceans: Atlantic Ocean. In: The World Factbook, undated. In: https://www.cia.gov/library/publications/the-world-factbook/geos/print_zh.html on July 25th, 2018.

²¹ Central Intelligence Agency (CIA): Oceans: Atlantic Ocean. In: The World Factbook, undated. In: https://www.cia.gov/library/publications/the-world-factbook/geos/print_zh.html on July 25th, 2018.

²² Nickels, Lothar: Atlantik. In: Planet Wissen, June 27th, 2018. In: <https://www.planet-wissen.de/natur/meer/atlantik/index.html> on July 25th, 2018.

²³ For detailed information about Alfred Wegener's life and scientific discoveries see McCoy, Roger M.: Ending in ice: the revolutionary idea and tragic expedition of Alfred Wegener. Oxford 2006 and Greene, Mott T.: Alfred Wegener: Science, Exploration, and the Theory of Continental Drift. Baltimore 2015.

²⁴ UNESCO / World Heritage Convention: The Mid-Atlantic Ridge. In: <https://whc.unesco.org/en/activities/504/> on July 25th, 2018.

²⁵ N.N.: Atlantic Ocean. In: Earth Eclipse, undated. In: <https://www.eartheclipse.com/geography/atlantic-ocean.html> on July 25th, 2018.

²⁶ Peace, Connor: Atlantic Ocean. From the Bottom to the Top. Gulf Stream. 2009. In: http://faculty.montgomerycollege.edu/growth/FP_examples/student_examples/connor_peace/gulfstream.html on July 25th, 2018.

²⁷ Peace, Connor: Atlantic Ocean. From the Bottom to the Top. Gulf Stream. 2009. In: http://faculty.montgomerycollege.edu/growth/FP_examples/student_examples/connor_peace/gulfstream.html on July 25th, 2018.

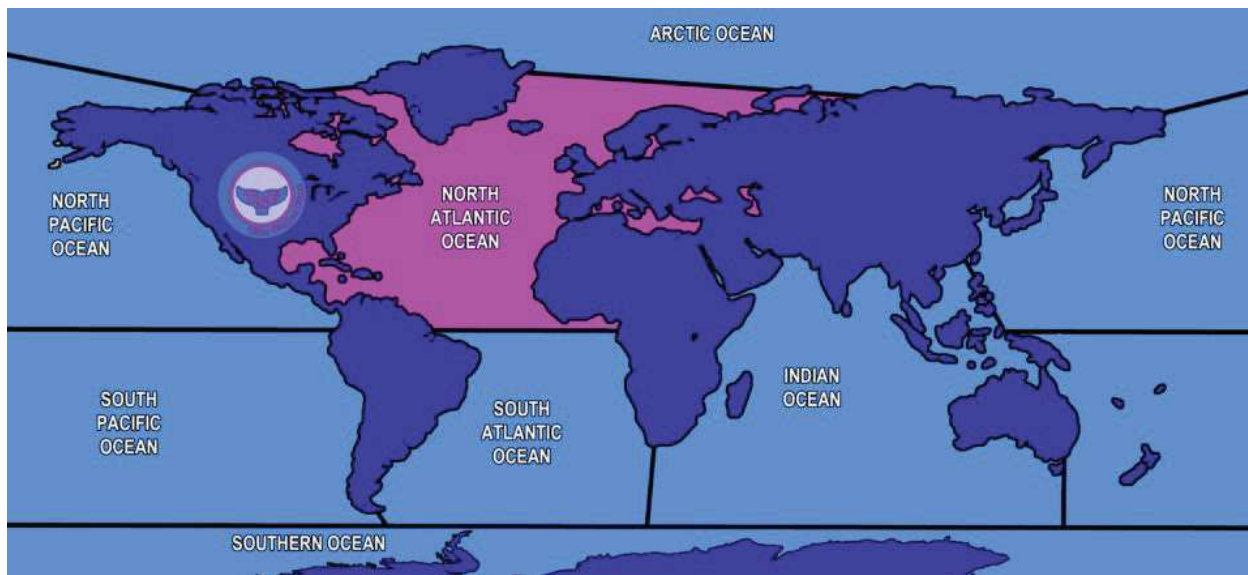


Fig. 1: Geographical location of the Atlantic Ocean with focus on the North Atlantic Ocean²⁸

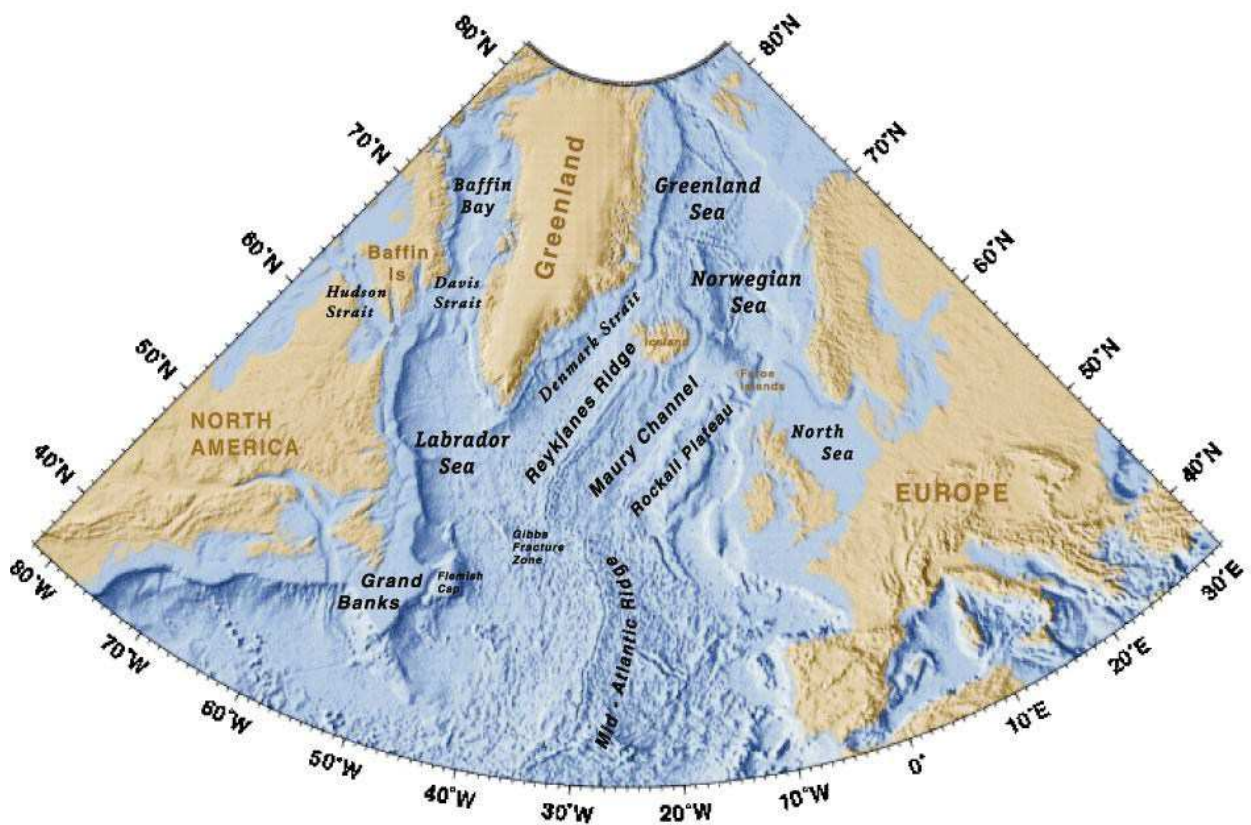


Fig. 2: Map of the northern North Atlantic²⁹

Particularly dangerous natural hazards present in the northern North Atlantic are icebergs, mainly located in the Davis Strait, the Denmark Strait, and the Northwestern Atlantic, and heavy fog and

²⁸ TSF: North Atlantic Ocean animal life. In: The Superfins, January 3rd, 2018. In: <http://www.thesuperfins.com/north-atlantic-ocean-animal-life/> on July 26th, 2018.

²⁹ N.N.: The North Atlantic Current. In: Ocean Surface Currents, undated. In: http://oceancurrents.rsmas.miami.edu/atlantic/north-atlantic_2.html on July 26th, 2018.

icing on the water surface in the extreme northern regions.³⁰ In 2017 an extreme peak in the number of icebergs in the northern North Atlantic was reached. In the beginning of April 2017 about 450 icebergs were counted near the Newfoundland Bank, best known as the spot where the ‘Titanic’ sunk in 1912 after a collision with an iceberg. In this region the usual number of icebergs in April is about 80. Icebergs flowing south alongside the adjacent countries’ coastlines have a high economic impact as they are affecting shipping routes – ships have to take detours of about 650 km which result in delays of approximately 1.5 days.³¹

Additionally, the northern North Atlantic is mainly a bad weather area which creates amongst other dangers for ships also ‘giant waves’. On February 4th, 2013, the World Meteorological Organization (WMO)³² declared that a new world record of a ‘giant wave’ in the North Atlantic had been set: At 59 degrees north latitude and 11 degrees west longitude between Iceland and Great Britain (United Kingdom, UK) a significant wave height of 19 m was measured (the significant wave height is the average height of the highest one-third of waves recorded).³³ Worldwide, about 100 large ships are lost to the sea every year. Container cargo vessels of more than 400 m length and loaded with several layers of cargo containers are the ships most likely to capsize if exposed to bad weather areas and giant waves.³⁴

³⁰ Peace, Connor: Atlantic Ocean. From the Bottom to the Top. Geography. 2009. In: http://faculty.montgomerycollege.edu/g youth/FP_examples/student_examples/connor_peace/geography.html on July 25th, 2018.

³¹ red / ORF.at: ‘Extreme Eissaison’. In: ORF.at, April 6th, 2017. In: <https://orf.at/stories/2386402/2386404/> on July 25th, 2018.

³² https://www.wmo.int/pages/index_en.html on July 27th, 2018.

³³ World Meteorological Organization: 19-meter wave sets new record – highest significant wave height measured by a buoy. Press release number 17 In: World Meteorological Organization, December 13th, 2016. In: <https://public.wmo.int/en/media/press-release/19-meter-wave-sets-new-record-highest-significant-wave-height-measured-buoy> on July 30th, 2018.

³⁴ N.N.: Beunruhigender Weltrekord: Riesenwellen im Nordatlantik gemessen. In: Ankerherz, December 15th, 2018. In: <https://blog.ankerherz.de/blog/beunruhigender-weltrekord-riesenwellen-im-nordatlantik/> on July 25th, 2018.

1.2 Historical development

West of the civilized world in the middle of the sea behind the pillars of Heracles there was an island, bigger than Asia and Libya counted together, called Atlantis. It was reigned by a tyranny of kings who invaded Europe and made it its subjects. As the warriors of the Atlantis' kings reached Athens, finally they were stopped and defeated by the attic ideal state ruled by wisdom and courage. Other people from all over Europe joined the victorious Athenians and send the warriors back to Atlantis. Europe was liberated and no longer subject to Atlantis. The hubris of the tyranny sealed the further fate of Atlantis: tremendous earthquakes and cataclysms drowned the warriors and the island of Atlantis sank within one day and one night in the sea, lost forever, leaving an unpassable spot for ships in the middle of the Atlantic.

Plato's definition of the superiority of the ideal state, extract, 360 B.C.³⁵

The Atlantic Ocean was a reference point for the ancient civilizations in Europe as it marked the presumed end of the – by then supposed to be – flat world. Today, it is the busiest shipping area worldwide³⁶, and it has been one of the world's most heavily trafficked sea routes in the Western Hemispheres for centuries. This offered seamen and explorers a high likelihood of discovering new lands and sea areas. But amidst real discoveries, also 20 of the 55 greatest blunders of cartography occurred in the Atlantic Ocean: three in the South Atlantic, 17 in the North Atlantic, twelve of them in the northern North Atlantic.³⁷ The most prominent of these is Atlantis, which is presumed to have been located at 35 degrees north latitude and 39 degrees west longitude in the middle of the North Atlantic.³⁸

Geologically the Atlantic Ocean is older than humankind, of course, although it is the youngest of the five Earth's oceans. About 150 million years ago the rather complicated process of continental drift between the Americas and Africa and Europe started, forming in the wide basin of the Atlantic Ocean.³⁹ Especially the separation of north America and Europe creating the North Atlantic, which started about 56 million years ago, was a nonlinear process of several volcanic eruptions, continental drifts, and landmass splits. It cooled down about 36 million years ago, having created the currently

³⁵ Plato: Timaios, cited in Wolf, Ursula (ed.): Platon. Sämtliche Werke. Band 4: Timaios, Kritias, Minos, Nomoi. Neuausgabe. Reinbeck / Hamburg 1994, p. 24-25.

³⁶ Peace, Connor: Atlantic Ocean. From the Bottom to the Top. Atlantic Facts. 2009. In: http://faculty.montgomerycollege.edu/g youth/FP_examples/student_examples/connor_peace/finalproject.html on July 25th, 2018.

³⁷ Brooke-Hitching, Edward: Atlas der erfundenen Orte. Die größten Irrtümer und Lügen auf Landkarten. München 2017.

³⁸ Brooke-Hitching, Edward: Atlas der erfundenen Orte. Die größten Irrtümer und Lügen auf Landkarten. München 2017, p. 24.

³⁹ Nickels, Lothar: Atlantik. In: Planet Wissen, June 27th, 2018. In: <https://www.planet-wissen.de/natur/meer/atlantik/index.html> on July 25th, 2018.

known form of the North Atlantic including the MAR and the still ongoing continental east-west drift.⁴⁰

When the first human settlements developed along the Atlantic Ocean, they were primarily located at the coasts of the marginal seas, especially of the Mediterranean Sea. Shipping in the Atlantic Ocean outside its marginal seas was limited, but started as early as in 10,000 B.C., proved e.g. by the Guanche who settled on the Canary Islands coming from North Africa. At the end of the last Ice Age (about 7,500 B.C.), when the British Isles split off from the continent and the North Sea was formed, the shipping region in the Atlantic Ocean extended from today's Norway to Morocco. Organized trade shipping in the Atlantic Ocean began in about 2,000 B.C. with tin being the major trade good. Since the Bronze Age, Mediterranean cultures have had a high demand for tin while tin mining had been known in Spain and Britain since 2,500 B.C. Because of this, Britain was named 'tin island' by the Mediterranean cultures. The Mediterranean cultures considered the Atlantic Ocean to be 'the end of the world', marking the western boundary of the cosmos known by then. Only the Phoenicians, who tried to monopolize the trade on the Atlantic Ocean by a sea blockade at Gibraltar from 530 B.C. to 206 B.C. and by keeping their knowledge about the Atlantic in secret, sailed south, north, and west from Europe into the Atlantic Ocean, discovering the Canary Islands and Madeira naming them 'Insulae Fortunatae'⁴¹ due to the convenient climate.⁴² Although theories and philosophical disputes about the actual form of the Atlantic Ocean, its width, and thus the possibility to reach eastern Asia by sea arose especially in Ancient Greece, sailing to the west was never a real project as there was no economical reason to risk lives and money for such an undertaking of unpredictable outcome. Huge distances and wide spaces were considered a curse rather than a blessing.⁴³

The Vikings acted contrary, undertaking long sea travels and looking for new land in unknown regions. They were known for plundering but mainly developed a huge trading network from the North Cape to Morocco, from the western Atlantic to eastern Europe, dominating Russia for nearly 200 years following the invasion by the 'Rus', Swedish Vikings, in A.D. 862. The Vikings started to discover islands first in the North Sea, later in the northern North Atlantic, such as the Orkney Islands, the Hebrides, the Shetland Islands, and the Faroe Islands.⁴⁴ Several times, Norwegian Vikings sailed further westwards and reached a cold, ice-covered but big island, which the seaman Flóki Vilgerdason

⁴⁰ Braun, Alexander / Lausch, Erwin / Marquart, Gabriele: Die bewegte Geschichte des Nordatlantiks. In: Spektrum.de, June 1st, 2001. In: <https://www.spektrum.de/magazin/die-bewegte-geschichte-des-nordatlantiks/827682> on July 25th, 2018.

⁴¹ In English 'Blessed Islands', translation from Latin by the author.

⁴² Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 27-31, 37.

⁴³ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 14-15, 55.

⁴⁴ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 60-61, 66-67.

named ‘Iceland’. Permanent settlement on Iceland began around 870 by the brothers Ingólfur Arnarson and Hjørleifur Hróðmannsson.⁴⁵ Starting from Iceland, the Vikings undertook more expeditions to the west. Eirik Raude (Erik the Red) discovered Greenland in 981 and settled there from 984 onwards. Although Greenland became widely known throughout medieval Europe, it never generated enough interest for a widespread settlement.⁴⁶ It did, however, become the starting point for ‘*a unique milestone in the history of human migration and discovery*’⁴⁷: the settlement of the Vikings in North America.⁴⁸ Around the year 1000 Erik the Red’s son Leif Eriksson travelled with 35 seamen from Greenland westwards reaching Baffin Island, which the Vikings called ‘Helluland’ (land of stones), the Labrador coast, which they called ‘Markland’ (land of woods), and Newfoundland, which they called ‘Vinland’ (land of wine).⁴⁹ In 1968, the archaeologists Helge and Anne Stine Ingstad discovered a small cloak pin in L’Anse aux Meadows in Newfoundland, Canada. Subsequent archaeological excavations in the area identified villages and settlements of Viking origin and thus proved the first crossing of the northern North Atlantic by Europeans and the earliest European settlement on the American continent.⁵⁰ The settlement did not last, but the Greenlanders continued to travel to ‘Markland’ to cover their requirement for wood in the following centuries.⁵¹

In medieval Europe, improvements in trade (establishment of Venetian and Genoese dominance in trade in the Mediterranean Sea, and the trade union Hanseatic League in the North Sea and the Baltic Sea) and nautics (the first mention of the compass in 1180, faster ships with the oar now in the middle of the stern) started to favour shipping in the Atlantic Ocean in the 14th century. Furthermore, the Atlantic Ocean had since the Ancient periods been connected to myths, monsters, and phantom islands. In the 15th century, especially discovering the latter evoked a boom of privateers sailing the

⁴⁵ Hjalmarsson, Jon R.: History of Iceland. From the Settlement to the Present Day. Reykjavik 1993, p. 14-17. The exact year of the first settlement is not known, but officially the settlement is dated 874. This specific date is commonly mentioned even by scientists (see Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 68), mainly because Iceland itself emphasizes it e.g. by having celebrated 1,000 years of its settlement in 1874. Hjalmarsson, Jon R.: History of Iceland. From the Settlement to the Present Day. Reykjavik 1993, p. 114-115.

⁴⁶ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 69-70.

⁴⁷ UNESCO / World Heritage Convention: L’Anse aux Meadows National Historic Site. In: <https://whc.unesco.org/en/list/4> on August 7th, 2018.

⁴⁸ UNESCO / World Heritage Convention: L’Anse aux Meadows National Historic Site. In: <https://whc.unesco.org/en/list/4> on August 7th, 2018.

⁴⁹ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 76-78.

⁵⁰ Newfoundland and Labrador Tourism: Welcome to L’Anse aux Meadows National Historic Site. In: <https://www.newfoundlandlabrador.com/top-destinations/lanse-aux-meadows> on August 7th, 2018.

⁵¹ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 85.

Atlantic Ocean trying to discover blunders of cartography such as Antilia⁵², Atlantis⁵³, Buss⁵⁴, Hy Brasil⁵⁵, St Brendan's Island⁵⁶, and Thule⁵⁷. The main reason for the new interest in sailing the Atlantic Ocean finally was economy. Since the era of the Roman Empire Europeans had complained about the surcharges on products coming from far East, such as silk and spices, collected by Indian and Arabic traders on the land routes between Asia and Europe.⁵⁸ In particular, the kings of Spain and Portugal became obsessed with reaching India on sea routes around Africa, even though sub-Saharan Africa was uncharted territory for Europeans. By trading with Asia directly, they hoped not to depend on Indians, Arabs, Turks, and Italians anymore, who dominated the land routes through Asia, the Middle East, and Europe.⁵⁹

Infante Henrique of Portugal (1394-1460), called Prince Henry the Navigator, ordered in 1422 that every year explorer ships should sail along the coast of Africa further south than any Portuguese ship ever travelled before. He wanted Portugal to be the first country to reach India travelling eastwards around Africa. During these expeditions the Canary Islands and Madeira were rediscovered and settled. In 1444, Nuno Tristão discovered the river mouth of the Senegal River and Dinis Dias the western tip of Africa, Cap Blanc. Alvise Cadamosto reached Cape Verde in 1456, and Diogo Cão discovered Congo, Angola, and Namibia in 1482, 1484, and 1485, respectively. First contacts with sub-Saharan natives, described as uncivilized, rude, and inferior to Europeans, established one of the main elements of the Atlantic economy: slave trading. Already between 1486 and 1493, about 3,600 slaves were deported from Africa to Europe within just seven years.⁶⁰

Finally, in 1488, Bartolomeu Dias reached the African south cape, which he named Cape of Good Hope, then sailed along the African coast in the Indian Ocean up to the Great Fish River, before returning to Portugal with proof that the sea route to India around Africa is possible. His expedition lasted 16 months and 17 days.⁶¹ Now king João II of Portugal had what he wanted most: the sea route to India. Alternative plans to reach India by ship were not of interest to him anymore. Consequently, Christopher Columbus, an Italian seaman from Genoa, who had

⁵² Brooke-Hitching, Edward: Atlas der erfundenen Orte. Die größten Irrtümer und Lügen auf Landkarten. München 2017, p. 18-23.

⁵³ Brooke-Hitching, Edward: Atlas der erfundenen Orte. Die größten Irrtümer und Lügen auf Landkarten. München 2017, p. 24-29.

⁵⁴ Brooke-Hitching, Edward: Atlas der erfundenen Orte. Die größten Irrtümer und Lügen auf Landkarten. München 2017, p. 46-49.

⁵⁵ Brooke-Hitching, Edward: Atlas der erfundenen Orte. Die größten Irrtümer und Lügen auf Landkarten. München 2017, p. 130-133.

⁵⁶ Brooke-Hitching, Edward: Atlas der erfundenen Orte. Die größten Irrtümer und Lügen auf Landkarten. München 2017, p. 202-205.

⁵⁷ Brooke-Hitching, Edward: Atlas der erfundenen Orte. Die größten Irrtümer und Lügen auf Landkarten. München 2017, p. 230-233.

⁵⁸ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 94, 96, 101, 107, 113.

⁵⁹ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 156.

⁶⁰ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 122-124, 133, 137, 140.

⁶¹ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 142-145, 149-150.

since 1484 tried but failed to convince the Portuguese king to finance his expedition to reach India westwards across the Atlantic Ocean, successfully turned to the Catholic Monarchs of Spain who until 1492 had been far less successful than Portugal in their expedition attempts. On August 3rd, 1492, Columbus set sail with three Spanish-financed ships and reached within only 35 days the Caribbean island of San Salvador, where the first Spanish settlement – Navidad – was founded. He travelled back to the Caribbean three times, discovering also the island of Hispaniola, before dying in 1506 in Spain, still believing he had reached Asia sailing westwards across the Atlantic Ocean.⁶²

Following the achievements of Columbus, further discoveries were made: 1497-1498 Vasco da Gama reached Mozambique by sailing around the Cape of Good Hope and concluded the sea route eastwards to India; in 1500 Pedro Álvares Cabral reached Brazil in South America by mistake as his ships drifted westwards while on their way eastwards to India; Amerigo Vespucci travelled two times to America exploring the coast line of South America, publishing his report with the title ‘Mundus Novus’⁶³, explicitly declaring that the discovery of Columbus is not an unknown part of Asia, but a new unknown continent (his name became the inspiration for cartographer Martin Waldseemüller to label the ‘New World’ America in 1507⁶⁴); in 1520 Ferdinand Magellan travelled to America, discovered the passage between Atlantic and Pacific Ocean, and, as first known expedition in human history, achieved to circumnavigate the world (although Magellan himself died in 1521 on this travel on the Philippines); in 1525 Estevan Gómez discovered the Saint Lawrence River on his search for a passage to Asia through North America; and Hernán Cortés and Francisco Pizarro conquered the Aztec State (1519-1521) and the Inca State (1530-1548).⁶⁵

The discovery of America and the sea route to India made Europe the centre of the world, especially in trade. Europe was not the final destination of a long row of distributors anymore; at dawn of the modern era, Europe dominated the world economy, eliminating the need for distributors from Asia and the Middle East. Even the view of the world had changed: cartographs moved Europe, Africa, and the Atlantic from the left margin into the centre of the world, showing Asia now on the right margin and the new discovered territory of America on the left. And the Atlantic Ocean got a new aspect: Before it had been the end of the European world, now it became the transit sea for the globalization of the world.⁶⁶

⁶² Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 167, 170-171, 173-175, 177.

⁶³ In English ‘New World’, translation from Latin by the author.

⁶⁴ Hebert, John R.: *The Map That Named America. Library Acquires 1507 Waldseemüller Map of the World*. In: Library of Congress, Information Bulletin, Vol. 62/9/2003. In: <http://www.loc.gov/loc/lcib/0309/maps.html> on August 8th, 2018. The only copy of Martin Waldseemüller’s monumental 1507 world map still existing was purchased in May 2003 by the Library of Congress in Washington, D.C., where it is open to visitors. Hebert, John R.: *The Map That Named America. Library Acquires 1507 Waldseemüller Map of the World*. In: Library of Congress, Information Bulletin, Vol. 62/9/2003. In: <http://www.loc.gov/loc/lcib/0309/maps.html> on August 8th, 2018.

⁶⁵ Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 151, 153, 178, 184.

⁶⁶ Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 9-10, 157, 187.

Trade between the newly discovered America and Europe grew rapidly. Especially the Spanish royal house ordered quickly to start the interchange of goods and precious metals. Between 1504 and 1699, 11,687 ships with goods weighing 2,334,480 tonnes, such as farming tools, sailed from Spain to America, and 8,115 ships with goods weighing 1,708,585 tonnes sailed from America back to Spain. The goods imported from America were four times more valuable than the goods exported from Spain and consisted mostly of tobacco, cocoa, and precious metals, mainly gold and silver. Between 1500 and 1800 precious metals with an estimated worth equivalent to about 90,000 tonnes of silver were shipped from America to Europe.⁶⁷

The Spanish and Portuguese domination of Atlantic trade was intolerable for the other European powers France, UK, and the Netherlands. Therefore, they launched a trade war promoting and supporting piracy on a massive scale especially in the Caribbean Sea. To protect their ships from each other and from piracy, all European nations trading in the Atlantic Ocean had adopted a convoy system by the 1520ies. This system increased the safe transport of goods between Europe and America but could extend the duration of the travel, which in the 16th century took between 55 and 160 days depending on weather, wind, and pirate or enemy contacts.⁶⁸

As the usage of the 'New World' as economic resource supplier for Europe increased, the transatlantic triangular trade arose. The European countries holding colonies in America soon realized: America lacked population and therefore workers; workers were cheap in Europe and Africa but expensive in America; land was cheap in America but expensive in Europe. Consequently, the European nations started to trade workers and services from Europe and Africa to America and imported from America resources and agricultural products such as sugar, tobacco, and cocoa.⁶⁹ Within this triangular trade, the transatlantic slave trade emerged, considered by *Deveau* to be one of '*the greatest tragedies in the history of humanity in terms of scale and duration*'⁷⁰. The triangular trade proceeded on three shipping routes forming an artificial triangle: Ships transported goods such as weapons, textiles, and manufactured goods, from Europe to Africa where the merchandise was traded in for slaves; then the ships crossed the Atlantic Ocean with the slaves who were sold for maximum profit throughout the continent of America; afterwards the ships crossed once again the Atlantic Ocean returning to Europe with goods, mainly produced by slaves in America, such as sugar, cotton, and coffee. One circuit could last up to 18 months. About 17 million people were deported forcefully by ship from Africa to America to serve as slaves mainly in agriculture on the European owned estates in Central and South America and on

⁶⁷ Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 202, 207.

⁶⁸ Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 196, 200-201.

⁶⁹ Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 209.

⁷⁰ Deveau, Jean-Michel, cited in UNESCO: Transatlantic Slave Trade. In: <http://www.unesco.org/new/en/social-and-human-sciences/themes/slave-route/transatlantic-slave-trade/> on August 8th, 2018.

the Caribbean islands. This number excludes those who died aboard the ships.⁷¹ Concurrently, a separate triangular trade system emerged in the North Atlantic, shipping goods only: ships transported mainly manufactured goods from Europe across the North Atlantic to North America; fish from the rich fishing grounds near Newfoundland were shipped back to Spain and Italy; goods from southern Europe such as wine were afterwards transported to Northern Europe.⁷²

Another 'good' to be transported en masse from Europe to America were immigrants. Between the 15th and the 18th century about 6 million Europeans travelled in seven to twelve weeks across the Atlantic Ocean to settle in America. More than half of them were of Spanish origin, travelling to Central and South America. The peak in transatlantic migration followed between 1820 and 1914 with about 44 million Europeans migrating to the by then already independent United States of America (USA). Between 1820 and 1920, 5.5 million Germans immigrated in the USA, forming the largest immigrant group by nationality in the 19th century. In 1900, 24.7% of all US Americans were of English, 18.6% of German, and 15.9% of Irish origin. The immigrants usually travelled on cargo ships, as passengers from the USA to Europe were few and the ships transported goods back to Europe. Scheduled transport by ship started in 1756, and from the 1820ies various lines offered regular carriage from Europe to America. In the 19th century crossing the Atlantic Ocean from Europe to North America by ship took on average 44 days; the packet boats of the 'Dramatic Line' were the quickest, crossing the Atlantic Ocean westwards in 23 days, eastwards in 17 days in 1839.⁷³

In the 19th century, development in nautical technology allowed an overwhelming increase of shipping: steamships (until the late 1880ies equipped with hybrid propulsion consisting of a steam engine and sails) reduced the duration of the travel between Europe and North America to 17 days on average and enabled for the first time travelling by timetable without major off hire periods. Consequently, many shipping companies were founded, such as the Cunard Line in Canada in 1840 or the German Hamburg-Amerikanische-Packetfahrt-Actien-Gesellschaft (HAPAG) in 1847.⁷⁴ HAPAG built and operated the largest luxury ocean liner of the pre-World War era: the 'Imperator'. In June 1913, the ship being able to carry over 4,000 passengers and 1,200 personnel started its maiden voyage from Cuxhaven to New York. 908 passengers could travel 1st class which offered the peak of luxury: restaurants managed by the luxury hotel company Ritz-Carlton, winter gardens, ballrooms, and a spa area made completely of marble spanning three ship levels.⁷⁵ In the aftermath of the tragedy of the 'Titanic'

⁷¹ UNESCO: Transatlantic Slave Trade. In: <http://www.unesco.org/new/en/social-and-human-sciences/themes/slave-route/transatlantic-slave-trade/> on August 8th, 2018.

⁷² Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 224.

⁷³ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 223, 225, 251, 255, 258, 260, 266, 288.

⁷⁴ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 267, 269, 273.

⁷⁵ Rehrmann, Marc-Oliver: Als der 'Imperator' den Atlantik eroberte. In: NDR.de, May 21st, 2012. In: <https://www.ndr.de/kultur/geschichte/chronologie/Als-der-Imperator-Atlantik-eroberte,imperator105.html> on August 8th, 2018.

in April 1912, the German emperor Wilhelm II ordered to install enough lifeboats on the 'Imperator' to avoid a huge loss of people to the sea in case of a maritime accident, and to travel cautiously instead of travelling fast.⁷⁶

In the first half of the 20th century, the two World Wars transformed the Atlantic Ocean into a major battle field between the European powers assembled around Germany and the Allied powers, mainly the UK and the USA. During World War I (1914-1918), about 200 ships entered and cleared harbour in the UK each day, 70-80% of them going to or coming from North America. To protect these overseas lifelines and to cut off Germany from world trade, the UK blockaded the North Sea from November 2nd, 1914. As submarines were the only German naval vessels able to break through the British blockade, Germany resorted to submarine warfare in the North Atlantic, mainly against cargo ships with food travelling from North America to the UK. During World War I about 11 million gross register tons (GRT) of hold were sunk and 7.5 million GRT of hold damaged by submarines. In 1917, every fourth ship destined to the UK was sunk by German submarines. Even passenger ships were sunk, e.g. the British liner 'Lusitania', which was accused by Germany to be a naval ship carrying war munition and torpedoed off the Irish coast by the German submarine 'U 20' on May 7th, 1915; she sank within 18 minutes taking 1,195 people down with her. In 1917, the Allied powers revived the convoy system to safely cross the North Atlantic, in particular after the entry of the USA into the war to protect passenger vessels shipping US troops to the UK. The convoy system prevented German submarines from sinking even a single such vessels, which carried up to 10,000 US soldiers each.⁷⁷

In World War II (1939-1945) the North Atlantic once again was a naval battlefield between the Allied powers and Germany. Again the UK and the USA aimed to secure the North Atlantic to freely ship resources and troops between the countries, while Germany mainly used submarine warfare to interrupt this connection.⁷⁸ The only voluntary occupation in World War II was Iceland: After Germany occupied Denmark in 1940, the UK feared to lose Iceland as the bridgehead in the North Atlantic; therefore, the UK occupied Iceland in accordance with the Icelandic rulers. After the USA entered the war, the UK handed over the occupation of Iceland to them.⁷⁹ Even before their entry, in April 1941 the USA extended the Pan-American safety zone to 26 degrees west latitude and thus to the Icelandic west coast, reducing the unguarded zone in the North Atlantic, the so called 'Black Pit', to a minimum. Germany broke into the safety zone repeatedly, provoking the USA to attack German submarines before they even entered the war.⁸⁰ Contrary to naval surface warfare in which Germany

⁷⁶ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 285.

⁷⁷ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 290-293, 295-297.

⁷⁸ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 298.

⁷⁹ Hjalmarsson, Jon R.: History of Iceland. From the Settlement to the Present Day. Reykjavik 1993, S. 155-161.

⁸⁰ Zentner, Christian (ed.): Der Zweite Weltkrieg. Daten, Fakten, Kommentare. Originalausgabe. 3rd edition, Rastatt 1998, p. 547.

was utterly outgunned by the British navy, German submarine warfare was very successful in the early years of World War II. The situation changed in 1943: improved Allied nautical technology, such as convoy ships equipped with radar and radio orientation, and an increasing number of anti-submarine aircraft limited the success and increased the losses of German submarines.⁸¹ The decryption of the German cipher machine 'Enigma' in 1940 ('Operation Ultra'⁸²), concealed from the Germans until the end of the war, facilitated tracking and attacking German ships and submarines.⁸³ Losses for all involved combatants in the Battle of the Atlantic were enormous: German submarines carried out about 3,000 attacks in the Atlantic Ocean during World War II sinking about 2,800 Allied cargo vessels with 14.5 million GRT (over 40% of the whole GRT destroyed in World War II); Germany lost over 27,000 seamen to the Atlantic Ocean and 80% of its ships and submarines on duty in the Atlantic Ocean.⁸⁴

Between the World Wars passenger shipping already started to decline and air traffic to increase. Due to the immigration restriction the USA implemented in 1921⁸⁵, the shipping companies were no longer able to profitably operate their ocean liners. Carrying passengers across the North Atlantic became depending on national subsidies, and building ships faster and more luxurious than their predecessors became national vanity projects, such as the 'Normandie' launched by the French shipping company Compagnie Générale Transatlantique in 1935, considered to be a superlative in elegance and progressiveness. Crossing the Atlantic Ocean became a pleasure trip in cruise ships important for tourism rather than a regular means of transport. Technical development in air traffic as a result of World War I enabled John Alcock and Arthur Whitten Brown in 1919 to fly the British bomber 'Vickers Vimy' in 16 hours and 28 minutes from St. John in Newfoundland to Clifdon in Northern Ireland. However, regular transatlantic traffic by aeroplanes was not common until 1938. The only aircraft establishing a regular flight schedule across the North Atlantic between 1926 and 1937 were passenger airships, such as the German 'Graf Zeppelin' and 'Hindenburg' which together crossed the North Atlantic over 300 times carrying 50 to 70 passengers per journey. With the 'Hindenburg' disaster at Lakehurst in 1937 – the airship exploded killing 36 people – the air traffic by passenger airships came

⁸¹ Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 299.

⁸² For detailed information about 'Operation Ultra' see Winterbotham, Frederick W.: *The Ultra Secret. The Inside Story of Operation Ultra, Bletchley Park and Enigma*. London 2000.

⁸³ Benz, Wolfgang / Graml, Hermann / Weiß, Hermann (ed.): *Enzyklopädie des Nationalsozialismus*. 4th edition, München 2001, p. 446.

⁸⁴ Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 301. For detailed information about the Battle of the Atlantic (ships and submarines) see Zentner, Christian (ed.): *Der Zweite Weltkrieg. Daten, Fakten, Kommentare*. Originalausgabe. 3rd edition, Rastatt 1998, p. 508-581. For detailed information about the ships and submarines on duty in World War II see Lüdeke, Alexander: *Waffentechnik im Zweiten Weltkrieg*. Bath, undated, p. 278-313.

⁸⁵ Also known as the Emergency Quota Law. 67th Congress of the United States of America: An Act To limit the immigration of aliens into the United States. H. R. 4075. In: 67th Congress of the United States of America: Session I. Washington, D.C., May 19th, 1921, p. 5-7.

abruptly to an end.⁸⁶ In 1938, finally, the German long-haul aeroplane ‘Focke-Wulf Fw 200 Condor D-ACON’ from Lufthansa crossed the North Atlantic from Berlin to New York non-stop in 24 hours, 36 minutes, and twelve seconds.⁸⁷

Unlike World War I which massively reduced passenger transport across the Atlantic Ocean, World War II increased the traffic enormously. Luxury ocean liners were used for troop transport, e.g. the ‘Queen Mary’, which carried nearly 800,000 soldiers across the Atlantic Ocean covering about 600,000 miles. British and US aeroplanes crossed the North Atlantic over 47,000 times.⁸⁸

After World War II, a short boom period made the passenger numbers on ocean liners rise constantly, but in the mid 1950ies the decline followed. Instead, the passenger numbers in aeroplanes increased due to the commission of the first non-military jet aircraft on the North Atlantic air route in 1952. In 1957, for the first time more passengers crossed the North Atlantic by aeroplane than by ship. In 1958 the jet aircraft ‘Boeing 707’ started to cross the North Atlantic on a regular schedule in only eight hours.⁸⁹

In merchandise traffic, shipping remained – and still is – the main means of transport. Today about 70% of world’s maritime traffic is carried out on the Atlantic Ocean making it the highest trade trafficked sea area in the world. The continuous importance of shipping is evident in the development of specialised ships for particular types of cargo. A good example are tankships which have been used since 1886 to transport liquids in tanks rather than in barrels. Since World War I, the amount of crude oil transported by tankships across the oceans has increased strongly. Accidents involving oil tankers have caused several environmental disasters due to oil-spillage, especially on European Atlantic coasts, e.g. the ‘Torrey Canyon’, leaking 122,000 tonnes of crude oil at the British coast in 1967; the ‘Amoco Cadiz’, leaking 246,000 tonnes of crude oil at Brittany in France in 1978⁹⁰; the ‘Braer’, leaking 85,000 tonnes of crude oil off the Shetland Isles in 1993^{91, 92}.

⁸⁶ Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 303-305, 307, 311-15, 317, 350.

⁸⁷ N.N.: Die Rekordflüge der Focke-Wulf Fw 200 Condor. New York Nonstop und in Etappen nach Tokio. In: *Klassiker der Luftfahrt*, July 5th, 2018. In: <https://www.klassiker-der-luftfahrt.de/geschichte/flugzeuge/rekordfluege-der-focke-wulf-fw-200-condor/631806> on August 12th, 2018.

⁸⁸ Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 318, 350.

⁸⁹ Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 307, 309-310, 318.

⁹⁰ N.N.: 10 largest oil spills in history. In: *The Telegraph*, October 7th, 2011. In: <https://www.telegraph.co.uk/news/worldnews/australiaandthepacific/newzealand/8812598/10-largest-oil-spills-in-history.html> on August 9th, 2018.

⁹¹ NE Scotland, Orkney & Shetland: Braer: The huge oil spill that Shetland survived. In: *BBC News Scotland*, January 5th, 2018. In: <https://www.bbc.com/news/uk-scotland-42577914> on August 9th, 2018.

⁹² Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 320-322, 326.

1.3 Significance of the northern North Atlantic

1.3.1 Economic significance

‘The discovery of America, and that of a passage to the East Indies by the Cape of Good Hope, are the two greatest and most important events recorded in the history of [hu]mankind. Their consequences have already been great; [...] By uniting in some measure the most distant parts of the world, by enabling them to relieve one another’s wants, to increase one another’s enjoyments, and to encourage one another’s industry, their general tendency would seem to be beneficial.’

Adam Smith: The Wealth of Nations, 1776⁹³

The transformation of the Atlantic Ocean from the end of the world into a transit sea has always been driven by economy. With the discovery and the settlement of America a globalized economic system developed and the connections between all continents became stronger and more intense than ever before in human history.⁹⁴ Today, 90% of international trade are transported by ship. By 2025, a rise to the double of the current worldwide shipping volume is expected.⁹⁵ Sea trade has shaped the world’s power structure since the discovery of America.⁹⁶ Sir Walter *Raleigh* described this connection already in 1618: *‘For whosoever commands the sea commands the trade; whosoever commands the trade of the world commands the riches of the world, and consequently the world itself.’*⁹⁷

Economically, the Atlantic Ocean offers some of the most productive fishing grounds, most of them located in the northern North Atlantic between the British Isles and the northeast coastline of the USA. Compared to the other oceans, fishing yields per unit area are most highest in the Atlantic Ocean. Besides fish, the Atlantic Ocean is rich in mineral resources, such as titanium, zircon, and iron ore, and fossil fuels, i.e., crude oil and natural gas.⁹⁸ Furthermore, the Atlantic Ocean is the busiest shipping area worldwide⁹⁹ including some of the world’s most heavily trafficked sea routes, between and within the Eastern and Western Hemispheres.¹⁰⁰ Negative consequences of the intense ship traffic

⁹³ Smith, Adam: The Wealth of Nations. Reprint of the first publication in 1776. Tustin 2015, p. 315.

⁹⁴ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 191, 325.

⁹⁵ Wanucha, Genevieve: ‘For whosoever commands the sea commands the trade’. In: MitMechE, January 13th, 2014. In: <http://meche.mit.edu/news-media/%E2%80%9C-whosoever-commands-sea-commands-trade> on August 10th, 2018.

⁹⁶ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 191.

⁹⁷ Raleigh, Sir Walter / Oldys, William / Birch, Thomas (ed.): The Works of Sir Walter Raleigh, KT. Now first collected: to which are prefixed the lives of the author. Vol. 8. New York 1965, p. 325.

⁹⁸ N.N.: Atlantic Ocean. In: Earth Eclipse, undated. In: <https://www.eartheclipse.com/geography/atlantic-ocean.html> on July 25th, 2018.

⁹⁹ Peace, Connor: Atlantic Ocean. From the Bottom to the Top. Atlantic Facts. 2009. In: http://faculty.montgomerycollege.edu/growth/FP_examples/student_examples/connor_peace/finalproject.html on July 25th, 2018.

¹⁰⁰ Central Intelligence Agency (CIA): Oceans: Atlantic Ocean. In: The World Factbook, undated. In: https://www.cia.gov/library/publications/the-world-factbook/geos/print_zh.html on July 25th, 2018.

are contaminations with crude oil from wrecked ships and offshore platforms¹⁰¹ and garbage patches.¹⁰²

The North Atlantic Ocean is not only part of the busiest shipping area worldwide¹⁰³, it is also one of the busiest flying regions. Between 2,000 and 3,000 aircraft per day travel across the North Atlantic connecting Europe and North America.¹⁰⁴ Eastbound tracks are optimized to take advantage of the tailwinds provided by the jet stream, while westbound tracks are designed to limit headwinds by avoiding the jet stream.¹⁰⁵ This is coordinated by the North Atlantic Organized Track system (OTS), '*a multi-lane, one-way highway in the sky*'¹⁰⁶, set on a daily basis by the Air Traffic Control Centre of Nav Canada¹⁰⁷ in Gander, Newfoundland, and the NATS Shanwick Oceanic Control Area, a joint venture since 1966 between the high frequency communications department in Shannon, Ireland, and the air traffic controller department in Prestwick, Scotland, UK. The Shanwick Oceanic Control Area (OCA) is the busiest of all North Atlantic airspace regions with around 80% of all North Atlantic air traffic passing through it.¹⁰⁸ North Atlantic organized tracks for aircraft started in 1965, and are based on the North Atlantic organized tracks for commercial shipping established in 1898.¹⁰⁹ In 2014, NATS produced a visualization of the main air traffic over the North Atlantic in a 24 hour period, provided on YouTube.¹¹⁰

The Atlantic Ocean is economically not only highly utilised on and above sea, but also under the sea. Currently, 411 submarine cables cross the World's oceans or are in construction. As fig. 3 shows, the highest density of submarine cables is found in the North Atlantic, running mainly between the USA and the UK.¹¹¹

¹⁰¹ Nickels, Lothar: Atlantik. In: Planet Wissen, June 27th, 2018. In: <https://www.planet-wissen.de/natur/meer/atlantik/index.html> on July 25th, 2018.

¹⁰² Lovett, Richard A.: Huge Garbage Patch Found in Atlantic Too. In: National Geographic, March 2nd, 2010. In: <https://news.nationalgeographic.com/news/2010/03/100302-new-ocean-trash-garbage-patch/> on July 25th, 2018.

¹⁰³ Peace, Connor: Atlantic Ocean. From the Bottom to the Top. Atlantic Facts. 2009. In: http://faculty.montgomerycollege.edu/g youth/FP_examples/student_examples/connor_peace/finalproject.html on July 25th, 2018.

¹⁰⁴ NATS: North Atlantic Skies. In: YouTube, June 26th, 2014. In: <https://www.youtube.com/watch?v=6pI77r3oAxxw> on July 27th, 2018.

¹⁰⁵ Slutsken, Howard: North Atlantic Tracks: Invisible highways in the sky. In: CNN travel, May 23rd, 2018. In: <https://edition.cnn.com/travel/article/north-atlantic-tracks/index.html> on July 25th, 2018.

¹⁰⁶ N.N.: Flying the North Atlantic Tracks. In: AeroSavvy. Aviation insight, February 23rd, 2016. In: <https://aero-savvy.com/north-atlantic-tracks/> on July 27th, 2018.

¹⁰⁷ <http://www.gandercanada.com/business-directory/7856/nav-canada> on July 27th, 2018.

¹⁰⁸ NATS: North Atlantic Skies. In: YouTube, June 26th, 2014. In: <https://www.youtube.com/watch?v=6pI77r3oAxxw> on July 27th, 2018.

¹⁰⁹ N.N.: Flying the North Atlantic Tracks. In: AeroSavvy. Aviation insight, February 23rd, 2016. In: <https://aero-savvy.com/north-atlantic-tracks/> on July 27th, 2018.

¹¹⁰ NATS: North Atlantic Skies. In: YouTube, June 26th, 2014. In: <https://www.youtube.com/watch?v=6pI77r3oAxxw> on July 27th, 2018.

¹¹¹ TeleGeography: Submarine Cable Map. In: <https://www.submarinecablemap.com/#/> on August 11th, 2018.

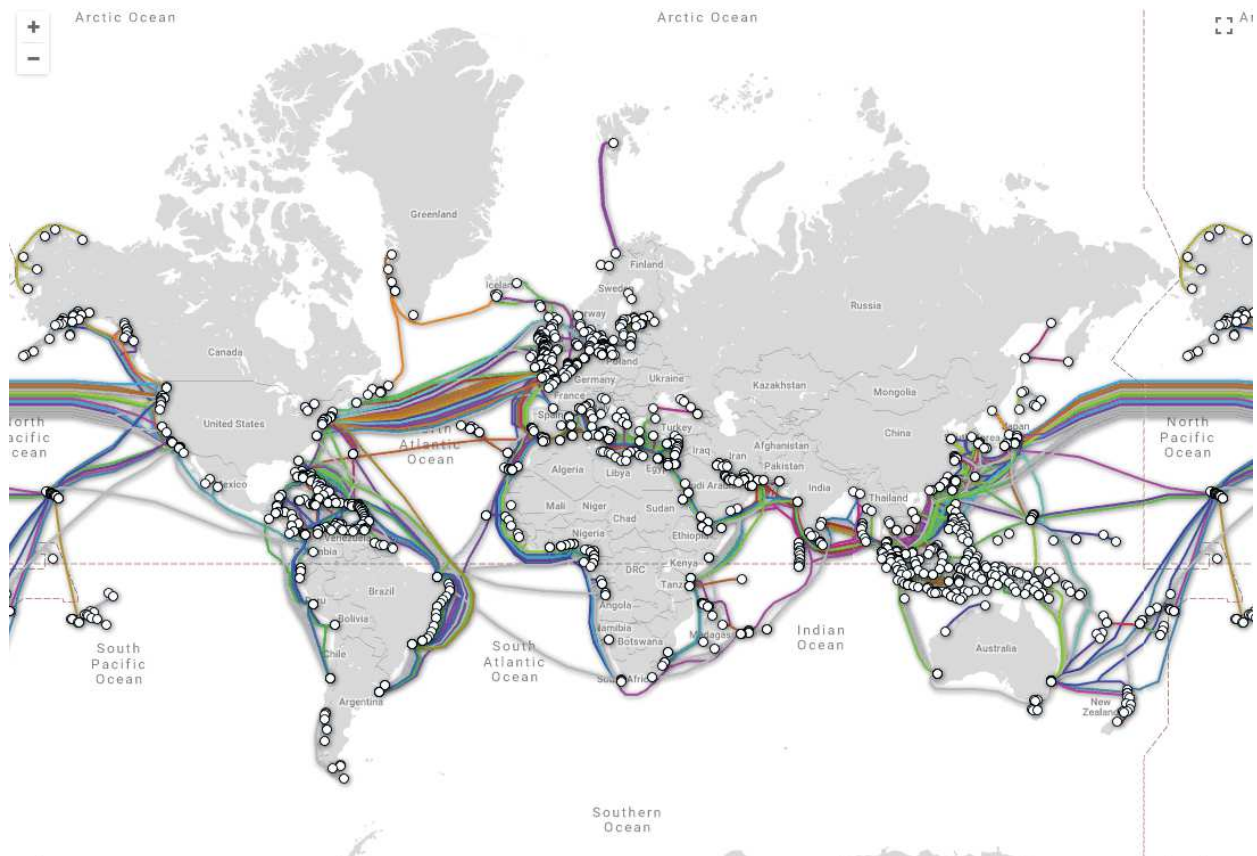


Fig. 3: World map of submarine cables, updated on August 6th, 2018¹¹²

Together with electricity, electrical telegraphy developed in the early 19th century. Quickly the communication industry expressed its wish to communicate with telegraphy via oceans to serve the newspaper industry and the stock markets. Connecting the coastline of the USA and Europe with submarine cables would make sharing the information about stock exchange quotations possible in minutes rather than in at least ten days, which was the time the fastest ships needed to cross the North Atlantic in the 19th century. Samuel Morse had already proven that electric impulses can be transferred through underwater cables he laid in the harbour of New York. In 1850, the first submarine cable was laid in the English Channel between the UK and France (it lasted for 24 hours only and was cut by accident), and during the Crimean War (1853-1856) British and French technicians laid submarine cables in the Black Sea. Although laying a submarine cable between Newfoundland and Nova Scotia failed in 1854, Cyrus W. Field stuck to his plan to lay the world's first trans-ocean submarine cable across the North Atlantic. Between 1857 and 1866, his company tried unsuccessfully to lay the cable three times until, finally, on July 27th, 1866, the then largest ship of the world, the 'Great Eastern', laid a submarine cable from Valentia, Ireland, to Heart's Content, Canada, and successfully connected Europe to North America. In September 1866, Field's company laid a second transatlantic submarine cable. Within a few years, a complete net of submarine cables emerged, first in the Atlantic Ocean, later in

¹¹² TeleGeography: Submarine Cable Map. In: <https://www.submarinecablemap.com/#/> on August 11th, 2018.

all other oceans and seas of the world. The first submarine cables were made of copper sheathed seamlessly by a method designed by the German inventor Werner Siemens with a material called ‘guttapercha’ made of the sap from trees cultivated in south east Asia. As the cable reels weighed thousands of tonnes, only large ships could transport them, led by a pilot ship as the enormous amount of copper on the large ships interfered with the board compass.¹¹³

Today special boats called cable-layers cross the oceans to lay mainly fibre optic lines for communication with an average diameter of 6.8 cm thick¹¹⁴ and high voltage cables, on average 30 cm in diameter¹¹⁵ for offshore energy suppliers. About 99% of international data worldwide is transmitted by submarine communications cables as communications satellites still have to deal with latency and bit loss.¹¹⁶ Currently, 20 submarine communications cables cross the North Atlantic – the so-called transatlantic cables. 18 of them are already in service, one is scheduled to be switched on (‘lit’) in 2019, and one in 2020.¹¹⁷ The transatlantic cable to be lit in 2019 is the HAVFRUE subsea cable, connecting the USA and Northern Europe as – unlike most transatlantic cables – it will not end in the UK but in Denmark. It will be named America Europe Connect-2 (AEC-2) complementary to the cable America Europe Connect-1 (AEC-1) already in service between the USA and Ireland run by Aqua Comms and HAVFRUE.¹¹⁸ The transatlantic cable to be lit in 2020 is called ‘Dunant’ and owned by the information technology company Google. Contrary to most transatlantic cables, it will run between Virginia Beach (not New York) in the USA and the French Atlantic coast (not the UK) in Europe.¹¹⁹ The transatlantic cables are an important factor in today’s globalized economy: about 15 million financial transactions with a total volume of 10 billion US Dollar are processed via the transatlantic cables every day.¹²⁰

¹¹³ Rademacher, Cay: Schiff der Besessenen. In: GEO Epoche: Die Industrielle Revolution. Wie Dampf, Stahl und Strom die Welt veränderten. Vol. 30/2008, p. 90-91, 96-97.

¹¹⁴ scarletrav3n: Transatlantic Cables. In: imgur, November 7th, 2015. In: <https://imgur.com/gallery/FZNvF> on July 26th, 2018.

¹¹⁵ scarletrav3n: Transatlantic Cables. In: imgur, November 7th, 2015. In: <https://imgur.com/gallery/FZNvF> on July 26th, 2018.

¹¹⁶ Brown, David W.: 10 Facts About the Internet’s Undersea Cables. In: Mental Floss, November 12th, 2015. In: <http://mentalfloss.com/article/60150/10-facts-about-internets-undersea-cables> on August 11th, 2018.

¹¹⁷ TeleGeography: Submarine Cable Map. In: <https://www.submarinecablemap.com/#/> on August 11th, 2018.

¹¹⁸ N.N.: Aqua Comms Continues Investment in Subsea Cables and Announces North Atlantic Bridge. In: 1025 Connect, January 15th, 2018. In: <https://1025connect.com/press-release/aqua-comms-continues-investment-subsea-cables-announces-north-atlantic-bridge/> on July 26th, 2018.

¹¹⁹ Sorrentino, Mike: Google is buying a trans-Atlantic cable, names projects after innovators. Future Google cables will be named after innovators alphabetically. In: CNET, July 17th, 2018. In: <https://www.cnet.com/news/google-is-buying-a-transatlantic-cable-names-projects-after-scientists/> on July 26th, 2018.

¹²⁰ Hermann, Rudolf: Die NATO will den ‘Flugzeugträger Island’ wieder mehr nutzen. In: Neue Zürcher Zeitung, 13.02.2018. In: <https://www.nzz.ch/international/die-nato-will-den-flugzeugtraeger-island-wieder-mehr-nutzen-id.1356585> am 27.02.2018.

1.3.2 Geostrategic significance

‘And we say that the first section of the second climate begins from the far west [al-maghrîb al-‘aqsâ] where the Sea of Darkness [bahr az-zulumât] is and no one knows what exists beyond.’

About the North Atlantic in 12th century Arab geography¹²¹

The North Atlantic is the sea connecting North America and Europe, a ‘[...] *maritime domain*, [...] *strategically important* [...]’¹²². The strong economic ties of these regions make them the largest trading partnership worldwide. Trade transit across the North Atlantic amounts to 4 trillion US Dollar per year. This intense connection depends on shipping routes, busy harbours, oil rigs, submarine cables, vital infrastructure, and a highly secured surrounding.¹²³ Its economic potential makes the North Atlantic the centre of geostrategic concepts and potential conflicts. These potential conflicts include not only a third battle of the Atlantic with high-precision long range strike weapons, but also the use of weapons mass destruction, international terrorism, and cyber warfare. The North Atlantic including the Baltic Sea, the North Sea, and the Norwegian Sea, has reverted to an area of security policy facing a new requirement for maritime strategy.¹²⁴ The connection of Europe and North America is built upon sea lines of communication (SLOC) and strategic economic routes.¹²⁵ A well-planned and organized defence of these in potential crises, conflicts, or wars is essential for the North Atlantic region and all surrounding territories. With the increasing military activities in the northern North Atlantic and in the Arctic –conducted mainly and aggressively by Russia –, exercising maritime control and demonstrating dominance in the eastern part of the northern North Atlantic is of growing interest to the North Atlantic Treaty Organization (NATO).¹²⁶

The North Atlantic and the Arctic are again to be of growing importance for Russian military strategic calculations, shown by increased naval and air presence.¹²⁷ Especially the Arctic presents challenges unknown to date. Presumably, 40% of the Arctic ice will melt within the next 20 years, making the Okhotsk Sea and the Japan Sea ice-free year-round. Thus, military strategic planning must be expanded to include operations in the Arctic by 2050. The USA and Russia amassed decades-long experience in

¹²¹ Abû ‘Abd Allâh al-Idrîsî: Kitâb nuzhat al-mushtâq, cited in Pandolfo, Stefania: Impasse of the Angels. Scences from a Moroccan Space of Memory. Chicago 1997, p. 42.

¹²² Olsen, John Andreas: Introduction: The Quest for Maritime Supremacy. In: Whitehall Papers, Vol. 87/1/2016, p. 7.

¹²³ Stavridis, James: The United States, the North Atlantic and Maritime Hybrid Warfare. In: Whitehall Papers, Vol. 87/1/2016, p. 92-93.

¹²⁴ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 18, 28.

¹²⁵ Stavridis, James: The United States, the North Atlantic and Maritime Hybrid Warfare. In: Whitehall Papers, Vol. 87/1/2016, p. 93.

¹²⁶ Efstestad, Svein: Norway and the North Atlantic: Defence of the Northern Flank. In: Whitehall Papers, Vol. 87/1/2016, p. 67.

¹²⁷ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 44.

polar nautical military operations during the Cold War, but this advantage will quickly diminish as several other countries aim to exploit resources in the Arctic.¹²⁸ Therefore, NATO puts the North Atlantic region in the centre of its strategic interest by prioritising maritime, air, and missile defence capabilities to enhance stability and security in the region.¹²⁹ *Efjestad* even tied the security of the whole of Europe to a secured North Atlantic: ‘Credible defence and stability in the North Atlantic will create a sound basis for NATO’s defence and deterrence elsewhere in Europe [...]’.¹³⁰ The main focus of NATO’s strategic planning in the North Atlantic is on protecting the vital SLOC across the ocean between Europe and North America.¹³¹

Within the past three years, NATO has started to develop and improve strategic concepts to secure the North Atlantic region by the Enhanced Northern Presence. In February 2018, the NATO defence ministers approved to set up two new military headquarters, a new regional base – the North Atlantic Command in Norfolk, Virginia – and a new Logistics Command presumably to be located in Germany.¹³² The North Atlantic Command will be responsible to secure the SLOC in the North Atlantic and the North Sea, in the Danish Strait and the Baltic Sea, and prepare for potential conflict situations as the SLOC are likely to be a central target to interrupt transatlantic movements. The new Command has to establish and coordinate operations in the maritime space of the North Atlantic as part of a defence concept for Northern Europe.¹³³ The Logistics Command is responsible for troop movements in Europe as an extended strategic process of the maritime defence operations by the North Atlantic Command.¹³⁴ An important prerequisite for the effective operation of both new Commands is the improvement of coordination and cooperation regarding political and military issues between the NATO member countries.¹³⁵

¹²⁸ Weir, Gary E.: Virtual War in the Ice Jungle: ‘We don’t know how to do this’. In: *Journal of Strategic Studies*, Vol. 28/2/2005, p. 425.

¹²⁹ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: *Whitehall Papers*, Vol. 87/1/2016, p. 44.

¹³⁰ Efjestad, Svein: Norway and the North Atlantic: Defence of the Northern Flank. In: *Whitehall Papers*, Vol. 87/1/2016, p. 59.

¹³¹ Efjestad, Svein: Norway and the North Atlantic: Defence of the Northern Flank. In: *Whitehall Papers*, Vol. 87/1/2016, p. 59. Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: *Whitehall Papers*, Vol. 87/1/2016, p. 48.

¹³² Associated Press in Washington: ‘Great power competition’: Nato announces Atlantic command to counter Russia. In: *The Guardian*, May 5th, 2018. In: <https://www.theguardian.com/world/2018/may/05/great-power-competition-nato-announces-atlantic-command-to-counter-russia> on August 24th, 2018.

¹³³ Rathke, Jeffrey: Security in Northern Europe and the Road to the 2018 NATO Summit. In: CSIS – Center for Strategic & International Studies, November 20th, 2017. In: <https://www.csis.org/analysis/security-northern-europe-and-road-2018-nato-summit> on August 24th, 2018.

¹³⁴ Stearns, Jonathan: NATO Will Put New Command Centers in U.S. and Germany, Officials Say. In: *Bloomberg*, February 13th, 2018. In: <https://www.bloomberg.com/news/articles/2018-02-13/u-s-germany-said-to-be-locations-for-new-nato-command-centers> on August 25th, 2018.

¹³⁵ Efjestad, Svein: Norway and the North Atlantic: Defence of the Northern Flank. In: *Whitehall Papers*, Vol. 87/1/2016, p. 74.

On December 19th, 2015, the first NATO Alliance Ground Surveillance (AGS) system aircraft completed its maiden flight.¹³⁶ NATO's AGS system is scheduled to start in 2018 as an integrated system with an air, a ground, and a support segment. The air segment consists of remotely piloted aircraft (RPA) of the type RQ-4B Global Hawk Block 40, having *'the benefit of bringing the [...] unmanned aerial vehicles capabilities to the North Atlantic.'*¹³⁷ The system is NATO-owned and will allow constant surveillance over wide areas regardless of weather or light conditions. Supplementary to the NATO Airborne Early Warning & Control (NAEW&C) aircraft which monitors airspace, the AGS will monitor the surface with advanced radar sensors to detect and track moving and stationary objects, and provide radar imagery of large areas. The main task is support in situational intelligence before, during, and after NATO operations. The ground and support segment (NATO Joint Intelligence, Surveillance & Reconnaissance, JISR) is located at Sigonella Air Base in Italy which is the main operating base for AGS.¹³⁸

In 2012, NATO launched the Allied Maritime Command (MARCOM) in Northwood, UK, as its single maritime authority to centrally command all NATO maritime forces. It consists of the NATO Maritime Air Command, the NATO Submarine Command, and the NATO Shipping Centre.¹³⁹

In addition, several countries have started to improve their forces and the cooperation with NATO to secure the North Atlantic. Norway, Iceland, and the UK allow NATO member countries to use their air and sea bases to exercise sea-control. All Nordic countries, including the non-NATO member countries Sweden and Finland, have agreed to let their national air forces operate freely across national borders for training and exercise.¹⁴⁰ In 2015, the UK started to purchase maritime patrol aircraft to detect submarine activities and protect its nuclear deterrent, and stealth multirole fighters. Both are in use in the US and the UK Armed Forces and therefore highly interoperable, making possible e.g. landings of the aircraft on both countries' aircraft carriers. The UK is currently renewing its Trident nuclear weapons system and building the new Dreadnought-class submarine to replace Vanguard-class nuclear submarines which carry Trident II D-5 ballistic missiles since 1992.¹⁴¹ The USA has deployed the 12th Space Warning Squadron at the Thule Air Force Base in Greenland, which operates an Up-

¹³⁶ N.N.: First NATO Alliance Ground Surveillance System aircraft. In: NATO Newsroom, December 19th, 2015. In: https://www.nato.int/cps/en/natohq/photos_146348.htm on August 25th, 2018.

¹³⁷ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 58.

¹³⁸ North Atlantic Treaty Organization, Public Diplomacy Division (PDD) – Press & Media Section: Alliance Ground Surveillance (AGS). Fact Sheet. July 2016. Brussels 2016, p. 1-2.

¹³⁹ <https://mc.nato.int/about-marcom.aspx> on August 24th, 2018.

¹⁴⁰ Efstestad, Svein: Norway and the North Atlantic: Defence of the Northern Flank. In: Whitehall Papers, Vol. 87/1/2016, p. 67, 69.

¹⁴¹ Ministry of Defence: Dreadnought submarine programme: factsheet. Policy paper. In: GOV.UK, February 19th, 2018. In: <https://www.gov.uk/government/publications/successor-submarine-programme-factsheet/successor-submarine-programme-factsheet> on August 30th, 2018.

graded Early Warning Radar (UEWR). It acts as space control for the North American Aerospace Defense Command (NORAD) and the US Space Command and it supports the US homeland missile defence by ballistic missile defence (BMD) detection and tracking.¹⁴² On July 1st, 2018, the US Navy re-established its 2nd Fleet Command which had been terminated in 2011 to cut costs. It will command ships, aircraft, and landing forces to train and conduct maritime operations in the North Atlantic.¹⁴³

On the ground of the North Atlantic, transatlantic cables are not only an important factor in today's globalized economic world but also a target for covert and cyber warfare. On one hand, tapping submarine cables is a standard operating procedure for intelligence agencies. Former NSA analyst Edward Snowden revealed in 2013 that mainly the UK is tapping submarine cables connecting Europe and the world, as most of these end or have a waypoint in the UK. In 2010, the British intelligence agency Government Communications Headquarters (GCHQ) became able to tap into and store enormous volumes of data collected from submarine cables for 30 days. Since then, the UK is considered to store the highest amount of internet data worldwide, having the *'biggest internet access'*¹⁴⁴ among the Five Eyes, the intelligence alliance between the USA, the UK, Canada, Australia, and New Zealand.¹⁴⁵ On the other hand, cutting submarine cables can reduce internet connection speed or completely block internet access for large regions. Several submarine cables have been cut, though mostly by accident, e.g. by ship anchors. In 2013, in Egypt the arresting of three men accused of having intentionally cut the South-East-Asia-Middle-East-West-Europe 4 (SeaMeWe-4) running from Marseille, France, to Tuas, Singapore,¹⁴⁶ caught international attention as this act demonstrated that cutting submarine cables – while dangerous due to the high operating voltage of the cables – is possible with relatively low effort.¹⁴⁷

The connection between North America and Europe is highly dependent on a completely secured North Atlantic region, on the waters, in the waters and above them. *'Security in the Atlantic is what ties the US and Canada directly to European security and this has to be a seamless connection.'*¹⁴⁸

¹⁴² Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 53, 56-57.

¹⁴³ Associated Press: US re-establishes naval fleet in Atlantic amid increased Russia threat. In: The Telegraph, May 5th, 2018. In: <https://www.telegraph.co.uk/news/2018/05/05/us-re-establishes-naval-fleet-atlantic-amid-increased-russia/> on August 24th, 2018.

¹⁴⁴ MacAskill, Ewen / Borger, Julian / Hopkins, Nick / Davies, Nick / Ball, James: GCHQ taps fibre-optic cables for secret access to world's communications. In: The Guardian, June 21st, 2013. In: <https://www.theguardian.com/uk/2013/jun/21/gchq-cables-secret-world-communications-nsa> on August 25th, 2018.

¹⁴⁵ MacAskill, Ewen / Borger, Julian / Hopkins, Nick / Davies, Nick / Ball, James: GCHQ taps fibre-optic cables for secret access to world's communications. In: The Guardian, June 21st, 2013. In: <https://www.theguardian.com/uk/2013/jun/21/gchq-cables-secret-world-communications-nsa> on August 25th, 2018.

¹⁴⁶ TeleGeography: Submarine Cable Map. In: <https://www.submarinecablemap.com/#/> on August 11th, 2018.

¹⁴⁷ Arthur, Charles: Undersea internet cables off Egypt disrupted as navy arrests three. In: The Guardian, March 28th, 2013. In: <https://www.theguardian.com/technology/2013/mar/28/egypt-undersea-cable-arrests> on August 25th, 2018.

¹⁴⁸ Efstestad, Svein: Norway and the North Atlantic: Defence of the Northern Flank. In: Whitehall Papers, Vol. 87/1/2016, p. 74.

2. The GIUK Gap

2.1 General information

gap; noun; \ 'gap \

Etymology: Middle English *gap*, *gappe*, borrowed from Old Norse *gap* 'chasm, outcry', noun derivative of *gapa* 'to gape', first known use: 14th century

Definition: a. a break in a barrier (such as a wall, hedge, or line of military defence);
b. an assailable position;
c. a mountain pass;
d. a separation in space;
e. an incomplete or deficient area;
f. a break in continuity;
g. a break in the vascular cylinder of a plant where a vascular trace departs from the central cylinder;
h. a lack of balance;
i. a wide difference in character or attitude;
j. a problem caused by some disparity.

Synonyms: discontinuity, hiatus, hiccup (also hiccough), interim, interlude, intermission, interregnum, interruption, interstice, interval

Defining the word gap, extract, The Merriam-Webster Dictionary¹⁴⁹

The term GIUK Gap derives from the abbreviations of the regions and countries this artificial region touches: Greenland-Iceland-UK Gap. It is defined by the imaginary line in the northern North Atlantic drawn from Greenland to Scotland in the UK including Iceland, the Faroe Islands, the Shetland Islands, and the Orkney Islands (fig. 4).¹⁵⁰

¹⁴⁹ <https://www.merriam-webster.com/dictionary/gap> on August 14th, 2018.

¹⁵⁰ ruh: Island und die 'GIUK-Lücke'. In: Neue Zürcher Zeitung, February 13th, 2018. In: <https://www.nzz.ch/international/die-nato-will-den-flugzeugtraeger-island-wieder-mehr-nutzen-ld.1356585> on February 27th, 2018.



Fig. 4: Location of the GIUK Gap in the northern North Atlantic¹⁵¹

The GIUK Gap is a naval strategic defence line connecting the Arctic Ocean and the Atlantic Ocean. It is the only perennially ice-free sea route between these two oceans. It also is the preferred route for large ships sailing from the North Sea into the Atlantic Ocean. Only smaller vessels commonly enter the Atlantic Ocean through the narrow English Channel. In any case, the ships have to cross waters mainly dominated by the British, giving the UK a strategic advantage.¹⁵² As the UK also controls Gibraltar, it can easily block access to the Atlantic Ocean via the North Sea and the Mediterranean Sea. Spain, France, and Portugal are the only continental European countries with direct access to the Atlantic Ocean. All other countries are highly dependent on the UK's cooperation. All this explains the UK's position of power in the North Atlantic.¹⁵³ *Marshall* stated that the GIUK Gap is one of the reasons why the UK strongly disapproves Scotland's independence. Without Scotland, British dominance in the North Sea and in the GIUK Gap would wane. Therefore, Scottish independence would imply a huge loss of power for the UK.¹⁵⁴ The only route into the North Atlantic from the east that is

¹⁵¹ Krog, Andreas: Ubåds-passage fra Den Kolde Krig får nyt liv. In: *Altinget*, March 29th, 2017. In: <https://www.altinget.dk/arktis/artikel/ubaads-passage-fra-den-kolde-krig-faar-nyt-liv> on July 26th, 2018.

¹⁵² Marshall, Tim: *Prisoners of Geography. Ten Maps That Tell You Everything You Need to Know About Global Politics*. Revised and updated edition. London 2016, p. 108.

¹⁵³ N.N.: GIUK gap. In: *Alchetron*, undated. In: <https://alchetron.com/GIUK-gap/#> on July 26th, 2018.

¹⁵⁴ Marshall, Tim: *Prisoners of Geography. Ten Maps That Tell You Everything You Need to Know About Global Politics*. Revised and updated edition. London 2016, p. 108-109.

not controlled by the UK is via the Norwegian Sea. However, this route also leads through the GIUK Gap, adding to its strategic importance.¹⁵⁵

Besides the maritime traffic, the GIUK Gap is also a route for migratory birds. Red-Necked Phalaropes migrate every year from the Shetland Islands through the GIUK Gap to Peru¹⁵⁶, Northern Wheatears migrate from northern Canada through the GIUK Gap to western Africa¹⁵⁷.

The GIUK Gap has even become a topic in literature and popular culture. It is frequently present in the novels of Tom Clancy, e.g. in ‘Red Storm Rising’¹⁵⁸ and ‘The Hunt for Red October’¹⁵⁹. Icelandic Nobel Prize winner Halldor Laxness dramatized the geopolitical importance of Iceland in the GIUK Gap from the perspective of an Icelandic country girl in his novel ‘The Atom Station’, first published in 1948.¹⁶⁰ Video game developer company WarfareSims released the first edition of the computer game ‘Harpoon’ in 1989, in which naval warfare in the North Atlantic during a fictional World War III in 1985 is simulated. In the first and all following editions, one set of simulations available is the ‘GIUK Gap battleset’, in which the player has to defend the GIUK Gap against Soviet attacks in various scenarios.¹⁶¹

¹⁵⁵ Hermann, Rudolf: Die NATO will den ‘Flugzeugträger Island’ wieder mehr nutzen. In: Neue Zürcher Zeitung, February 13th, 2018. In: <https://www.nzz.ch/international/die-nato-will-den-flugzeugtraeger-island-wieder-mehr-nutzen-ld.1356585> on February 27th, 2018.

¹⁵⁶ Byrne, Paul: Incredible journey: Tiny British bird flies 16,000 miles to Peru and back again. In: Mirror, January 10th, 2014. In: <https://www.mirror.co.uk/news/uk-news/red-necked-phalarope-bird-flies-peru-3006687> on August 14th, 2018.

¹⁵⁷ Hochachka, Wesley: Migrating Northern Wheatears Go The Distance – and Pack Accordingly. In: All About Birds. The Cornell Lab of Ornithology, October 1st, 2014. In: <https://www.allaboutbirds.org/for-migration-northern-wheatears-go-the-distance-and-pack-accordingly/> on August 14th, 2018.

¹⁵⁸ Clancy, Tom: Red Storm Rising. New York 1987.

¹⁵⁹ Clancy, Tom: The Hunt for Red October. University Park, Illinois, 1984.

¹⁶⁰ Laxness, Halldor: The Atom Station. New York 2004.

¹⁶¹ Harpoon Head Quarters: World War Three in 1985. In: <http://www.harpoonhq.com/harpoon3/scenarios/plot-ww3in1985.html> on August 14th, 2018. After-action reports for assistance in the videogame Harpoon ‘GIUK Gap battleset’ are available on YouTube. HarPlonked: [HCE] GIUK 3.0 Hide and Seek. In: <https://www.youtube.com/watch?v=bvAxAZyBym0> on July 26th, 2018.

2.2 Historical development

‘Ár var alda þar er Ýmir bygði, vara sandr né sær né svalar unnir, jörð fannsk æva né upphiminn, gap var ginnunga, en gras hvergi.’	‘Of old was the age when Ymir lived, Sea nor cool waves nor sand there were, Earth had not been, nor heaven above, But a yawning gap, and grass nowhere.’
About <i>ginnungagap</i> , the large whirlpool, Völuspa, stanza 3, 1270 ¹⁶²	

Geologically, the GIUK Gap is a product of a rather complicated process of continental drift resulting from the development of the Atlantic Ocean. About 54 million years ago, seafloor spreading in the northern North Atlantic created the Vøring Plateau west of today’s Norwegian coast and the Iceland-Faroe-Shetland Ridge, which forms the eastern part of the Greenland-Iceland-Faroe Ridge Complex (GIFRC)¹⁶³. These fierce geological activities disrupted all activities in the Labrador Sea about 36 million years ago. Consequently, the activities shifted to the area between Greenland and Svalbard, splitting Greenland from continental Europe and making it an island and part of the American instead of the European continental plate.¹⁶⁴ The geological evolution of the GIUK Gap came to a close about 7,500 B.C., when the British Isles split off from the continent and the North Sea was formed.¹⁶⁵

In the following millennia, the GIUK Gap was of minor interest to humankind. Only the Vikings sailed from Norway and Denmark to the British Isles and continued further into the GIUK Gap discovering Iceland (around A.D. 870)¹⁶⁶, Greenland (981), and the surrounding isles.¹⁶⁷ Up to the Age of Discovery, the GIUK Gap remained a – mainly economic – traffic route of marginal importance for North Europe. This can be illustrated by an example: In Europe between 1348 and 1351 the plague, imported by ship traffic presumably from India, extinguished more than one third of the inhabitants, but Iceland was spared as shipping traffic was rather limited. Only more than 50 years later (1402-1404) ship traffic imported the plague to Iceland and consequently, nearly half of the island’s inhabitants were extinguished.¹⁶⁸

The chokepoint of the GIUK Gap gained importance for explorers in the Age of Discovery. Starting in the 16th century particularly British and Dutch explorers sailed from the northern North Atlantic into the Arctic Ocean looking for the Northwest and the Northeast Passage to Asia, e.g. John Davis

¹⁶² Poetic Edda: Völuspa – The Prophecy of the Seeress. In: Codex Regius, 1270. In: <http://www.voluspa.org/voluspa.htm> on August 16th, 2018.

¹⁶³ Hjartarson, Arni / Erlendsson, Ögmundur / Blischke, Anett: The Greenland-Iceland-Faroe Ridge Complex. In: Peron-Pinvidic, Gwenn / Hopper, John R. / Stoker, Martyn S. / Gaina, Carmen / Doornenbal, J. C. / Funck, Thomas / Arting, Uni (ed.): The NE Atlantic Region: A Reappraisal of Crustal Structure, Tectonostratigraphy and Magmatic Evolution. Geological Society London Special Publications, Vol. 447, London 2017, p. 1.

¹⁶⁴ Braun, Alexander / Lausch, Erwin / Marquart, Gabriele: Die bewegte Geschichte des Nordatlantiks. In: Spektrum.de, June 1st, 2001. In: <https://www.spektrum.de/magazin/die-bewegte-geschichte-des-nordatlantiks/827682> on July 25th, 2018.

¹⁶⁵ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 29.

¹⁶⁶ Hjalmarsson, Jon R.: History of Iceland. From the Settlement to the Present Day. Reykjavik 1993, p. 14-17.

¹⁶⁷ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 65, 68.

¹⁶⁸ Hjalmarsson, Jon R.: History of Iceland. From the Settlement to the Present Day. Reykjavik 1993, p. 60.

who between 1585 and 1587 sailed westwards around Greenland discovering the straight between West Greenland and the Baffin Island, today named Davis Strait in his honour. In the beginning, exploring these nearly impassable routes was a prestige project for the UK and other countries excluding Spain and Portugal, as these two countries held territorial hegemony of the Strait of Magellan, Cape Hoorn, and the Cape of Good Hope, and therefore were dominating all known shipping routes to Asia and India. The peak followed in the 19th century: British explorers William Parry and James Ross sailed westwards to pass the Northwest Passage, but failed to do so; Sir John Franklin's expedition vanished with both his ships, 'Erebus' and 'Terror', triggering a shock within the British society, as this expedition was equipped with modern technology and guided by experienced naval commanders; Robert McClure, finally, between 1850 and 1854 proved the existence of the Northwest Passage with three ships and covering two track sections by sledge. 1903 to 1906, Roald Amundsen was able to sail through the Northwest Passage for the first time. Proof of the existence of the Northeast Passage was presented by Vitus Bering as early as 1728. However, not before the 19th century shipping through the Passage became possible (Adolf Erik Nordenskjöld's expedition 1878-1879), but only by ice-breakers or submarines.¹⁶⁹

In the 20th century, the GIUK Gap began to evolve as a major part of military planning in the northern North Atlantic. The chokepoint gained geostrategic importance for all powers surrounding the North Atlantic: Patrolling and securing the GIUK Gap became a military planning hotspot.¹⁷⁰ During World War I, the UK needed to protect the overseas lifelines and to cut off Germany from world trade, therefore it blockaded the North Sea from November 2nd, 1914. Due to the blockade, German ships were not able to reach the Atlantic Ocean through the GIUK Gap. Germany resorted to submarine warfare in the North Atlantic, mainly against cargo ships with food travelling from North America to the UK and, starting in 1917, against passenger vessels carrying US troops to the UK.¹⁷¹

With the beginning of World War II, the GIUK Gap once again became a chokepoint in naval warfare between the Allied powers and Germany. Starting in 1939 German ships and submarines crossed the GIUK Gap to break into the North Atlantic and attack the Allied shipping convoys. At first, German naval bases were situated in northern Germany. After the occupation of Norway ('Norwegian Campaign'¹⁷²) on April 9th, 1940, German ships and submarines were relocated to Norwegian harbours, most of them to Narvik. The UK responded by blocking naval access to the North Sea and the GIUK Gap. It occupied the Faroe Islands on April 13th, 1940, and Iceland on May 10th, 1940, handing

¹⁶⁹ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 237-240, 243-244, 246, 248.

¹⁷⁰ N.N.: GIUK gap. In: Alchetron, undated. In: <https://alchetron.com/GIUK-gap/> on July 26th, 2018.

¹⁷¹ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 290, 293, 295-297.

¹⁷² Benz, Wolfgang / Graml, Hermann / Weiß, Hermann (ed.): Enzyklopädie des Nationalsozialismus. 4th edition, München 2001, p. 616.

it over to the USA on June 16th, 1941¹⁷³. The USA took over effective control over Greenland on April 9th, 1941. This blocked entry into the North Atlantic for Germany as the GIUK Gap was completely controlled by the Allied powers. This might seem to be of little importance for Germany, because with the occupation of France in June 1940, access to the North Atlantic was secured, but the so called ‘Black Pit’¹⁷⁴ remained the only area not covered by Allied patrol bombers.¹⁷⁵

The ‘Black Pit’ – also known as the Mid-Atlantic Gap – was an air gap between the UK and North America stretching from Greenland to the Azores Islands on a length of 965 km and a width of 482 km. In the beginning of World War II, this region could not be covered by aircraft as they lacked the required range. Thus, shipping on the North Atlantic in this area had no air force assistance. This facilitated German submarine attacks on Allied convoys carrying mainly food for the UK, but also – after the entry of the USA into the war – equipment and troops for ‘Operation Bolero’, the build-up of the Allied forces for D-Day to invade German-occupied Europe in Normandy across the English Channel. Starting in 1940, Germany deployed its submarine fleet in the North Atlantic mainly in the Black Pit. The submarines entered the Black Pit via the western part of the GIUK Gap between Greenland and Iceland, a part of the Mid-Atlantic Gap called the ‘Greenland air gap’. This is where the usage of ‘gap’ for the GIUK Gap derives from.¹⁷⁶ The UK Coastal Command soon realised that closing the Mid-Atlantic Gap was crucial, but the focus was set on UK Bomber Command’s offensive strategy rather than on closing the gap, it was not before September 1943 that the gap was finally closed by covering all ship traffic between the UK and North America with Consolidated B-24 Liberator Mark I bombers¹⁷⁷ modified to very-long-range (VLR) standards, with a range of about 3,900 km.¹⁷⁸ Goette expressed harsh critique on British Prime-Minister Winston Churchill and the British leadership during World War II on waiting three years to close the Mid-Atlantic Gap: *‘The elimination of the mid-Atlantic air gap was crucial in the final defeat of the U-boats in May and September 1943. The striking issue is that the British had the resources to close the air gap in 1942, but they failed to do so. This was a clear failure of Britain’s military and political leadership. [...] Although victory against the U-boats finally came [...], it was at great cost of lives, resources and time. Indeed, had the British military and political leadership correctly evaluated the strategic situation earlier on in the war, it was very likely that most of these losses could have been avoided and that the Normandy invasion could have been expedited by several months.’*¹⁷⁹ The Allies’ losses peaked in April 1943

¹⁷³ Hjalmarsson, Jon R.: History of Iceland. From the Settlement to the Present Day. Reykjavik 1993, p. 155-161.

¹⁷⁴ Zentner, Christian (ed.): Der Zweite Weltkrieg. Daten, Fakten, Kommentare. Originalausgabe. 3rd edition, Rastatt 1998, p. 547.

¹⁷⁵ N.N.: GIUK gap. In: Alchetron, undated. In: <https://alchetron.com/GIUK-gap#> on July 26th, 2018.

¹⁷⁶ N.N.: GIUK gap. In: Alchetron, undated. In: <https://alchetron.com/GIUK-gap#> on July 26th, 2018.

¹⁷⁷ For detailed information about the Consolidated B-24 Liberator see Lüdeke, Alexander: Waffentechnik im Zweiten Weltkrieg. Bath, undated, p. 272-273.

¹⁷⁸ Goette, Richard: Britain and the Delay in Closing the Mid-Atlantic ‘Air Gap’ During the Battle of the Atlantic. In: The Northern Mariner / Le marin du nord, Vol. XV/4/2005, p. 19, 21, 25, 29, 41.

¹⁷⁹ Goette, Richard: Britain and the Delay in Closing the Mid-Atlantic ‘Air Gap’ During the Battle of the Atlantic. In: The Northern Mariner / Le marin du nord, Vol. XV/4/2005, p. 40-41.

when German submarines destroyed 97 British and US ships with more than half a million GRT within only 20 days.¹⁸⁰

In the aftermath of World War II, the Allied Powers had to face a new enemy: Germany was not the main focus anymore, the former ally Soviet Union (Union of Soviet Socialist Republics, USSR) and its regime of communism was. As *Kaplan* put it: for the USA and the UK *‘[w]inning the war had only produced another great enemy.’*¹⁸¹ The USSR’s tendency to extend its sphere of influence between 1947 and 1949 (Greece, Czechoslovakia, East Germany) brought the potential of the USSR to be an aggressor in Central Europe to light. Thus, the USA, Canada, and the UK started discussions about a military alliance with the western European countries. Perfectly aware of the USSR’s geostrategic approach, NATO initiating countries USA, Canada, and UK therefore wanted to have the Scandinavian countries tied in their military alliance. Norway, Denmark, Iceland, and even the UK itself were considered a strategic bottleneck in the northern North Atlantic, but also to be a strategic liability because they were weakly armed (in the case of Iceland not armed at all as it disbanded its own Armed Forces in the 19th century¹⁸²) and therefore exposed to Soviet attacks.¹⁸³ This resulted in the signing of the North Atlantic Treaty and the founding of the military alliance NATO on April 4th, 1949, in Washington, D.C., by twelve countries: the USA, Canada, the UK, France, Belgium, Luxemburg, the Netherlands, Denmark, Norway, Iceland, Italy, and Portugal.¹⁸⁴ Thus, the GIUK Gap is under total NATO control as it is completely surrounded by NATO member countries. The USSR’s largest fleet, the Northern Fleet, was – and Russia’s still is – based in Severomorsk near Murmansk¹⁸⁵ on the Kola Peninsula and had direct access to the Arctic Ocean but not to the Atlantic Ocean as entering the latter required crossing the NATO-controlled GIUK Gap.¹⁸⁶ The GIUK Gap became the key maritime chokepoint: Soviet ships and submarines had to cross it in order to access the North Atlantic, and US forces had to cross it in order to move towards the Kola Peninsula if they planned to attack the Soviet fleet and its base.¹⁸⁷ The military strategic scenario of war between the USA and the USSR focused on continental Europe. The alliance between the satellite countries in Eastern Europe and

¹⁸⁰ Goette, Richard: Britain and the Delay in Closing the Mid-Atlantic ‘Air Gap’ During the Battle of the Atlantic. In: *The Northern Mariner / Le marin du nord*, Vol. XV/4/2005, p. 37.

¹⁸¹ Kaplan, Lawrence S.: *NATO 1948. The Birth of the Transatlantic Alliance*. Lanham 2007, p. 4.

¹⁸² Iceland disbanded its national armed forces in the middle of the 19th century. Authors mention different years when the Icelandic Armed Forces were abolished: 1849 (Steinlechner, Daniel: Ohne Heer geht’s auch. In: *News*, January 3rd, 2013. In: <https://www.news.at/a/wehrpflicht-ohne-heer-geht%20es%20auch> on February 27th, 2018.), 1859 (N.N.: Staaten ohne Militär. In: *Lexas Information Network*, 2011. In: https://www.laenderdaten.de/militaer/kein_militaer.aspx on February 27th, 2018.), and 1869 (N.N.: Diese Nationen kommen ohne Armee aus. In: *msn nachrichten*, October 11th, 2016. In: <https://www.msn.com/de-de/nachrichten/photos/diese-nationen-kommen-ohne-armee-aus/ss-BBxe4XT#image=21> on February 27th, 2018.).

¹⁸³ Salmon, Patrick: Great Britain and Northern Europe from the Second World War to the Cold War. In: Bohn, Robert / Elvert, Jürgen (ed.): *Kriegsende im Norden. Vom heißen zum kalten Krieg*. Stuttgart 1995, p. 200.

¹⁸⁴ Warwick, Johannes: *Die NATO. Vom Verteidigungsbündnis zur Weltpolizei?* München 2008, p. 20-23.

¹⁸⁵ Perdelwitz, Wolf: *Wollen die Russen Krieg?* 1st edition, Hamburg 1980, p. 285.

¹⁸⁶ Olsen, John Andreas: Introduction: The Quest for Maritime Supremacy. In: *Whitehall Papers*, Vol. 87/1/2016, p. 4.

¹⁸⁷ Nordenman, Magnus: Back to the Gap. In: *The RUSI Journal*, Vol. 162/1/2017, p. 25.

the USSR, the Warsaw Pact, founded in 1955¹⁸⁸, focused the geostrategic spotlight on Central Europe, mainly on the border between West Germany, a NATO member since 1955, and the German Democratic Republic (GDR), a Warsaw Pact member. Military planners of NATO identified the Fulda Gap as the most likely invasion route into Western Europe for the Warsaw Pact forces.¹⁸⁹ In the case of such an attack, North America needed to ship reinforcements and material across the North Atlantic to Europe. Soviet forces consequently needed to cross the GIUK Gap to intercept and destroy this shipping.¹⁹⁰ The Soviet leadership quickly conferred greater geostrategic importance on the GIUK Gap, being perfectly aware that *'a war might be won in the Fulda Gap but it might be lost at the GIUK Gap.'*¹⁹¹

Soviet leadership was perfectly aware of the difficult geostrategic situation the USSR fleet was trapped in: None of the USSR's four fleets was able to reach an ocean without having to cross a naval choke-point controlled by an enemy in case of war, and – even worse – most USSR's naval bases were frozen over from autumn to spring.¹⁹² This was alleviated in part in the 1950ies as the range of Soviet strategic missiles increased and crossing the GIUK Gap for an attack was not necessary anymore because strategic submarines could fire their missiles from safe home waters.¹⁹³ In the 1960ies the USSR switched therefore to the 'bastion' concept which focused on a defensive perimeter stretching to the GIUK Gap defending and securing the nuclear forces on the Kola Peninsula seeking control of the Norwegian Sea¹⁹⁴ by submarines equipped with ballistic nuclear missiles.¹⁹⁵ A significant disadvantage was identified: Compared to US intercontinental ballistic missiles (ICBM), USSR's ICBM were heavy, large, vulnerable, and inaccurate. To offset this disadvantage with conventional weapons, Soviet ships tended to be more heavily armed than NATO ships, but were often of lower build-quality and manned by poorly trained personnel. The sides of the aircraft carriers 'Kiev' and 'Minsk' were too low for the heavy seas in the northern North Atlantic; in 1968 a Soviet nuclear-powered submarine exploded at the US east coast; several times complete crews of nuclear-powered submarines had to be replaced, presumably because of exposure to radiation. Because Soviet ships were harboured for about 80% of their term of service (only 10% in the US fleet), training opportunities for USSR naval personnel were limited.¹⁹⁶

¹⁸⁸ Perdelwitz, Wolf: *Wollen die Russen Krieg?* 1st edition, Hamburg 1980, p. 206-207.

¹⁸⁹ Associated Press: Fulda Gap Is Key Point in NATO Defense Against Soviet Forces. In: Los Angeles Times, March 1st, 1987. In: http://articles.latimes.com/1987-03-01/news/mn-6926_1_fulda-gap on August 16th, 2018.

¹⁹⁰ Nordenman, Magnus: Back to the Gap. In: The RUSI Journal, Vol. 162/1/2017, p. 25.

¹⁹¹ Olsen, John Andreas: Introduction: The Quest for Maritime Supremacy. In: Whitehall Papers, Vol. 87/1/2016, p. 4.

¹⁹² Perdelwitz, Wolf: *Wollen die Russen Krieg?* 1st edition, Hamburg 1980, p. 180, 200.

¹⁹³ Nordenman, Magnus: Back to the Gap. In: The RUSI Journal, Vol. 162/1/2017, p. 25.

¹⁹⁴ Olsen, John Andreas: Introduction: The Quest for Maritime Supremacy. In: Whitehall Papers, Vol. 87/1/2016, p. 3-4.

¹⁹⁵ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 9.

¹⁹⁶ Perdelwitz, Wolf: *Wollen die Russen Krieg?* 1st edition, Hamburg 1980, p. 143, 184, 196-197, 199.

In the 1970ies, the warfare focus was set on the Arctic Ocean and the Arctic. Already in 1958, the world's first operational nuclear-powered submarine USS Nautilus¹⁹⁷ completed a submerged transit of the North Pole; in 1962 the Soviet nuclear submarine K-21 made the first Russian Arctic voyage. In the 1970ies, after two decades of continued efforts of both superpowers to prepare for a third battle of the Atlantic, it was obvious that these preparations *'simply occurred at greater depth, at greater speed, with more powerful and innovative weapons and techniques, and eventually on board nuclear submarines'*¹⁹⁸. These preparations and the growing importance of submarine warfare in military planning in the North Atlantic, the GIUK Gap and the Arctic Ocean sparked extensive research in improved passive sonar and signals analysis technology, and led to the development of the deep ocean surveillance system SOSUS.¹⁹⁹

Already in World War I rudimentary passive and active sonar techniques for submarine detection were in use, but of little impact because their range was limited to several thousand metres even under favourable conditions. In 1937 in the North Atlantic, US geophysicist Maurice Ewing discovered that sounds could travel underwater for great distances with minimum attenuation within the so-called 'deep sound channel'. Sound speed in water depends on water temperature and pressure: it increases both with temperature and pressure. In oceans, sound speed first decreases with increasing depth due to the drop in water temperature, then increases again as the pressure effect sets in. The 'deep sound channel' is found where the sound velocity is a minimum, and traps sounds travelling horizontally in-between the warmer waters. After World War I the US Navy started to support research programmes in underwater acoustics which ultimately led to the development of the underwater Sound Surveillance System (SOSUS). As the prototype of a full-size SOSUS installation at Eleuthera succeeded in detecting a US submarine in tests in 1952, the USA installed SOSUS arrays in a huge semicircle along the US East Coast from Barbados to Newfoundland opening toward the deep-water abyss west of the MAR. The hydrophone outputs were transmitted to shore on multi-conductor armoured cables, where triangulating the signals from multiple stations enabled the USA to determine a potential threat's position. As in the 1960ies Soviet submarines continuously broke into the North Atlantic via the GIUK Gap, SOSUS was extended to Keflavik, Iceland, in 1966 and Wales, UK, in 1974. The same year, Keflavik was the first SOSUS installation to discover a Delta-class Soviet nuclear-powered, ballistic missile-carrying submarine on its way into the North Atlantic. In the 1980ies, SOSUS was supplemented by a small fleet of surveillance ships (Surveillance Towed Array Sensor System, SURTASS), satellite communication links, and evaluation centres ashore. The total system became known as the Integrated Undersea Surveillance System (IUSS). The Walker-Withworth espionage ring informed the

¹⁹⁷ The USS Nautilus was decommissioned in 1985 and is since 1986 open to visitors in Groton, Connecticut, at the Submarine Force Museum. <http://www.usnautilus.org/nautilus/> on August 22nd, 2018.

¹⁹⁸ Weir, Gary E.: Virtual War in the Ice Jungle: 'We don't know how to do this'. In: Journal of Strategic Studies, Vol. 28/2/2005, p. 414.

¹⁹⁹ Weir, Gary E.: Virtual War in the Ice Jungle: 'We don't know how to do this'. In: Journal of Strategic Studies, Vol. 28/2/2005, p. 413-414.

USSR about SOSUS already in 1968 which triggered a huge effort to silence USSR's submarines. The necessity for this endeavour has been perfectly illustrated by *Perdelwitz*: Soviet submarines were too loud to hide; all of the up to 100 submarines operating in the North Atlantic in 1980 could be detected and the type determined by sonar from at least 200 sea miles away.²⁰⁰ By the late 1980ies, Soviet efforts had been largely successful, and the ability to detect and track Soviet submarines by SOSUS and IUSS decreased significantly.²⁰¹

Approaching the 1980ies, the NATO allies feared an upcoming confrontation with the USSR to escalate into a World War III. Contemporary authors stated that latest in 1985 a nuclear aggression would trigger World War III²⁰², and the video game developing company WarfareSims mentioned before included storytelling about World War III starting in 1985 in its games²⁰³. The NATO allies acted already in 1978 by installing the Long Term Defence Programme (LTDP) to set the military course for the 1980ies. Within the period of 1979 to 1984, all NATO allies should improve combat readiness, and response and decision-making time, to react on surprise attacks which were believed to be the most likely USSR military strategy for an aggression against Western Europe. These improvements should be achieved by increased efficiency and interoperability, extension of the NATO's military command structures, and modernisation and armament of NATO's naval forces, air defence, electronic warfare capacities, and nuclear short-range ballistic missiles (SRBM). The LTDP saw no need to enlarge the forces: *Fortunately, NATO's need is not so much for more forces as for better managed, better equipped, more compatible, and readier forces. Clearly one of its higher priorities must be readiness to deter and if necessary cope with a short-warning attack.*²⁰⁴ Of major importance was improving the capacity to ship reinforcement from North America to Western Europe across the North Atlantic in case of war. The Rapid Reinforcement Concept (RRC) was developed to enable the USA, Canada, and the UK by 1990 to transport more than a million soldiers and several million tonnes of weapons, equipment, and supplies across the North Atlantic and from the UK to Central Europe within seven weeks. In 1978, such shipping would have taken over three months. The RRC called for the deployment of Canadian and US heavy weaponry in Central European depots by 1984 and the allocation of national trade ships and passenger aeroplanes for military use. Warding off an attack of Soviet submarines on NATO ships

²⁰⁰ Perdelwitz, Wolf: *Wollen die Russen Krieg?* 1st edition, Hamburg 1980, p. 196-197.

²⁰¹ Whitman, Edward C.: SOSUS. The 'Secret Weapon' of Undersea Surveillance. In: *Undersea Warfare*, Vol. 7/2/2005. In: https://www.public.navy.mil/subfor/underseawarfaremagazine/Issues/Archives/issue_25/sosus.htm on August 14th, 2018.

²⁰² Perdelwitz, Wolf: *Wollen die Russen Krieg?* 1st edition, Hamburg 1980, p. 266.

²⁰³ Harpoon Head Quarters: *World War Three in 1985*. In: <http://www.harpoonhq.com/harpoon3/scenarios/plot-ww3in1985.html> on August 14th, 2018.

²⁰⁴ Harold Brown: 'Proposed U.S. Defense Initiatives' (Spring 1977 DPC Ministerial Meeting – Statement for the Record by the U.S. Secretary of Defense), NATO confidential, May 13th, 1977. In: PRO National Archives, DEFE 24/1302: *The United States and NATO*, secret, (closed until 2008, 2005 preterm declassified according to FOI Act), cited in Schmid, Michael: *Transatlantische und mittelöstliche 'Krisenbögen'. Die US-Sicherheitspolitik im Zweiten Kalten Krieg zwischen NATO-Modernisierung und Carter-Doktrin – und ihre Einschätzung durch die östliche Spionage (1977-1985)*. Publications of the University of Augsburg. Augsburg 2007, p. 20.

in the North Atlantic was still considered to be relatively easy, as the GIUK Gap and the North Atlantic were under control by NATO member countries.²⁰⁵

On the opposing side, the Warsaw Pact aimed to quickly defeat NATO by adopting a blitzkrieg strategy although it possessed capacities to conduct a long war. Of main strategic importance were strategic breakthroughs to prevent NATO member countries from forming a coherent front line; gain of air dominance; neutralization of nuclear weaponry deployed in Europe to avoid the escalation into a nuclear war; and interruption of the shipping routes in the North Atlantic by breaking through the GIUK Gap to block NATO reinforcement across the North Atlantic.²⁰⁶

In the 1980ies a wide range of strategies for naval warfare in the North Atlantic was developed mainly by the USA, predominantly to secure the US naval dominance and to enact their global responsibility resulting from this dominance.²⁰⁷

One example for the increasing concentration of military activities in the GIUK Gap in the 1980ies is a mission of the Soviet nuclear submarine Komsomolets K-278 in 1989. On a surveillance mission Soviet military leadership ordered the submarine to position itself in the GIUK Gap north of the Shetland Islands to detect US aircraft carriers. *Weir* considered this situation as particularly fatal due to the NATO protection of the GIUK Gap: *With the density of opposing forces and the sheer numbers of submarines in that portion of the GIUK [G]ap the situation grew more dangerous by the hour.*²⁰⁸ K-278 sunk in consequence of a fire only days later on April 7th, 1989, in the Norwegian Sea. 42 crew members were lost.²⁰⁹

Obviously, neither World War III nor a Soviet attack occurred. By the end of the 1980ies, the world had changed completely. In 1989, the dissolution of the Soviet-dominated Eastern Bloc started, which ended in the breakup of the USSR and the disbandment of the Warsaw Pact. Consequently, the NATO was considered to be as obsolete as the Warsaw Pact, as *Waltz* put it in 1993: *NATO's days are not numbered, but its years are.*²¹⁰ However, NATO managed to change this perception. The NATO member countries were united by more than a mere military alliance. They shared common

²⁰⁵ Schmid, Michael: Transatlantische und mittelöstliche 'Krisenbögen'. Die US-Sicherheitspolitik im Zweiten Kalten Krieg zwischen NATO-Modernisierung und Carter-Doktrin – und ihre Einschätzung durch die östliche Spionage (1977-1985). Publications of the University of Augsburg. Augsburg 2007, p. 19-20, 26-27, 36.

²⁰⁶ Deutsche Demokratische Republik, Ministerium für Staatssicherheit, Hauptverwaltung Aufklärung: Information über die Vorbereitung der Frühjahrstagung 1985 der NATO-Führungsgremien – streng vertraulich. Berlin, May 5th, 1985, Nr. 36, part 1, p. 221 cited in Schmid, Michael: Transatlantische und mittelöstliche 'Krisenbögen'. Die US-Sicherheitspolitik im Zweiten Kalten Krieg zwischen NATO-Modernisierung und Carter-Doktrin – und ihre Einschätzung durch die östliche Spionage (1977-1985). Publications of the University of Augsburg. Augsburg 2007, p. 106.

²⁰⁷ Hattendorf, John B. / Swartz, Peter M. (ed.): U.S. Naval Strategy in the 1980s. Selected Documents. Naval War College Newport Papers 33. Newport, Rhode Island, 2008, p. 206.

²⁰⁸ Weir, Gary E.: Virtual War in the Ice Jungle: 'We don't know how to do this'. In: Journal of Strategic Studies, Vol. 28/2/2005, p. 418.

²⁰⁹ Weir, Gary E.: Virtual War in the Ice Jungle: 'We don't know how to do this'. In: Journal of Strategic Studies, Vol. 28/2/2005, p. 416-418.

²¹⁰ Waltz, Kenneth N.: The Emerging Structure of International Politics. In: International Security, Vol. 18/2/1993, p. 76.

interests, such as fighting against international terrorism or organized crime, and common challenges, such as the integration of the Eastern European countries into the Western European system. A new main task, defined in 1991, has been the establishment of a pan-European security system. In 1991 the North Atlantic Cooperation Council (NACC)²¹¹ and in 1994 the Partnership for Peace (PfP)²¹² were founded, both hosting the former Warsaw Pact member countries and successor states from the USSR such as Lithuania, Estonia, and Latvia. Starting in 1999, several former Eastern Bloc countries have become full members of NATO.²¹³ NATO leadership soon realised that a European security system has to include Russia. In 1997, the NATO-Russia Founding Act on Mutual Relations, Cooperation and Security defined the goals and principles for a NATO-Russia relationship. Building on this Act, the NATO-Russia Council (NRC) was founded in 2002 to replace the Permanent Joint Council (PJC) which constituted a forum for consultation and cooperation between NATO and Russia.²¹⁴ With the disappearance of the USSR as the main enemy in Europe and Russia's integration into the pan-European security system, the USA in the 21st century have changed their focus on Asia and the Middle East. While they still see Europe as their main and most important strategic and economic partner, it is no longer considered the hotspot of strategic threats.²¹⁵

The focussing by the USA on the Asian-Middle East-region and by NATO on a pan-European security system, caused the geostrategic importance and public awareness of the GIUK Gap to nearly fade into oblivion in the 1990ies and the beginning of the 21st century. Currently, the GIUK Gap re-emerges as a strategic chokepoint due to the changing security situation in Europe and the renewed tendencies of Russian aggression against Europe.²¹⁶

²¹¹ In 1997 the NACC was succeeded by the Euro-Atlantic Partnership Council (EAPC) to establish a forum which includes the western European partner countries. https://www.nato.int/cps/en/natohq/topics_69344.htm on August 23rd, 2018.

²¹² In 2018, 21 non-NATO countries participate in the PfP programme: Armenia, Austria, Azerbaijan, Belarus, Bosnia and Herzegovina, Finland, Georgia, Ireland, Kazakhstan, the Kyrgyz Republic, Malta, Moldova, the Russian Federation, Serbia, Sweden, Switzerland, Tajikistan, The Former Yugoslav Republic of Macedonia (FYROM), Turkmenistan, Ukraine, and Uzbekistan. <https://www.sto.nato.int/Pages/partnership-for-peace.aspx> on August 23rd, 2018.

²¹³ In 1999, the Czech Republic, Hungary, and Poland became full members; in 2004, Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia, and Slovenia; in 2009, Albania and Croatia; in 2017, Montenegro. https://www.nato.int/cps/en/natohq/topics_52044.htm on August 23rd, 2018.

²¹⁴ https://www.nato.int/cps/en/natohq/topics_50091.htm on August 23rd, 2018.

²¹⁵ Meier-Walser, Reinhard: Die NATO im Funktions- und Bedeutungswandel. Veränderungen und Perspektiven transatlantischer Sicherheitspolitik. Series: essentials. Wiesbaden 2018, p. 1, 3, 5-6, 10-11, 15.

²¹⁶ Nordenman, Magnus: Back to the Gap. In: The RUSI Journal, Vol. 162/1/2017, p. 26.

2.3 Significance of the GIUK Gap

2.3.1 Economic significance

‘The hunger for energy suggests the race is inevitable in what some Arctic specialists have called the ‘New Great Game’. There are going to be a lot more ships in the High North, a lot more oil rigs and gas platforms – in fact, a lot more of everything.’

Tim Marshall: Prisoners of Geography, 2016²¹⁷

Although the GIUK Gap might seem to be of only military and geostrategic importance, its economic significance in the northern North Atlantic is substantial. The most obvious economic impact is its geographical location, making it a chokepoint between the Arctic Ocean and the North Atlantic. It is the only perennially ice-free sea route between these two oceans and a main part of the busiest shipping area worldwide²¹⁸, connecting the Arctic Ocean, the Baltic Sea, and the North Sea with the North Atlantic. Ships sailing from the North Sea into the Atlantic Ocean traditionally do not cross the English Channel but the GIUK Gap, because the English Channel is partially very narrow.²¹⁹ Ships sailing from the Arctic Ocean into the Atlantic Ocean across the Norwegian Sea also have to pass through the GIUK Gap.²²⁰

The GIUK Gap is a main area for industrial fishing, holding rich fishing grounds, especially around Iceland. Admission to these fishing grounds and their industrial exploitation even lead to three so-called ‘cod wars’ between Iceland, the UK, Belgium, and West Germany. To limit UK fishing activities in Icelandic waters, in 1956 Iceland expanded its fishery limits to twelve nautical miles from the island’s shore, forcing British fishery ships out of this area and sparking the first ‘cod war’ which only came to an end as the UK recognized the 12-mile extension in 1961. The second ‘cod war’ was fought from 1972 to 1973 over another extension of Icelandic fishery limits to 50 nautical miles. The dispute was over at the end of the third ‘cod war’ (1975-1976) when the UK finally recognized Iceland’s fishery limits of 200 nautical miles. These ‘cod wars’ were fought without any military attacks but mainly

²¹⁷ Marshall, Tim: Prisoners of Geography. Ten Maps That Tell You Everything You Need to Know About Global Politics. Revised and updated edition. London 2016, p. 281.

²¹⁸ Peace, Connor: Atlantic Ocean. From the Bottom to the Top. Atlantic Facts. 2009. In: http://faculty.montgomerycollege.edu/gvouth/FP_examples/student_examples/connor_peace/finalproject.html on July 25th, 2018.

²¹⁹ Marshall, Tim: Prisoners of Geography. Ten Maps That Tell You Everything You Need to Know About Global Politics. Revised and updated edition. London 2016, p. 108.

²²⁰ Hermann, Rudolf: Die NATO will den ‘Flugzeugträger Island’ wieder mehr nutzen. In: Neue Zürcher Zeitung, February 13th, 2018. In: <https://www.nzz.ch/international/die-nato-will-den-flugzeugtraeger-island-wieder-mehr-nutzen-ld.1356585> on February 27th, 2018.

diplomatically by menacing, discussing, agreeing, and intervening. They created a difficult situation for NATO, as all involved parties including the USA as arbitrator were NATO member countries.²²¹ The self-confidence of Iceland to claim the waters surrounding the island for exclusive economic usage stemmed from its strategic location within the GIUK Gap²²² and the negotiations for the United Nations Convention on the Law of the Sea (UNCLOS) between 1973 and 1982, signed in 1982 and effective since 1994.²²³ UNCLOS defines and controls through the specifically implemented International Seabed Authority (ISA)²²⁴ the established regulation of national and international waters. Starting from a country's baseline seawards, the territorial sea reaches out to twelve nautical miles. The sovereignty of the coastal state extends to this zone in the waters, including bed and subsoil, and in the airspace above.²²⁵ The contiguous zone extends 24 nautical miles from the baseline and allows the coastal state to exercise control and punishment over infringement of its customs, fiscal, immigration or sanitary laws in the waters and the airspace above.²²⁶ The sea extending from the baseline to 200 nautical miles is the exclusive economic zone (EEZ). Within the EEZ, the coastal state has sovereign rights to explore, exploit, conserve, and manage all natural resources of the seafloor and the subsoil including the energy production from wind, water, and currents.²²⁷ The zone further of 200 nautical miles from the baseline is high sea and open to all states offering free navigation, free overflight, free research, and free fishing.²²⁸ All countries adjacent to the northern North Atlantic but the USA signed and ratified the UNCLOS²²⁹. The US think tank Bluebird Marine Systems Ltd (BMS) strongly supports the signing and ratifying by the USA, otherwise the USA will become '*outlaws of the sea*'²³⁰, as UNCLOS would increase the legal security for the US economy and resources and uphold, preserve, and strengthen a rules-based order in maritime territorial disputes.²³¹

²²¹ Ingimundarson, Valur: A Western Cold War: The Crisis in Iceland's Relations with Britain, the United States, and NATO, 1971-74. In: Diplomacy & Statecraft, Vol. 14/4/2003, p. 95, 99.

²²² Ingimundarson, Valur: A Western Cold War: The Crisis in Iceland's Relations with Britain, the United States, and NATO, 1971-74. In: Diplomacy & Statecraft, Vol. 14/4/2003, p. 130.

²²³ <http://www.imo.org/en/OurWork/Legal/Pages/UnitedNationsConventionOnTheLawOfTheSea.aspx> on August 23rd, 2018.

²²⁴ United Nations Convention on the Law of the Sea, Part XI, Section 4. The Authority. In: United Nations Convention on the Law of the Sea. Montego Bay 1982, p. 81-97.

²²⁵ United Nations Convention on the Law of the Sea, Part II, Section 1, Articles 2 and 3. The Authority. In: United Nations Convention on the Law of the Sea. Montego Bay 1982, p. 27.

²²⁶ United Nations Convention on the Law of the Sea, Part II, Section 4, Article 33. The Authority. In: United Nations Convention on the Law of the Sea. Montego Bay 1982, p. 35.

²²⁷ United Nations Convention on the Law of the Sea, Part V, Articles 56 and 57. The Authority. In: United Nations Convention on the Law of the Sea. Montego Bay 1982, p. 43-44.

²²⁸ United Nations Convention on the Law of the Sea, Part VII, Section 1, Articles 86 and 87. The Authority. In: United Nations Convention on the Law of the Sea. Montego Bay 1982, p. 57.

²²⁹ https://treaties.un.org/pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XXI-6&chapter=21&Temp=mtdsg3&clang=en on September 17th, 2018.

²³⁰ Bluebird Marine Systems Ltd: United Nations Convention on the Law of the Sea, undated. In: [http://www.bluebird-electric.net/oceanography/Ocean Plastic International Rescue/United Nations Convention On The Law Of The Sea UNCLOS.htm](http://www.bluebird-electric.net/oceanography/Ocean%20Plastic%20International%20Rescue/United%20Nations%20Convention%20On%20The%20Law%20Of%20The%20Sea%20UNCLOS.htm) on August 23rd, 2018.

²³¹ Bluebird Marine Systems Ltd: United Nations Convention on the Law of the Sea, undated. In: [http://www.bluebird-electric.net/oceanography/Ocean Plastic International Rescue/United Nations Convention On The Law Of The Sea UNCLOS.htm](http://www.bluebird-electric.net/oceanography/Ocean%20Plastic%20International%20Rescue/United%20Nations%20Convention%20On%20The%20Law%20Of%20The%20Sea%20UNCLOS.htm) on August 23rd, 2018.

The GIUK Gap's role as gateway between the North Atlantic and the Arctic Ocean will lead to an increase in its importance in the future due to evolving shipping in the Arctic Ocean. After the discovery of the sea routes to Asia via Cape Horn and the Cape of Good Hope, a focus was set on the discovery of the Northwest and the Northeast Passage to Asia. Over the centuries up to now the main problem in sailing these routes is pack-ice. As no perennially ice-free sea route exists, trade shipping across the Northwest and the Northeast Passage is deemed un-economical.²³² But this situation is changing due to climate change. Ecologically, the Arctic is facing the environmental disaster of major ice melting.²³³ Economically, the major ice melting finally allows economic exploitation of the Arctic. In 2014, 'Nunavik' was the first cargo ship to pass the Northwest Passage from Canada to China without accompanying ice-breakers. Her voyage illustrated the main advantage of a regularly shippable route through the Arctic: such a route is much shorter (about 40%) and in deeper waters than the standard route via the Panama Canal. Therefore, more cargo can be shipped in less time.²³⁴ A resurgent interest in the Northwest Passage, which connects to the Atlantic Ocean via the Baffin Bay between Canada and Greenland, does not affect the GIUK Gap. It is central, however, to sailing the Northeast Passage. Currently, the Northeast Passage – called Northern Sea Route by Russia – is ice-free for approximately two months per year. Estimates assume that by 2040 the whole Arctic Ocean will be ice-free during summer for three to six months²³⁵. Ship traffic through the Northeast Passage has increased over the past years, from four vessels in 2010 to 71 in 2013. The key point is reduced sailing time: A trade ship sailing through the Northeast Passage from the UK to Japan takes only 35 days; the same ship on the standard route via the Suez Canal needs 48 days. If the estimates prove to be true, a central Arctic shipping route near the North Pole will be navigable in due time.²³⁶ Both routes (Northeast Passage and a possible central Arctic route) will connect to the Atlantic Ocean through the chokepoint of the GIUK Gap (fig. 5).

²³² Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 248.

²³³ Strnadl, Susanne: Fatale Folgen der arktischen Eisschmelze. In: *Der Standard*, January 5th, 2018. In: <https://derstandard.at/2000071365221/Die-fatalen-Folgen-der-arktischen-Eisschmelze> on August 23rd, 2018.

²³⁴ Oskin, Becky: Cargo Ship Makes 1st-Ever Solo Trip Through Northwest Passage. In: *Live Science*, October 1st, 2014. In: <https://www.livescience.com/48105-cargo-ship-solos-northwest-passage.html> on August 23rd, 2018.

²³⁵ Strnadl, Susanne: Fatale Folgen der arktischen Eisschmelze. In: *Der Standard*, January 5th, 2018. In: <https://derstandard.at/2000071365221/Die-fatalen-Folgen-der-arktischen-Eisschmelze> on August 23rd, 2018.

²³⁶ Farquhar, Peter: A Cargo Ship Just Completed A Historic Trip Through The Northwest Passage. In: *Business Insider*, October 2nd, 2014. In: <https://www.businessinsider.com/a-cargo-ship-just-completed-a-historic-trip-through-the-northwest-passage-2014-10?IR=T> on August 23rd, 2018.



Fig. 5: Possible commercial sea routes in an ice-free Arctic Ocean²³⁷

Furthermore, the area above the Arctic Circle holds approximately 13% of the world's undiscovered conventional oil resources and about 30% of the undiscovered natural gas resources in its continental shelves, representing approximately 412 billion barrels oil equivalent. Currently, exploitation of these resources in the Arctic is an expensive and dangerous endeavour. Particularly, the transport from the Arctic to the refineries is a challenge: the construction of pipelines in Arctic waters is difficult and expensive; transporting the liquid resources with tankers is less expensive, but the need to supercool the natural gas to a liquid requires the construction of liquefaction plants which can take several years before they become operational. Currently, over 87% of these resources are estimated to be located in seven Arctic basins: the Amerasian Basin, the Arctic Alaska Basin, the East Barents Basin, the East Greenland Rift Basin, the West Greenland-East Canada Basin, the West Siberian Basin, and the Yenisey-Khatanga Basin. From the eight countries situated above the Arctic Circle, six border the

²³⁷ Farquhar, Peter: A Cargo Ship Just Completed A Historic Trip Through The Northwest Passage. In: Business Insider, October 2nd, 2014. In: <https://www.businessinsider.com/a-cargo-ship-just-completed-a-historic-trip-through-the-northwest-passage-2014-10?IR=T> on August 23rd, 2018.

Arctic Ocean and thus claim the exclusive economic exploitation of parts of the Arctic seafloor. These countries are Canada, Denmark (Greenland), Iceland, Norway, Russia, and the USA.²³⁸ According to the UNCLOS, these countries are entitled to exploit the resources within 200 nautical miles from their baseline.²³⁹ The main issue arising momentarily is the definition of the country's baseline. As an example, Russia claims its baseline along the Lomonosov Ridge which stretches through the Arctic near the North Pole, bringing half of the Arctic under territorial control of Russia²⁴⁰; the USA and Canada both claim baselines reaching into the Beaufort Sea, inducing maritime territorial disputes.²⁴¹ However, economical potential is not limited to the north of the GIUK Gap. South of the GIUK Gap, 19 transatlantic cables cross the North Atlantic. One of these connects Northern Europe via Iceland and Greenland to Newfoundland in Canada and lies therefore directly in the GIUK Gap. Three more transatlantic cables which connect New York and North Europe skirting the UK run through the most eastern part of the GIUK Gap.²⁴² One of these is the HAVFRUE subsea cable.²⁴³

²³⁸ Sweden and Finland are partially located above the Arctic Circle but they both do not hold a coast line at the Arctic Ocean. <http://nordictravel.com.au/en/destinations/sweden-tours/experience-the-ice-hotel/> on August 24th, 2018.

²³⁹ For matters of discussion and dispute settlement the Arctic Council was established. For detailed information about the Arctic Council see Ingimundarson, Valur: Managing a contested region: the Arctic Council and the politics of Arctic governance. In: The Polar Journal, Vol. 4/1/2014, p. 183-198. To offer a wider range of topics to various participants and not only to member countries and observer entities, Arctic Council member Iceland launched the Arctic Circle in 2013. For detailed information about the Arctic Circle see Mazo, Jeffrey: Showing the Flag. In: Survival. Global Politics and Strategy, Vol. 57/1/2015, p. 241-252.

²⁴⁰ MacFarlan, Tim: Denmark stakes claim to North pole thanks to Greenland ridge, as three-way battle for vast Arctic oil and gas deposits heats up. In: Daily Mail Online, December 14th, 2014. In: <http://www.dailymail.co.uk/news/article-2873808/Denmark-claims-North-Pole-Greenland-ridge-link.html> on August 24th, 2018.

²⁴¹ King, Hobart M.: Oil and Natural Gas Resources of the Arctic. In: Geology.com, undated. In: <https://geology.com/articles/arctic-oil-and-gas/> on August 24th, 2018.

²⁴² TeleGeography: Submarine Cable Map. In: <https://www.submarinecablemap.com/#/> on August 11th, 2018.

²⁴³ N.N.: Aqua Comms Continues Investment in Subsea Cables and Announces North Atlantic Bridge. In: 1025 Connect, January 15th, 2018. In: <https://1025connect.com/press-release/aqua-comms-continues-investment-subsea-cables-announces-north-atlantic-bridge/> on July 26th, 2018.

2.3.2 Geostrategic significance

‘Politics. As exciting as war. Definitely as dangerous.’

Admiral William Adama, *Battlestar Galactica*²⁴⁴

During the Cold War, the strategic value of the GIUK Gap was essential for both, NATO and the USSR. The Soviet naval forces at Murmansk had to traverse the GIUK Gap to reach the North Atlantic.²⁴⁵ For NATO, the GIUK Gap – entitled ‘death zone’ as military strategies planned to meet the Soviet fleet here in case of a conflict²⁴⁶ – was the major security policy region to protect the SLOC between North America and Europe for transport, supply, and reinforcement. Preserving the maritime domain in the northern North Atlantic by strategically focusing on the GIUK Gap was of major importance to NATO and its military responsibility to secure the maritime superiority in the North Atlantic.²⁴⁷ After the Cold War, for about 20 years, NATO concentrated on different crises such as international terrorism. Gradually, the military dominance upheld by fleets, aeroplanes, and troops in and around the GIUK Gap decreased.²⁴⁸ In 2006, the USA closed their naval air base in Keflavik, Iceland, in 2011, the UK gave up Kinloss airfield in northern Scotland, both being bases for intelligence, surveillance, and reconnaissance (ISR) and patrol flights in and around the GIUK Gap. Between 1990 and 2017, NATO executed only 15 naval operations mainly focusing on peace enforcement and counter-terrorism. Submarine forces and maritime patrol aircraft fleets were diminished mainly to cut costs, especially after the financial crisis in 2008. In 2000, Denmark, Germany, France, the Netherlands, Norway, and the UK maintained a total of 62 conventional and nuclear submarines in the North Atlantic to protect the GIUK Gap. This number had decreased to 38 by 2017. At the end of the Cold War, NATO provided 1.8 maritime patrol aircraft for every one adversary maritime patrol aircraft; in 2017 only one NATO maritime patrol aircraft can be provided for two adversary maritime patrol aircraft.²⁴⁹

However, since 2008, the situation has changed. The NATO member countries were reminded of the need of a credible deterrence and defence posture in Europe when Russia intervened militarily in Georgia in 2008, annexed Crimea in 2014, and conducted military operations in Syria in 2015 and 2016. Russia has focussed on the North Atlantic in its military strategic planning, knowing exactly that the GIUK Gap is the main chokepoint to target to secure its own nuclear forces on the Kola Peninsula

²⁴⁴ *Battlestar Galactica*, developed by Ronald D. Moore: Series 1, Episode 11: Colonial Day. USA, Canada 2005.

²⁴⁵ Barlow, Jeffrey G.: NATO's Northern Flank: The Growing Soviet Threat. In: The Heritage Foundation, May 1st, 1979, p. 6.

²⁴⁶ Marshall, Tim: *Prisoners of Geography. Ten Maps That Tell You Everything You Need to Know About Global Politics*. Revised and updated edition. London 2016, p. 278.

²⁴⁷ Olsen, John Andreas: Introduction: The Quest for Maritime Supremacy. In: *Whitehall Papers*, Vol. 87/1/2016, p. 3.

²⁴⁸ Efstad, Svein: Norway and the North Atlantic: Defence of the Northern Flank. In: *Whitehall Papers*, Vol. 87/1/2016, p. 68.

²⁴⁹ Nordenman, Magnus: Back to the Gap. In: *The RUSI Journal*, Vol. 162/1/2017, p. 27.

and to prevent NATO to reinforce its northern and eastern flank. An increased presence of Russian submarines in the GIUK Gap would challenge the unrestricted access to the North Atlantic SLOC for NATO member countries. Russia had for years modernized and grown its naval and air forces in the North Atlantic, before NATO started to react. In 2010, NATO's Strategic Concept defined missile defence as a centrepiece of its mission. The US contribution to NATO's missile defence system in Europe is the European Phased Adaptive Approach (EPAA). Between 2011 and 2018, sea- and land-based configurations of the Aegis missile defence system were installed in Turkey, Romania, Germany, and Poland, to ward off short-, medium-, and intermediate-range ballistic missiles launched from Iran.²⁵⁰ Even though EPAA's objective is neither to deter Russia nor to defend the GIUK Gap, it *'represents a longstanding and major irritant to Russia, particularly due to its geographic location'*²⁵¹ according to Hamre / Conley.²⁵² In 2011, NATO defined its Alliance Maritime Strategy, covering the four pillars deterrence and collective defence, crisis management, cooperative security, and maritime security, mainly focusing on security threats rather than on interstate conflicts.²⁵³ However, in 2017 Grove at IISS emphasised the need to adjust the Alliance Maritime Strategy²⁵⁴, as did Allport in 2018.²⁵⁵ In 2016, the UK already commissioned the third of the planned seven Astute-class nuclear attack submarines. The advantage of the small Astute-class fleet is the outstanding quality of the vessels and their crews, and its location as the base is in Faslane, Scotland, at the eastern limit of the GIUK Gap. The major part of the French naval fleet is based in Toulon and can reach or the GIUK Gap or the Baltic Sea within six days at a speed of 20 knots.²⁵⁶ In 2016, the USA re-deployed F-15 aircraft and personnel to Iceland and the Netherlands for training and support. To monitor the GIUK Gap, the UK and Norway will purchase Boeing P-8A aircraft, designed for long-range anti-submarine warfare (ASW), anti-surface warfare, and ISR missions.²⁵⁷ To provide an adequate landing field for the P-8As in the middle of the GIUK Gap (fig. 6), in 2018 the USA will invest 14.4 million US Dollar²⁵⁸ in the Keflavik Airfield in Iceland as part of the European Deterrence Initiative (EDI) established in 2014 *'to bolster the security*

²⁵⁰ Reif, Kingston: The European Phased Adaptive Approach at a Glance. In: Arms Control Association, Fact Sheets & Briefs, July 2017. In: <https://www.armscontrol.org/factsheets/Phasedadaptiveapproach> on August 28th, 2018.

²⁵¹ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 52.

²⁵² Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 44, 46, 49, 52.

²⁵³ NATO: Alliance Maritime Strategy. March 18th, 2011. In: https://www.nato.int/cps/en/natohq/official_texts_75615.htm on August 28th, 2018.

²⁵⁴ Grove, Eric: NATO, the North Atlantic, and maritime strategy: back to the future? In: IISS, October 2nd, 2017. In: <https://www.iiss.org/events/2017/10/nato-maritime-strategy> on August 28th, 2018.

²⁵⁵ Allport, Rowan: NATO needs a new Maritime Strategy for its Northern Flank. In: UK Defence Journal, February 12th, 2018. In: <https://ukdefencejournal.org.uk/nato-needs-new-maritime-strategy-northern-flank/> on August 28th, 2018.

²⁵⁶ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 23, 28.

²⁵⁷ <http://www.boeing.com/defense/maritime-surveillance/p-8-poseidon/index.page> on August 28th, 2018.

²⁵⁸ <https://www.statista.com/chart/12389/the-us-is-pouring-money-into-air-bases-flanking-russia/> on August 8th, 2018.

of our NATO Allies [...] in Europe²⁵⁹. In 2017, the US Government approved to invest 8.1 billion US Dollar in undersea warfare capabilities such as attack submarines capable of launching up to 40 Tomahawk cruise missiles.²⁶⁰

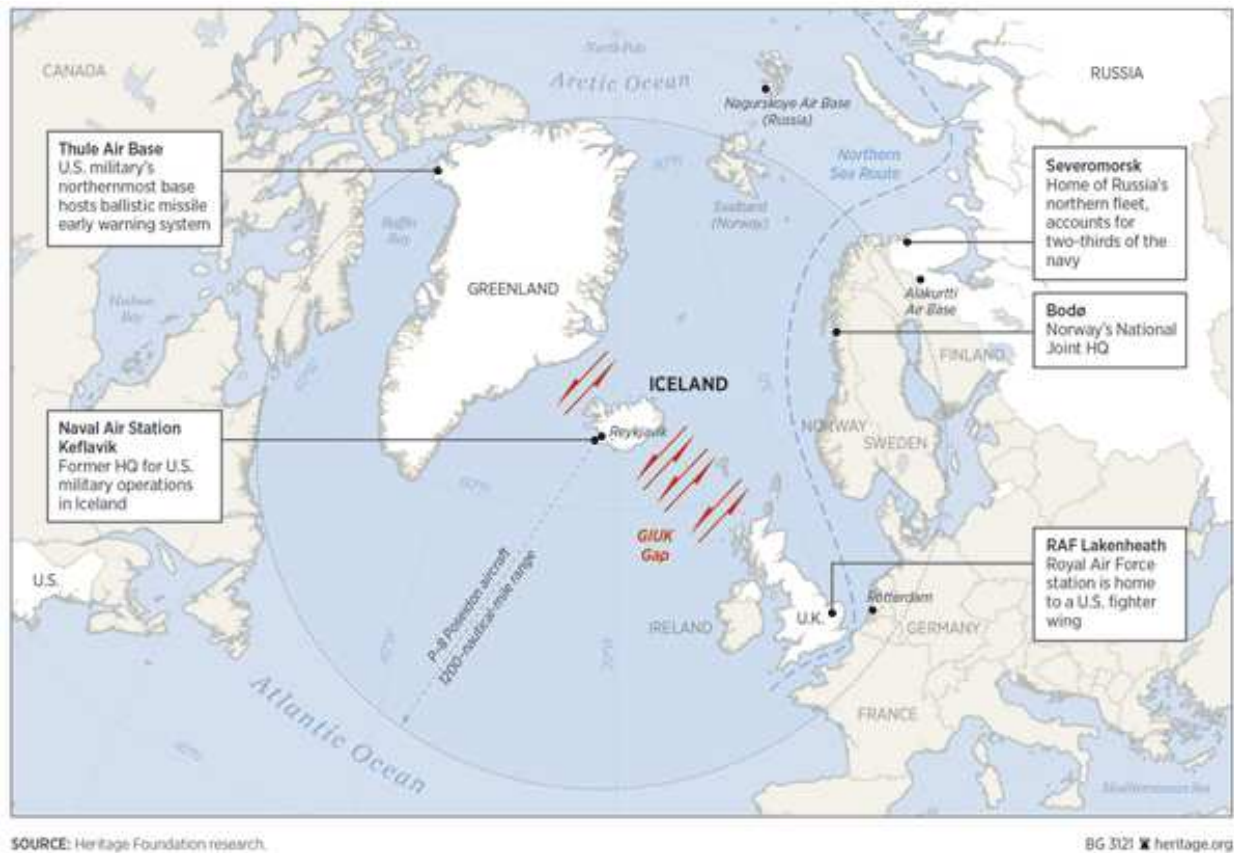


Fig. 6: The GIUK Gap and the main military instalments in the northern North Atlantic²⁶¹

Since 2014, NATO has been implementing the '360-degree approach', also called 28-for-28²⁶² strategy, which encourages the NATO member countries to prepare for all possible missions as NATO has to counter threats from all sides without region limitation. Many NATO member countries, however, lack the capabilities to fully comply with the 28-for-28 strategy due to budget constraints and the structure of their armed forces. Furthermore, several assets suitable for dealing with the challenges of the '360-degree approach' in the GIUK Gap are currently not deployed in the Atlantic Ocean but mostly in Asia. Therefore, the availability of existing assets to survey and protect the GIUK Gap is

²⁵⁹ Obama, Barack / The White House, Office of the Press Secretary: Remarks by President Obama and President Komorowski of Poland in a Joint Press Conference, June 3rd, 2013. In: <https://obamawhitehouse.archives.gov/the-press-office/2014/06/03/remarks-president-obama-and-president-komorowski-poland-joint-press-conf> on June 28th, 2018.

²⁶⁰ Smith, Julianne / Hendrix, Jerry: Forgotten Waters. Minding the GIUK Gap. A Tabletop Exercise. Center for a New American Security. Washington, D.C., 2017, p. 3.

²⁶¹ Kochis, Daniel / Slattery, Brian: Iceland: Outsized Importance for Transatlantic Security. In: The Heritage Foundation Backgrounder, Vol. 3121, June 21st, 2016. Washington, D.C., 2016, p. 11.

²⁶² In 2014, NATO counted 28 member countries. Since 2017 as Montenegro joined NATO, there are 29 NATO member countries. https://www.nato.int/cps/en/natohq/topics_52044.htm on August 23rd, 2018.

depending on time for deployment which diminishes the capability of immediate reaction in case of conflict or attack.²⁶³ Especially naval assets are in short supply which alarmed General Philip Breedlove, commander of the US European Command, in 2016: *In that very contested, very highly sophisticated part of the world, we play zone defense. We cannot play man on man.*²⁶⁴

Submarine operations and the deployment of sonar systems in the GIUK Gap benefit from the completed mapping of the seafloor (fig. 7). In 2016, the US Department of Defense decided to upgrade the decommissioned SOSUS system with the new Deep Reliable Acoustic Path Exploitation System (DRAPES). Like SOSUS, DRAPES is a fixed passive listening system which interoperates with SURTASS mobile units within IUSS. It will provide permanent coverage of wide ocean areas from a fixed location by transmitting the acoustic data with a new underwater communication system to the Navy Operational Processing Facilities still in service from SOSUS; no additional on-shore facilities will be needed. Transmitted data from DRAPES combined with P-8A surveillance data and data from improved towed sonar arrays, will enable tracking or engaging targets, depending on the situation.²⁶⁵ Not only submarine tracking, but also collision prevention in highly trafficked regions such as the GIUK Gap will improve. To avoid allied submarine collisions and facilitate detection of hostile submarines, NATO developed the 'waterspace management' by assigning defined areas, so-called 'boxes', to various nations. Only one nation's submarines will patrol each box. If unknown submarines are detected within a box, they will be identified as probably non-allied.²⁶⁶

²⁶³ Smith, Julianne / Hendrix, Jerry: *Forgotten Waters. Minding the GIUK Gap. A Tabletop Exercise*. Center for a New American Security. Washington, D.C., 2017, p. 6, 9.

²⁶⁴ Breedlove, Philip, cited in Vandiver, John: *Breedlove: US Must Rebuild Forces in Europe to Confront Russia*. In: Military.com, February 26th, 2016. In: <https://www.military.com/daily-news/2016/02/26/breedlove-us-must-rebuild-forces-in-europe-to-confront-russia.html> on August 28th, 2018.

²⁶⁵ Stashwick, Steven: *US Navy Upgrading Undersea Sub-Detecting Sensor Network*. In: The Diplomat, November 4th, 2016. In: <https://thediplomat.com/2016/11/us-navy-upgrading-undersea-sub-detecting-sensor-network/> on August 14th, 2018.

²⁶⁶ Smith, Julianne / Hendrix, Jerry: *Forgotten Waters. Minding the GIUK Gap. A Tabletop Exercise*. Center for a New American Security. Washington, D.C., 2017, p. 12.

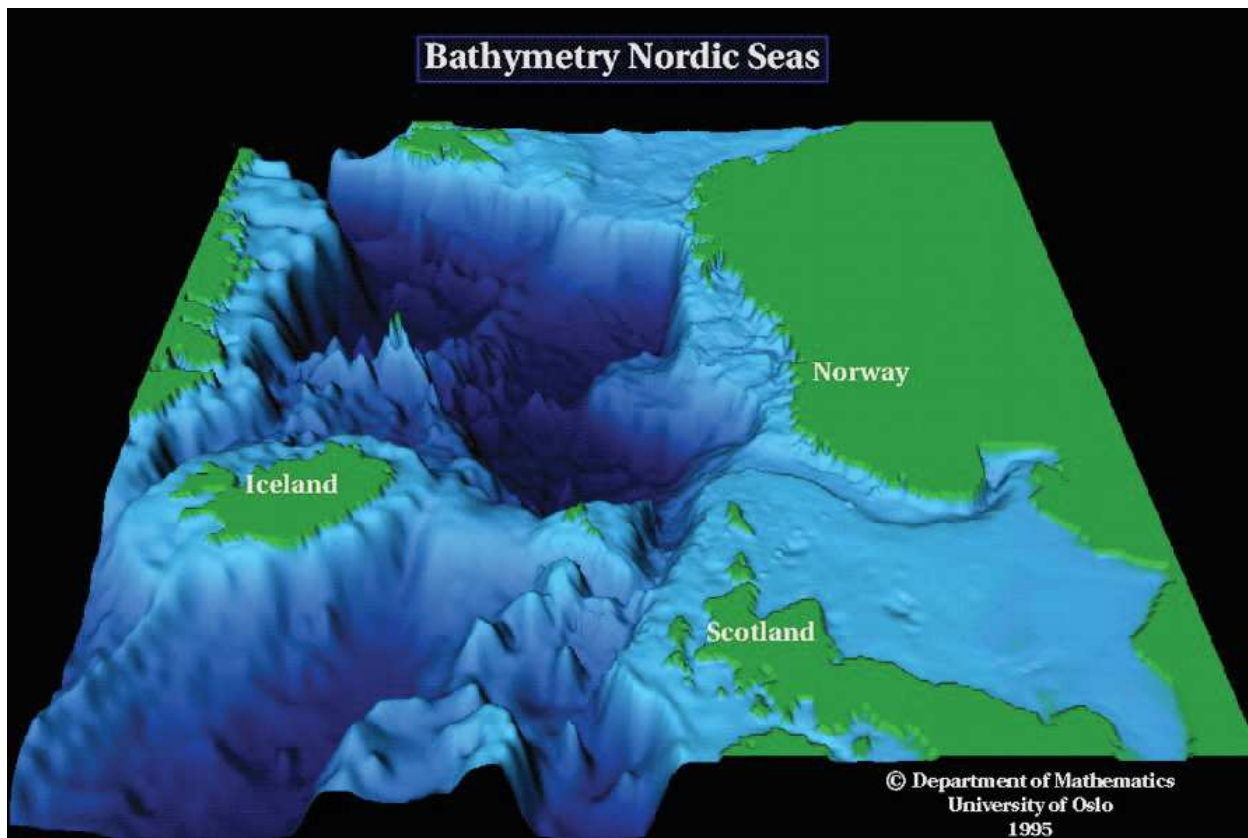


Fig. 7: The seafloor topography of the GIUK Gap²⁶⁷

Ship traffic has generally increased in the GIUK Gap as the Norwegian Sea, the Barents Sea, and the Arctic Ocean have constantly gained attractiveness for commercial activities, scientific exploration, and tourism. The emerging possibility to ship the Arctic and to exploit the presumed oil and gas fields in the Arctic Ocean, attract new global powers such as China and Japan. In 1997, a satellite receiver farm was established in Svalbard, because the island north of the GIUK Gap is ideal for transmitting data from and to orbiting satellites.²⁶⁸ Transatlantic cables, pipelines, and energy wellheads complete the non-military usage of the GIUK Gap and its surrounding waters and regions.²⁶⁹

Consequently, for NATO the GIUK Gap is a major task in both peacetime and wartime. In peacetime, NATO monitors and tracks naval movements in the GIUK Gap to contribute to its ASW and its deterrence on the northern flank. In a potential war with Russia, NATO would have to prevent Russia's access to the SLOC in the North Atlantic by defending the GIUK Gap.²⁷⁰ *[...] securing and defending the GIUK [G]ap and its associated maritime domain will by necessity have to be one of stark prioritisation and deeper cooperation among navies and within NATO.*²⁷¹

²⁶⁷ Smith, Julianne / Hendrix, Jerry: *Forgotten Waters. Minding the GIUK Gap. A Tabletop Exercise.* Center for a New American Security. Washington, D.C., 2017, p. 4.

²⁶⁸ Nordenman, Magnus: *Back to the Gap.* In: *The RUSI Journal*, Vol. 162/1/2017, p. 24, 28.

²⁶⁹ Smith, Julianne / Hendrix, Jerry: *Forgotten Waters. Minding the GIUK Gap. A Tabletop Exercise.* Center for a New American Security. Washington, D.C., 2017, p. 8.

²⁷⁰ Nordenman, Magnus: *Back to the Gap.* In: *The RUSI Journal*, Vol. 162/1/2017, p. 28.

²⁷¹ Nordenman, Magnus: *Back to the Gap.* In: *The RUSI Journal*, Vol. 162/1/2017, p. 28.

3. The Nordic NATO member countries and the GIUK Gap

3.1 Iceland and the GIUK Gap

I am a rock
I am an island'

From the song 'I am a rock', Paul Simon for Simon & Garfunkel, 1965²⁷²

Iceland is an island in the northern North Atlantic located between Greenland, the UK, Norway, and the Arctic, directly on the MAR. The east-west drift of the tectonic plates stretching the MAR is responsible for the high density of volcanos, hot springs, geysers, and the occurrence of earthquakes on Iceland.²⁷³ 10% of the Icelandic land surface is covered by glaciers. The unique combination of fire, ice, wind, and earth guarantees the island a high rate of potable water and clean environment. According to the Environmental Performance Index (EPI) 2018, Iceland offers the highest quality of potable water worldwide.²⁷⁴ The development of technologies for using hot springs as sources of clean energy made Iceland a role model in sustainable energy production.²⁷⁵ In 2014, Iceland's electricity came from hydropower (71%) and geothermal power (28.9%). The remaining 0.1% derived from wind power and fossil fuels. Thus, nearly 100% of Iceland's electricity came from sustainable energy sources.²⁷⁶ *Iceland is a country of sharp contrasts. A place where fire and ice co-exist. Where dark winters are offset by the summer's midnight sun. A country where insular existence has spurred a rich and vibrant culture.*²⁷⁷

In 2016, Iceland had 332,000 inhabitants on an area of 103,000 km² making for a very low population density of only 3.22 inhabitants per km². Approximately one third of the population (122,000) lives in the capital Reykjavik.²⁷⁸ Iceland was strongly affected by the financial crisis in 2008 and its economy has developed only slowly since, but in July 2018 Iceland posted an unemployment rate of only 2.5% in the 15 to 64 age group. This age group makes up 67% of Iceland's inhabitants, making the Icelandic population the youngest in Europe. According to the Organisation for Economic Co-operation and Development (OECD), the Icelandic gross domestic product (GDP) per capita in 2016 was 50,752 US Dollar.²⁷⁹ The main economic sectors are service industries including tourism

²⁷² Simon, Paul: I am a rock, 1965. In: <https://genius.com/Simon-and-garfunkel-i-am-a-rock-lyrics> on August 22nd, 2018.

²⁷³ Hjalmarsson, Jon R.: History of Iceland. From the Settlement to the Present Day. Reykjavik 1993, p. 6.

²⁷⁴ <https://epi.envirocenter.yale.edu/epi-country-report/ISL> on February 25th, 2018.

²⁷⁵ <http://www.iceland.is/the-big-picture/nature-environment> on February 25th, 2018.

²⁷⁶ Orkustofnun – National Energy Authority (ed.): Energy Statistics in Iceland 2014. Reykjavik 2015, p. 4.

²⁷⁷ <http://www.iceland.is/> on February 25th, 2018.

²⁷⁸ <http://www.iceland.is/the-big-picture/quick-facts/> on February 25th, 2018.

²⁷⁹ <https://data.oecd.org/gdp/gross-domestic-product-gdp.htm> on August 29th, 2018.

(57% of GDP), the manufacturing sector (23.4% of GDP), and fishing (6.3% of GDP). Fish and sustainable energy solutions are the main exported products of the Icelandic economy.²⁸⁰

Settled in the 9th century by Vikings sailing westwards from Norway, Iceland was initially independent, but economically connected to Norway. In 1022, Iceland and Norway signed a contract to regulate rights, duties, and prerogatives, such as the import of wood from Norway to Iceland. Only in 1262, Iceland became a Norwegian colony in the aftermath of the loss of the civil war of 1235. In 1661, Denmark and Norway merged into one kingdom under king Frederik III, and Iceland became a part of the kingdom's territory. In 1814, the monarchy union of Norway and Denmark was abolished, and Iceland became Danish territory. Due to the occupation of Denmark by Germany during World War II, and Iceland's voluntary occupation first by the UK, then by the USA, Iceland pursued its independence. The Republic of Iceland was proclaimed on June 17th, 1944. Its parliament, the 'Althingi', has been meeting since 930, and thus is the oldest parliament in the world. In 1980, Vigdís Finnbogadóttir was elected president of Iceland, becoming the first democratically directly elected female head of a state worldwide. In 1946, Iceland joined the United Nations. In 1949 it became a founding member of NATO. In 1950 it joined the Council of Europe, in 1952 the Nordic Council, and in 1970 the European Free Trade Association (EFTA).²⁸¹ Iceland is currently not a member country of the European Union (EU) but negotiations started in 2009.²⁸²

The negotiations to found NATO in 1948 and 1949 revealed the importance of Iceland as the largest landmass in the GIUK Gap. In 1947, the USA withdraw their troops in Iceland, leaving the island undefended as Iceland had not maintained national armed forces since the 19th century. When the political activities of the USSR in independent European countries grew, Iceland feared Soviet invasion, especially when in spring 1948 unidentified aeroplanes were sighted above Keflavik and a Soviet fishing fleet offshore.²⁸³ As the geostrategic position of Iceland to protect the North Atlantic connection between North America and Europe was obvious to all NATO founding members, the military alliance wanted Iceland to be its ally to avoid having to deal with a neutral country or – even worse – a Soviet satellite in the middle of the GIUK Gap menacing the transatlantic alliance.²⁸⁴ The USA in particular identified Iceland as one of the main bridge-heads to Europe: '*without the Azores, Iceland and Greenland, help could not be got to Europe in significant quantities at all*'²⁸⁵ and '*Greenland and Iceland were more*

²⁸⁰ <http://www.iceland.is/the-big-picture/economy-infrastructure> on February 25th, 2018. <https://www.statice.is/> on August 29th, 2018.

²⁸¹ Hjalmarsson, Jon R.: History of Iceland. From the Settlement to the Present Day. Reykjavik 1993, S. 16, 35, 56, 80, 100, 151, 159, 163, 169, 174-176.

²⁸² Pollak, Johannes / Slominski, Peter: Das politische System der EU. 2nd edition, Wien 2006, p. 45-46.

²⁸³ Whitehead, Thor: Die Außenpolitik Islands 1946-1956. In: Wiggershaus, Norbert / Heinemann, Winfried (ed.): Nationale Außen- und Bündnispolitik der NATO-Mitgliedstaaten. München 2000, p. 51-52.

²⁸⁴ Kaplan, Lawrence S.: NATO 1948. The Birth of the Transatlantic Alliance. Lanham 2007, p. 208-209.

²⁸⁵ Reid: Time of Fear and Hope, p. 195, cited in Kaplan, Lawrence S.: NATO 1948. The Birth of the Transatlantic Alliance. Lanham 2007, p. 117.

*important than some countries in Western Europe to the security of the United States and Canada*²⁸⁶. In 1951, the USA started to deploy troops to Keflavik Air Field in Iceland. A defence agreement between Iceland and the USA clarified that the US troops were deployed under NATO mandate to ensure the defence of Iceland.²⁸⁷ Notably, to keep Keflavik under US control, the USA intervened in favour of Iceland in the Cod Wars with the UK from 1952 until 1976.²⁸⁸

Presumably, as a result of the reorientation of NATO after the Cold War and the vanishing focus on the GIUK Gap and the North Atlantic, the USA decided to withdraw their troops from Iceland in 2006, which until then had conducted maritime patrolling and ISR flights in and around the GIUK Gap²⁸⁹. The estimated annual costs for the US military instalment at Naval Air Station (NAS) Keflavik were approximately 260 million US Dollar, making up 0.05% of the 2006 US defence budget.²⁹⁰ The decision to withdraw was taken unilaterally by the USA; Iceland was not involved and did not agree. The defence agreement established between Iceland and the USA in 1951, however, remained in effect.²⁹¹ The USA withdrew four F-15 tactical fighter aircraft, several helicopters, more than 1,000 military personnel and 100 civilian employees²⁹² from NAS Keflavik near Reykjavik, *‘[i]n the 1970’s and 1980’s [...] frequently referred to [...] as the ‘anti-submarine warfare capital of the world’.*²⁹³

Iceland has since invested in supporting assets, purchasing search-and-rescue helicopters, improving radar stations, and maintaining the air field. This supports the rotational system and further developments in the improvement of NATO’s new maritime strategy focused on the GIUK Gap.²⁹⁴ Furthermore, Iceland established four radar sites and an Air Command and Control System²⁹⁵ within the NATO Integrated Air and Missile Defence (NATO IAMD) system which safeguards and protects the Alliance territory against air and missile attack.²⁹⁶ The declaration from the 2014 NATO Summit in Wales on spending minimum 2% of national GDP on national defence (paragraph 14)²⁹⁷ cannot be

²⁸⁶ Minutes of the Fourth Meeting, p. 165, cited in Kaplan, Lawrence S.: NATO 1948. The Birth of the Transatlantic Alliance. Lanham 2007, S. 117.

²⁸⁷ Whitehead, Thor: Die Außenpolitik Islands 1946-1956. In: Wiggershaus, Norbert / Heinemann, Winfried (ed.): Nationale Außen- und Bündnispolitik der NATO-Mitgliedstaaten. München 2000, p. 57-60.

²⁸⁸ Hjalmarsson, Jon R.: History of Iceland. From the Settlement to the Present Day. Reykjavik 1993, p. 179-184.

²⁸⁹ Nordenman, Magnus: Back to the Gap. In: The RUSI Journal, Vol. 162/1/2017, p. 27.

²⁹⁰ Kochis, Daniel / Slattery, Brian: Iceland: Outsized Importance for Transatlantic Security. In: The Heritage Foundation Backgrounder, Vol. 3121, June 21st, 2016. Washington, D.C., 2016, p. 9.

²⁹¹ Ingimundarson, Valur: Britain, the United States and the Militarization of Iceland. In: Scandinavian Journal of History, Vol. 37/2/2012, p. 214.

²⁹² Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 52.

²⁹³ Thordarson, Gudlaugur Thor: Speech at the Stockholm International Peace Research Institute (SIPRI). Stockholm, January 18th, 2018. In: Government Offices of Iceland, January 18th, 2018. In: <https://www.government.is/news/article/2018/01/18/Speech-at-the-Stockholm-International-Peace-Research-Institute-SIPRI/> on August 28th, 2018.

²⁹⁴ Nordenman, Magnus: Back to the Gap. In: The RUSI Journal, Vol. 162/1/2017, p. 29.

²⁹⁵ Kochis, Daniel / Slattery, Brian: Iceland: Outsized Importance for Transatlantic Security. In: The Heritage Foundation Backgrounder, Vol. 3121, June 21st, 2016. Washington, D.C., 2016, p. 9.

²⁹⁶ https://www.nato.int/cps/en/natohq/topics_8206.htm on August 29th, 2018.

²⁹⁷ NATO: Wales Summit Declaration Issued by the Heads of State and Government participating in the Meeting of the North Atlantic Council in Wales. NATO Press Releases 120/2014, September 5th, 2014. In: https://www.nato.int/cps/ic/natohq/official_texts_112964.htm on August 29th, 2018.

fulfilled by Iceland as it does not maintain national armed forces. Instead, Iceland is investing in supporting assets. All NATO member countries agree on the strategic importance of Iceland due to its unique geographic position in the middle of the GIUK Gap. *Smith / Hendrix* made clear: ‘[...] *the indispensable nature of a country such as Iceland cannot be fully evaluated by measuring its defence spending.*’²⁹⁸ Any defence planning of NATO to protect the allies’ interests in the North Atlantic includes access to Iceland.²⁹⁹ Iceland is ‘*the unsinkable aircraft carrier in the middle of the Atlantic that you can fly from. [...] It [has] had enduring importance for the defence of the North Atlantic.*’³⁰⁰

In 2008, NATO and Iceland agreed to deploy aircraft of NATO member countries and the non-NATO member countries Sweden and Finland³⁰¹ on a rotational principle in NAS Keflavik to survey the North Atlantic. Aircraft for submarine surveillance are stationed at their main base at Sigonella in Sicily, Italy, and fly to Iceland when on duty.³⁰² Surveillance flights have increased yearly. In 2014, allied maritime surveillance aircraft operated from NAS Keflavik for a total of 21 days. In 2017, this number had risen to 153 days.³⁰³

In 2016, a new Joint Declaration between the USA and Iceland was signed. Among other regulations the two countries agreed on US deployments in Iceland to support the NATO air surveillance mission in the GIUK Gap.³⁰⁴ Consequently, the USA re-deployed F-15 aircraft and air force personnel to Iceland.³⁰⁵

In 2018, the USA will invest 14.4 million US Dollar³⁰⁶ in the NAS Keflavik airfield as part of the EDI established in 2014. This upgrade of the NAS Keflavik will allow P-8s to be used in maritime patrolling. The UK and Norway already purchased P-8s to support the established rotation system.³⁰⁷ Covering 1,200 nautical miles in range, these aircraft will survey the complete area of the GIUK Gap and

²⁹⁸ Smith, Julianne / Hendrix, Jerry: *Forgotten Waters. Minding the GIUK Gap. A Tabletop Exercise.* Center for a New American Security. Washington, D.C., 2017, p. 6.

²⁹⁹ Smith, Julianne / Hendrix, Jerry: *Forgotten Waters. Minding the GIUK Gap. A Tabletop Exercise.* Center for a New American Security. Washington, D.C., 2017, p. 6.

³⁰⁰ Nordenman, Magnus, cited in Montgomery, Nancy: No permanent basing for Navy sub hunters in Iceland despite construction projects. In: *Stars and Stripes*, January 9th, 2018. In: <https://www.stripes.com/news/no-permanent-basing-for-navy-sub-hunters-in-iceland-despite-construction-projects-1.505835> on February 27th, 2018.

³⁰¹ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: *Whitehall Papers*, Vol. 87/1/2016, p. 52.

³⁰² Hermann, Rudolf: Die NATO will den ‘Flugzeugträger Island’ wieder mehr nutzen. In: *Neue Zürcher Zeitung*, February 2nd, 2018. In: <https://www.nzz.ch/international/die-nato-will-den-flugzeugtraeger-island-wieder-mehr-nutzen-id.1356585> on February 27th, 2018.

³⁰³ Thordarson, Gudlaugur Thor: Speech at the Stockholm International Peace Research Institute (SIPRI). Stockholm, January 18th, 2018. In: Government Offices of Iceland, January 18th, 2018. In: <https://www.government.is/news/article/2018/01/18/Speech-at-the-Stockholm-International-Peace-Research-Institute-SIPRI/> on August 28th, 2018.

³⁰⁴ U.S. Department of State, Bureau of European and Eurasian Affairs: U.S. Relations With Iceland. Fact Sheet. In: U.S. Department of State, *Diplomacy in Action*, October 16th, 2017. In: <https://www.state.gov/r/pa/ei/bgn/3396.htm> on August 29th, 2018.

³⁰⁵ Smith, Julianne / Hendrix, Jerry: *Forgotten Waters. Minding the GIUK Gap. A Tabletop Exercise.* Center for a New American Security. Washington, D.C., 2017, p. 3.

³⁰⁶ <https://www.statista.com/chart/12389/the-us-is-pouring-money-into-air-bases-flanking-russia/> on August 8th, 2018.

³⁰⁷ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: *Whitehall Papers*, Vol. 87/1/2016, p. 54, 57.

its adjacent maritime regions from Canada to the European continent and from Svalbard to the North Atlantic (fig. 6).³⁰⁸ Special focus will be placed on increasing surveillance of Russian maritime traffic in the northern North Atlantic.³⁰⁹ *Wezeman* emphasized the return of the US Armed Forces to Iceland in a SIPRI Background Paper from October 2016. Plans are mentioned to re-establish a permanent presence at NAS Keflavik in reaction to the increased activity of Russian submarines in the northern North Atlantic.³¹⁰ In an article from February 2018, *Hermann* from the 'Neue Zürcher Zeitung' mentioned rumours about the US Department of Defense's plans to invest several million US Dollar for improvement and modernization of the NAS Keflavik to re-activate a permanent US presence in Iceland.³¹¹ However, *Montgomery* reported in 'Stars and Stripes' in January 2018 that a permanent return to the NAS Keflavik was not discussed within the US Department of Defense, and that the USA would stick to the NATO's rotation system.³¹²

The UK is planning to install a permanent UK Royal Navy carrier group in the GIUK Gap between Iceland and Scotland to protect NATO's SLOC in the North Atlantic. Combined with the US Navy carrier contingent already active in the North Atlantic, the united forces will be able to impede Russian submarines and maritime strike aircraft operations, and effectively defend the SLOC. Furthermore, an old military strategic concept is being re-vitalised: putting pressure on Russia by rapid deployment of alliance forces northwards from the GIUK Gap into the Norwegian Sea, thus moving the front line away from the SLOC. All these instalments and concepts are developed in cooperation with Iceland, which will be the main land base to operate from in the northern North Atlantic towards the Arctic Ocean.³¹³

Its geographical position brings Iceland into a new economic focus as the exploitation of resources in the Arctic increases. Iceland could become an important transshipment hub as the Northeast Passage connects to the Atlantic Ocean through the GIUK Gap. In 2015, Iceland announced the start of feasibility studies for a deep-water port to be built in Iceland's northeast at Finnaþjófur. China and Singapore have expressed interest in supporting Iceland with this project.³¹⁴

³⁰⁸ Kochis, Daniel / Slattery, Brian: Iceland: Outsized Importance for Transatlantic Security. In: The Heritage Foundation Backgrounder, Vol. 3121, June 21st, 2016. Washington, D.C., 2016, p. 11.

³⁰⁹ Smith, Julianne / Hendrix, Jerry: Forgotten Waters. Minding the GIUK Gap. A Tabletop Exercise. Center for a New American Security. Washington, D.C., 2017, p. 3.

³¹⁰ Wezeman, Siemon T.: Military Capabilities in the Arctic: A New Cold War in the High North? SIPRI Background Paper, October 2016. Solna 2016, p. 18.

³¹¹ Hermann, Rudolf: Die NATO will den 'Flugzeugträger Island' wieder mehr nutzen. In: Neue Zürcher Zeitung, February 2nd, 2018. In: <https://www.nzz.ch/international/die-nato-will-den-flugzeugtraeger-island-wieder-mehr-nutzen-ld.1356585> on February 27th, 2018.

³¹² Montgomery, Nancy: No permanent basing for Navy sub hunters in Iceland despite construction projects. In: Stars and Stripes, January 9th, 2018. In: <https://www.stripes.com/news/no-permanent-basing-for-navy-sub-hunters-in-iceland-despite-construction-projects-1.505835> on February 27th, 2018.

³¹³ Allport, Rowan: NATO needs a new Maritime Strategy for its Northern Flank. In: UK Defence Journal, February 12th, 2018. In: <https://ukdefencejournal.org.uk/nato-needs-new-maritime-strategy-northern-flank/> on August 28th, 2018.

³¹⁴ Kochis, Daniel / Slattery, Brian: Iceland: Outsized Importance for Transatlantic Security. In: The Heritage Foundation Backgrounder, Vol. 3121, June 21st, 2016. Washington, D.C., 2016, p. 6-7.

The significance of Iceland as land base in the middle of the GIUK Gap will increase together with military and non-military interests in the northern North Atlantic. Iceland covers a major part of the GIUK Gap with its EEZ (fig. 8), and this dominance is of undoubtedly importance for any strategic or economic operations in the GIUK Gap.

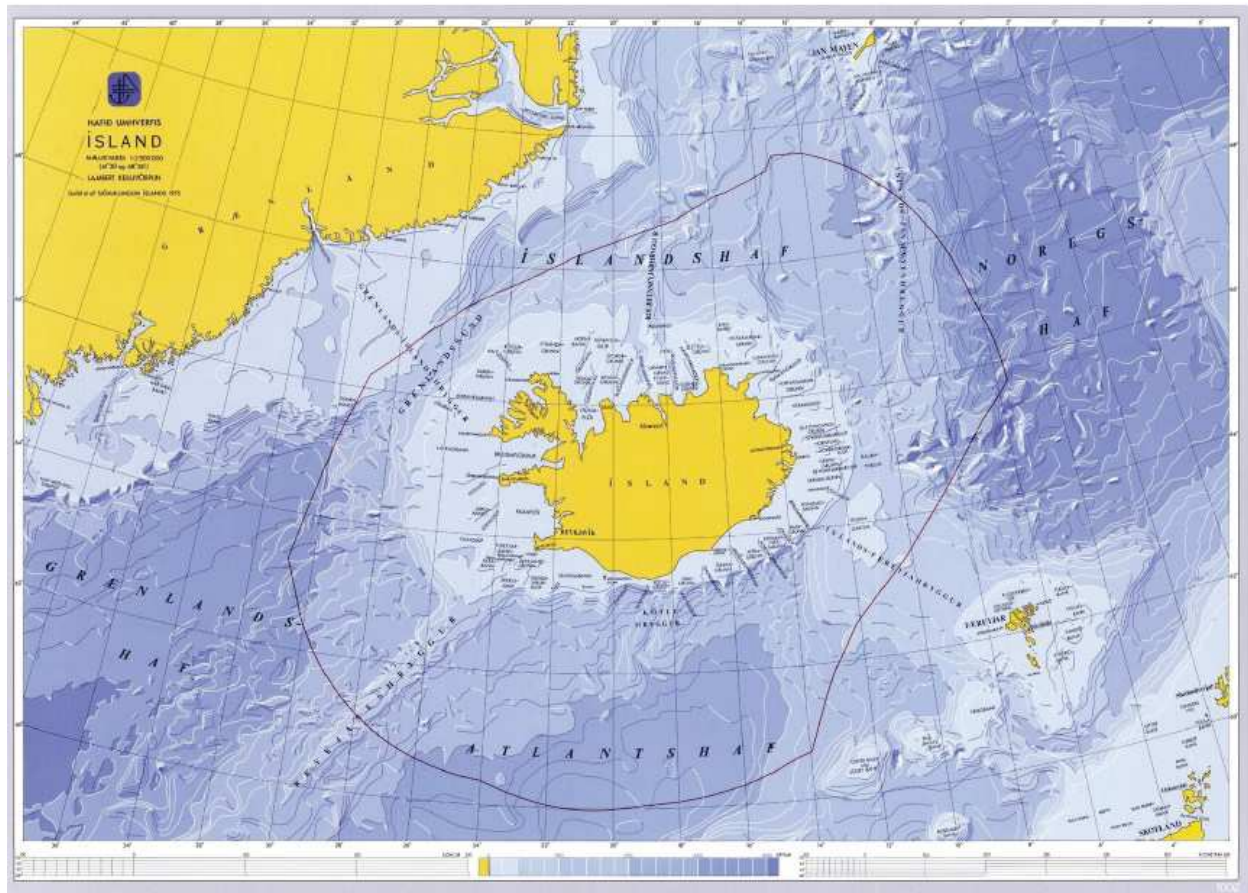


Fig. 8: Iceland's EEZ in the GIUK Gap³¹⁵

³¹⁵ Bjarnason, Björn: Climate Change and Iceland's Role in North Atlantic Security. Talk at the Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University on November 26th, 2007. Cambridge, Massachusetts 2007, p. 6.

3.2 Greenland (Denmark) and the GIUK Gap

‘ultima omnium quae memorantur Tyle, in qua solstitio nullas esse noctes indicavimus, cancri signum sole transeunte, nullosque contra per brumam dies; hoc quidam senis mensibus continuis fieri arbitrantur. [...] a Tyle unius diei navigatione mare concretum a nonnullis Cronium appellatur.’

‘The most remote of all those recorded is Thule, in which as we have pointed out there are no nights at midsummer when the sun is passing through the sign of the Crab, and on the other hand no days at midwinter; indeed some writers think this is the case for periods of six months at a time without a break. [...] One day’s sail from Thule is the frozen ocean, called by some the Cronian Sea.’

About Thule, Pliny the Elder: *Naturalis Historia*, IV/XVI/104, A.D. 77³¹⁶

Greenland, a self-governing part of Denmark, is the world’s largest island³¹⁷ with an ice-free area of 410,450 km².³¹⁸ The total area including islands and ice-covered regions is 2,166,086 km², 1,755,637 km² of which are inland ice and glaciers. The coast line is 44,078 km long and its capital city, Nuuk, is located on the western coast.³¹⁹ In 2016, Greenland had 56,000 inhabitants and a GDP of 2.3 billion US Dollar.³²⁰ The population density is 0.026 inhabitants per km², the second-lowest worldwide after the Antarctic³²¹. However, as almost 80% of the area is ice-covered³²², the population density on the permanently ice-free area is 0.14 per km². In 2016, the GDP per capita was 40,469 US Dollar which is distinctly lower than in Denmark (53,774 US Dollar³²³). The main economic sectors are service industries including tourism (72% of GDP), the manufacturing sector (15.2% of GDP), and agriculture (12.8% of GDP)³²⁴, although only 0.6% of the ice-free land area³²⁵ are arable and only one km² is forest³²⁶. By contrast, 66% of Greenland’s motherland Denmark’s area is agricultural land, making it the country with the most intense agriculture in Europe.³²⁷ Greenland’s main product is fish.

³¹⁶ Rackham, Harris (ed.): Pliny: *Natural History*. With an English Translation in Ten Volumes. Vol. II, Libri III-VII. Reprint, Cambridge 1961, p. 198-199.

³¹⁷ N.N.: Greenland profile. In: BBC News, July 23rd, 2018. In: <https://www.bbc.com/news/world-europe-18249474> on September 4th, 2018.

³¹⁸ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Grönland. April 2018. Wien 2018, p. 1.

³¹⁹ Hoydal, Marita: Facts about Greenland. In: Nordic Co-operation, undated. In: <https://www.norden.org/en/fakta-om-norden-1/the-nordic-countries-the-faroe-islands-greenland-and-aaland/facts-about-greenland> on September 4th, 2018.

³²⁰ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Grönland. April 2018. Wien 2018, p. 1.

³²¹ Knauer, Claudia: Dänemark. Ein Länderporträt. 1st edition, Berlin 2015, p. 102.

³²² Hoydal, Marita: Facts about Greenland. In: Nordic Co-operation, undated. In: <https://www.norden.org/en/fakta-om-norden-1/the-nordic-countries-the-faroe-islands-greenland-and-aaland/facts-about-greenland> on September 4th, 2018.

³²³ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Dänemark. April 2018. Wien 2018, p. 1.

³²⁴ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Grönland. April 2018. Wien 2018, p. 4.

³²⁵ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Grönland. April 2018. Wien 2018, p. 4.

³²⁶ Hoydal, Marita: Facts about Greenland. In: Nordic Co-operation, undated. In: <https://www.norden.org/en/fakta-om-norden-1/the-nordic-countries-the-faroe-islands-greenland-and-aaland/facts-about-greenland> on September 4th, 2018.

³²⁷ Borchert, Thomas: *Gebrauchsanweisung für Dänemark*. München, Berlin 2017, p. 161.

In 2016, 88.6% of all exported products were fish. The main trading partner for exports (81.3% of all exported products) and imports (66.9% of all imported products) is Denmark. The main imported product is crude oil, making up 11.5% of all imports. The fifth most imported product, making up 4.3%, is meat due to the limitations of stock farming on the icy island. With 0.03 tonnes per inhabitant, Greenland has an extraordinarily low rate of carbon emission compared to the world's average of 4.8 tonnes per inhabitant and to the EU's average of 6.75 tonnes per inhabitant.³²⁸

The northern part of Greenland is located in the Arctic Ocean and as part of the arctic ice shield perennial covered in ice. However, this thick sea ice has started to break up twice in 2018 due to climate change driven heatwaves in the northern hemisphere. Ruth Mottram of the Danish Meteorological Institute has been concerned about the situation: *'Almost all of the ice to the north of Greenland is quite shattered and broken up and therefore more mobile.'*³²⁹ Economically, the ice melting offers new resources to Greenland which is highly dependable on fish for export. Mining of rare earth minerals has grown rapidly. Within ten years, from 2003 to 2013, the annual number of exploration licences issued by the Greenlandic government increased fourfold. Currently, 56 active licences explore Greenland for gold, rubies, diamonds, nickel, copper and other minerals deposits. A controversial issue was the repeal of the ban on uranium mining in 2013. In 2016, the first licences to mine uranium in Greenland were assigned to the Australian-owned company Greenland Minerals and Energy (GME) in Kvanefjeld.³³⁰ Geologically, Greenland is part of the American continental plate as it was split from continental Europe about 36 million years ago.³³¹ Geopolitically, Greenland is a part of Europe as it is a part of Denmark³³², making Denmark one of the largest countries in the world by area.³³³ In 1947, the Danish archaeologist Eigil Knuth proved that around 2,500 B.C. a prae-inuit population of hunters and fishermen from North America settled Greenland for the first time.³³⁴ The first European settlers were Vikings. In A.D. 981 Eirik Raude (Erik the Red) discovered Greenland and settled there from 984 onwards, naming the glacial-covered region 'Greenland' as *PR stunt*³³⁵ to attract settlers. Although Greenland became widely known throughout medieval Europe, it never generated enough interest for

³²⁸ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Grönland. April 2018. Wien 2018, p. 5-6.

³²⁹ Mottram, Ruth cited in Watts, Jonathan: Arctic's strongest sea ice breaks up for first time on record. In: The Guardian, August 21st, 2018. In: <https://www.theguardian.com/world/2018/aug/21/arctics-strongest-sea-ice-breaks-up-for-first-time-on-record> on September 4th, 2018.

³³⁰ Walsh, Maurice: 'You can't live in a museum': the battle for Greenland's uranium. In: The Guardian, January 28th, 2017. In: <https://www.theguardian.com/environment/2017/jan/28/greenland-narsaq-uranium-mine-dividing-town> on September 4th, 2018.

³³¹ Braun, Alexander / Lausch, Erwin / Marquart, Gabriele: Die bewegte Geschichte des Nordatlantiks. In: Spektrum.de, June 1st, 2001. In: <https://www.spektrum.de/magazin/die-bewegte-geschichte-des-nordatlantiks/827682> on July 25th, 2018.

³³² Hoydal, Marita: Facts about Greenland. In: Nordic Co-operation, undated. In: <https://www.norden.org/en/fakta-om-norden-1/the-nordic-countries-the-faroe-islands-greenland-and-aaland/facts-about-greenland> on September 4th, 2018.

³³³ Knauer, Claudia: Dänemark. Ein Länderporträt. 1st edition, Berlin 2015, p. 14.

³³⁴ Braukmüller, Heide: Grönland – gestern und heute. Grönlands Weg der Dekolonisation. Münster 1990, p. 42.

³³⁵ Afflerbach, Holger: Das entfesselte Meer. Die Geschichte des Atlantik. München 2001, p. 70.

a widespread settlement. Around the year 1000 Erik the Red's son Leif Eriksson travelled with 35 seamen from Greenland westwards reaching Baffin Island, which the Vikings called 'Helluland' (land of stones), the Labrador coast, which they called 'Markland' (land of woods), and Newfoundland, which they called 'Vinland' (land of wine). Viking settlements in North America did not last, but the Greenlanders continued to travel to 'Markland' to cover their requirement for wood in the following centuries.³³⁶ In 1261, Greenland became part of Norway as the Greenlanders accepted the Norwegian king Haakon IV Haakonsson (Haakon the Old) as their king. Norway and Greenland signed an agreement about payments of interest and the trade monopoly with Bergen in Norway. This agreement later became the reason for the dispute about ownership of Greenland between Norway, Denmark, and Iceland. From 1389, when Greenland was inherited by Denmark, the interaction with continental Europe waned and the descendants of the Vikings on Greenland disappeared in about 1500. Only in 1721 Danish resettlement of Greenland started with a mission led by reverend Hans Pövelson Egede to evangelize the native Inuit. In the 19th and 20th century, various expeditions studied Greenland, bringing Knud Rasmussen and Alfred Wegener to the island. During World War II, Greenland became largely self-administered when Germany occupied Denmark, but the USA took over effective control in 1941. Movements for an autonomous administration of Greenland had first surfaced as soon as 1859 but only after World War II, steps for an autonomous Greenland were taken: In 1950, the Danish trade monopoly was abolished. In 1953, Greenland was decolonised and became an integrated and equal part of Denmark. In 1979, Greenland attained home rule, making the island an autonomous part of Denmark. Like the Faroe Islands, Greenland dispatches two elected members to the Danish Parliament 'Folketing'.³³⁷ As a part of Denmark, Greenland had joined the EU in 1973, but left it in 1985 in agreement with all EU member countries.³³⁸ Greenland then became a member of the Association of the Overseas Countries and Territories of the European Union (OCTA)³³⁹. In 2009, a law gave Greenland more autonomy and the autonomous administration of its natural resources. Foreign policy, defence and internal security have remained Danish duties. Because Denmark is a founding member of NATO, Greenland has been part of NATO since 1949.³⁴⁰

During World War II, the US Armed Forces built military bases and airfields in Greenland. In 1949 the USA held four large military bases, mainly in the south of the island. In 1950, the USA started to concentrate their geostrategic interests on the north of Greenland, making Thule their main base with an airfield for medium-range bombers. At the same time, the number of US bases was reduced to

³³⁶ Afflerbach, Holger: *Das entfesselte Meer. Die Geschichte des Atlantik*. München 2001, p. 69-70, 76-78, 85.

³³⁷ Förster, Christian / Schmid, Josef / Trick, Nicolas: *Die nordischen Länder. Politik in Dänemark, Finnland, Norwegen und Schweden*. Wiesbaden 2014, p. 25.

³³⁸ Braukmüller, Heide: *Grönland – gestern und heute. Grönlands Weg der Dekolonisation*. Münster 1990, p. 63-64, 78, 85-90, 157, 243-244, 260, 273, 331, 413-414.

³³⁹ <http://www.octassociation.org/> on September 4th, 2018.

³⁴⁰ Knauer, Claudia: *Dänemark. Ein Länderporträt*. 1st edition, Berlin 2015, p. 107-108.

three. Besides Thule, the USA held Narsarsuaq Air Base in the south of Greenland until closing it in 1958, and Sondrestrom Air Base at Kangarlussuaq (Søndre Strømfjord) in the west of Greenland, which was handed over to the Greenland government in 1992 but continues to host a small US Air National Guard detachment³⁴¹. With the handover of Sondrestrom Air Base, the geostrategic transformation of Greenland was complete: Defending Greenland from a Soviet attack was no longer a major concern. Instead, Greenland became an important base in strategic plans for a nuclear offensive against the USSR, which included the unrestricted use of Greenland's airspace.³⁴²

The only US military base in Greenland remaining today is Thule Air Base in Pituffik near Qaanaaq on the northwest coast of the island at the Baffin Bay (fig. 9). It is the northernmost US base worldwide.³⁴³ During the Cold War it was the key point in the geostrategic planning of the USA. *The shortest route from the US to the Soviet Union's most important industrial areas was over the North Pole, and Thule is at the precise midpoint between Moscow and New York.*³⁴⁴ Currently, Thule is the home base of the 12th Space Warning Squadron and the only US Air Force base without aircraft.³⁴⁵ In 2017, the US Department of Defense completed an upgrade for missile and space defence at Thule, investing 40 million US Dollar in a software upgrade for the radar. Thule holds more than 3,500 antennas which can see 4,800 km into space. Ground-based radar is considered to be essential to track missiles trajectories as satellites only offer first detection of missile launches.³⁴⁶ An ongoing dispute is the territorial claim of the Inuit who were exiled from their land to expand the Thule Air Base. In 1999, the Danish High Court ruled that exiling the Inuit was illegal but denied their right to return.³⁴⁷

³⁴¹ <http://www.sondrestrom.com/> on September 5th, 2018.

³⁴² Petersen, Nikolaj: Dänemark und die atlantische Allianz 1949-1957. Die kritische Entscheidung. In: Wiggershaus, Norbert / Heinemann, Winfried (ed.): Nationale Außen- und Bündnispolitik der NATO-Mitgliedstaaten. München 2000, p. 112-114.

³⁴³ N.N.: Arctic air base gets \$40 million upgrade in face of increasing missile threats. In: CBS News, May 30th, 2017. In: <https://www.cbsnews.com/news/inside-thule-air-base-arctic-jeff-glor/> on September 5th, 2018.

³⁴⁴ N.N.: SAC Bases: Thule Air Base. In: Strategic-Air-Command.com, undated. In: http://www.strategic-air-command.com/bases/Thule_AFB.htm on September 4th, 2018.

³⁴⁵ N.N.: SAC Bases: Thule Air Base. In: Strategic-Air-Command.com, undated. In: http://www.strategic-air-command.com/bases/Thule_AFB.htm on September 4th, 2018.

³⁴⁶ N.N.: Arctic air base gets \$40 million upgrade in face of increasing missile threats. In: CBS News, May 30th, 2017. In: <https://www.cbsnews.com/news/inside-thule-air-base-arctic-jeff-glor/> on September 5th, 2018.

³⁴⁷ N.N.: Greenland profile. In: BBC News, July 23rd, 2018. In: <https://www.bbc.com/news/world-europe-18249474> on September 4th, 2018.



Fig. 9: Military and civilian airports and heliports on Greenland³⁴⁸

As Greenland is not autonomous in security and defence policy, Denmark is responsible for the geo-strategic planning of the Greenlandic region including the western part of the GIUK Gap. Denmark's defence policy is outlined in the Danish Defence Agreement which since 2013 has focussed on the

³⁴⁸ <http://bjarki-sirius.blogspot.com/> on September 5th, 2018.

Arctic as the region of Danish territory of new geostrategic significance based on a special Arctic strategy adopted in 2011. The agreement binds the Danish government to establish a modular Arctic Response Force and a Joint Arctic Preparedness Force to operate on Greenland and in the Arctic. Already in 2012, the new joint military Arctic Command was installed in Nuuk, Greenland, which took over the duties of the former Greenland and Faroe Islands commands. It is responsible for the deployment of Danish military units in the northern North Atlantic and the Arctic.³⁴⁹

Although Denmark retired its submarine force between 2000 and 2016 to cut costs and to optimise the Danish military for expeditionary operations³⁵⁰, Denmark has been highly involved in the strategic upgrading to protect NATO's northern flank in the last years. Since 2002, Denmark has been part of the Joint Strike Fighter programme which coordinates air and maritime defence with the USA. This participation also enhances the cooperation between US and Danish industry in research, development, and technical improvement. In 2016, within this programme Denmark purchased 27 F-35 aircraft to strengthen NATO's defence capabilities in the North Atlantic.³⁵¹ Already in the past, Danish F-16 aircraft used Sondrestrom Air Base and Thule Air Base for stop-overs. In 2014, two fully armed F-16 aircraft tested their Arctic capabilities flying from both Air Bases. In 2016, further testing for several weeks was carried out. As the new F-35 aircraft will replace the F-16 aircraft, some of them are reported to be deployed permanently on Greenland. Additionally, three Danish unarmed maritime patrol aircraft operate off Greenland.³⁵² Denmark also purchased the US Aegis Weapon System.³⁵³

On Greenland, small special forces units are available for Arctic defence, such as the Frømandskorps (Frogman Corps) and the Jaeger special forces. For both units, troops have been doubled within the past years. Another special forces unit is the Slædepatrulje Sirius (Sledge Patrol Sirius), the only sledge patrol in the world. Sirius was installed during World War II and is still responsible for patrolling in extreme arctic conditions.³⁵⁴ It currently consist of around a dozen troops.³⁵⁵

In the south of Greenland, the Danish Navy holds a base at Kangilinnguit (Grønnedal). It is a main port for Danish naval operations in Arctic waters. This fleet includes a comparatively large number of ocean patrol vessels and frigates which are specifically optimised for Arctic operations³⁵⁶, such as three

³⁴⁹ Wezeman, Siemon T.: Military Capabilities in the Arctic: A New Cold War in the High North? SIPRI Background Paper, October 2016. Solna 2016, p. 7-8.

³⁵⁰ Nordenman, Magnus: Back to the Gap. In: The RUSI Journal, Vol. 162/1/2017, p. 27.

³⁵¹ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 56.

³⁵² Wezeman, Siemon T.: Military Capabilities in the Arctic: A New Cold War in the High North? SIPRI Background Paper, October 2016. Solna 2016, p. 8.

³⁵³ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 58.

³⁵⁴ Braukmüller, Heide: Grönland – gestern und heute. Grönlands Weg der Dekolonisation. Münster 1990, p. 245.

³⁵⁵ Wezeman, Siemon T.: Military Capabilities in the Arctic: A New Cold War in the High North? SIPRI Background Paper, October 2016. Solna 2016, p. 8-9.

³⁵⁶ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 22.

Iver-Huitfeldt-class frigates and two Absalon-class command and support ships³⁵⁷. Four Thetis-class frigates and three Knud Rasmussen-class³⁵⁸ light corvettes patrol in the northern North Atlantic and off Greenland. Both classes are heavily armed and ice-strengthened. All major Danish ships are equipped with Stanflex, a unique modular system allowing to quickly change a ship's payload according to mission requirements.³⁵⁹ In 2014, Denmark agreed to integrate the radar systems on its Iver Huitfeldt-class frigates into the NATO BMD system to guarantee a more robust and mobile radar coverage.³⁶⁰ In 2016³⁶¹, nine new MH-60R helicopters which can be used on naval frigates and corvettes were purchased.³⁶²

The USA and Canada consider the Arctic region to be of major importance. Therefore, cooperation between the USA, Canada, and Greenland for surveillance of this region is essential. Since the 1950ies, Canada has been holding a military base on Ellesmere Island in Nunavut facing Greenland. At Resolute Bay in Nunavut a special Arctic training centre was installed in 2013. NORAD, which controls US interceptor aircraft in Alaska and all Canadian interceptor aircraft, also controls the air surveillance radars of the North Warning System in Alaska, Canada, and Greenland.³⁶³

Besides geostrategic interests, Greenland is of major interest because of the rising economic potential of the Arctic. As Greenland is a part of Denmark, Denmark claims territory in the Arctic and the right to exploit the presumed resources there. Only due to Greenland, Denmark holds the fifth largest EEZ in NATO after Canada, France, the UK, and the USA.³⁶⁴ However, Greenland boycotts the Arctic Council because the contracting countries are not willing to include the Inuit due to the growing interest in Greenland's natural resources.³⁶⁵

³⁵⁷ Defence Command Denmark: The Royal Danish Navy. In: Danish Defence / Ministry of Defence, May 23rd, 2016. In: <https://www2.forsvaret.dk/eng/organisation/navy/pages/navy.aspx> on September 23rd, 2018.

³⁵⁸ Defence Command Denmark: The Royal Danish Navy. In: Danish Defence / Ministry of Defence, May 23rd, 2016. In: <https://www2.forsvaret.dk/eng/organisation/navy/pages/navy.aspx> on September 23rd, 2018.

³⁵⁹ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 22.

³⁶⁰ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 53.

³⁶¹ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 23.

³⁶² Wezeman, Siemon T.: Military Capabilities in the Arctic: A New Cold War in the High North? SIPRI Background Paper, October 2016. Solna 2016, p. 9.

³⁶³ Wezeman, Siemon T.: Military Capabilities in the Arctic: A New Cold War in the High North? SIPRI Background Paper, October 2016. Solna 2016, p. 6, 18.

³⁶⁴ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 21.

³⁶⁵ Ingimundarson, Valur: Managing a contested region: the Arctic Council and the politics of Arctic governance. In: The Polar Journal, Vol. 4/1/2014, p. 190, 192.

3.3 Norway and the GIUK Gap

‘Visstnok var vi ikke mange,
men vi strakk dog til,
da vi prøvdes noen gange,
og det stod på spill;
ti vi heller landet brente
enn det kom til fall’

‘Sure, we were not many,
but we were enough,
when we were tested sometimes,
and it was at stake;
we would rather burn our land
than to declare defeat.’

The National Anthem of Norway, verse 4, 1863³⁶⁶

Norway, one of the twelve monarchies of Europe³⁶⁷, is situated on the western edge of the Scandinavian peninsula in northern Europe. It is a long and narrow country extending 1,752 km from north to south but only 6 km to 435 km from east to west. The landscape is mountainous. Particularly at the coast lines rough cliffs of fiords shape the country. The major part of Norway faces the ocean, and the mainland coastal line is 25,148 km long, increasing to 83,381 km if the Norwegian islands are included.³⁶⁸ On land, Norway shares borders with Sweden (1,619 km), Finland (727 km), and Russia (196 km).³⁶⁹ One third of the country lies north of the Arctic Circle, making Norway the northern most country on the European continent with the North Cape as the northernmost headland.³⁷⁰

In 2017, a populace of 5,290,000 inhabited an area of 385,178 km², making for a population density of 13.74 inhabitants per km².³⁷¹ However, only 3% of the country’s area is built-up land, 27% is agricultural land and productive forest, 7% are glaciers and fresh-water resources, and 63% are uninhabited areas such as mountains, moors, and unproductive forests.³⁷² In 2017, Norway posted an unemployment rate of 4.5% within a rather young population, in which 65.6% are between 15 and 64.³⁷³ According to the OECD, the Norwegian GDP per capita of 58,792 US Dollar in 2016 was the fourth highest worldwide, surpassed only by Luxemburg, Ireland, and Switzerland.³⁷⁴ The main economic sectors are service industries including tourism (65.6% of GDP), the manufacturing sector (32% of GDP), and agriculture (2.4% of GDP). Norway’s top 3 exports in 2016 were crude oil (29.2% of all exports), natural gas (23.1%), and fish (11.8%).³⁷⁵ The discovery of the Ekofisk Field³⁷⁶

³⁶⁶ Bjørnson, Bjørnstjerne: Ja, vi elsker dette landet, 1863. In: <http://www.nationalanthems.info/no.htm> on August 30th, 2018.

³⁶⁷ N.N.: Britain aside, Europe has 11 other monarchies. In: RTE, May 19th, 2018. In: <https://www.rte.ie/news/newslens/2018/0519/964254-europes-other-monarchies/> on August 30th, 2018.

³⁶⁸ N.N.: Geography & Climate. In: Norway Exports, January 31st, 2017. In: <http://www.norwayexports.no/invest/norway-at-a-glance/geography-climate/> on August 30th, 2018.

³⁶⁹ Knoller, Rasso: Norwegen. Ein Länderporträt. 1st edition, Berlin 2013, p. 192.

³⁷⁰ N.N.: Geography & Climate. In: Norway Exports, January 31st, 2017. In: <http://www.norwayexports.no/invest/norway-at-a-glance/geography-climate/> on August 30th, 2018.

³⁷¹ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Norwegen. April 2018. Wien 2018, p. 1.

³⁷² Statistics Norway, Department of Communications: This Is Norway. Oslo 2017, p. 42.

³⁷³ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Norwegen. April 2018. Wien 2018, p. 3-4.

³⁷⁴ <https://data.oecd.org/gdp/gross-domestic-product-gdp.htm> on August 29th, 2018.

³⁷⁵ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Norwegen. April 2018. Wien 2018, p. 4, 6.

³⁷⁶ Petrick, Fritz: Norwegen. Von den Anfängen bis zur Gegenwart. Regensburg 2002, p. 263.

offshore in the North Sea in 1969, catapulted Norway not only into the major crude oil and natural gas exporting countries worldwide but also into the richest countries in the world. Norway handles the income from oil and gas with care: In the 1970ies, Norway fulfilled all obligations in external debts, and posted no obligations in external debts in 2017³⁷⁷; 96% of all oil and gas income are invested in funds reaching a volume of over 500 million Euro in October 2012; only 4% of the earnings are spend for the yearly government budget.³⁷⁸

In the United Nations' Human Development Index 2016 Norway was ranked first among 189 states.³⁷⁹ Nevertheless, Norway identifies more strongly with its ranking in the World Happiness Index, in which it ranked second behind Finland in 2018³⁸⁰, as Norway's official tourist information website introduces Norway as *'the second happiest country in the world'*³⁸¹.

About 7,500 B.C., when the British Isles split from continental Europe, the North Sea emerged and brought the Gulf Stream to the coast line of Norway. It is the reason why even today Norway's fiords are perennially ice-free and the climate is quite mild. Human settlement of Norway started at approximately the same time, preferably along the coast. The inhabitants of Norway have been seaman ever since. The first contact of Norwegians with Europe outside Scandinavia is dated A.D. 793 when the Vikings sailed to the British Isles to plunder a monastery on the island of Lindisfarne. Vikings from Norway also discovered Iceland, Greenland, and even reached North America. Even though Norway is known as the homeland of the Vikings, the Vikings did not form a united country but spread over today's Norway organized in clans reigned by kinglets called jarls.³⁸² Only in 1163 the first king of Norway was crowned, establishing a united monarchy. In 1380, the kingdom of Norway was united with the kingdom of Denmark under Danish leadership. After defeat in the Napoleonic Wars, Denmark had to hand over Norway to Sweden following the Treaty of Kiel in 1814.³⁸³ Only in 1905, Norway gained its independence by popular vote and established the still ruling Norwegian monarchy, only interrupted from 1940 until 1945 when German occupation forced king Haakon VII and his government into exile in London³⁸⁴. In 1948, Norway became a member country of the OECD. In 1949 it was a founding member of NATO and the Council of Europe. In 1952, Norway was a founding member of the Nordic Council, and in 1960 of the EFTA. Norway started negotiations to

³⁷⁷ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Norwegen. April 2018. Wien 2018, p. 1.

³⁷⁸ Knoller, Rasso: Norwegen. Ein Länderporträt. 1st edition, Berlin 2013, p. 109-110.

³⁷⁹ United Nations Development Programme: Human Development Report 2016 – Norway. In: <http://hdr.undp.org/en/countries/profiles/NOR> on August 30th, 2018.

³⁸⁰ Helliwell, John F. / Layard, Richard / Sachs, Jeffrey D. (ed.): World Happiness Report 2018. New York 2018, p. 20.

³⁸¹ <https://www.visitnorway.com/> on August 30th, 2018.

³⁸² Knoller, Rasso: Norwegen. Ein Länderporträt. 1st edition, Berlin 2013, p. 85.

³⁸³ Kinder, Hermann / Hilgemann, Werner / Hergt, Manfred: dtv-Atlas Weltgeschichte. Von den Anfängen bis zur Gegenwart. Aktualisierte Neuauflage. München 2006, p. 315.

³⁸⁴ Kinder, Hermann / Hilgemann, Werner / Hergt, Manfred: dtv-Atlas Weltgeschichte. Von den Anfängen bis zur Gegenwart. Aktualisierte Neuauflage. München 2006, p. 477.

join the EU four times (1962, 1967, 1972, 1994), but withdrew each time, twice due to a negative plebiscite (1972 and 1994).³⁸⁵

Norway borders on the Norwegian Sea and has regained importance to geostrategic projects regarding the GIUK Gap over the last decade because of this position and the renewed build-up of Russian naval forces, in particular of the submarine fleet anchored at the Kola Peninsula. The increased interest in the Arctic further raises Norway's importance, as the main connection between the northern North Atlantic and the Arctic Ocean runs through the GIUK Gap and the Norwegian Sea. As Finland and Sweden are only associated with the NATO via the PfP, Norway is the only NATO member country at the Northern Flank. Because of this, Norway is included in all NATO geostrategic planning in the northern North Atlantic. *Nordenman* mentioned in 2016 the inclusion of Norway is sometimes highlighted by referring to the GIUK Gap as GIUK-N Gap to emphasise the importance of the maritime domain around Norway for the GIUK Gap.³⁸⁶ During the Cold War Norway was the main NATO member country to protect the Northern Flank. The USA deployed military personnel on land and at sea in Norway³⁸⁷, and in 1982 started to pre-position military equipment in an elaborate cave system.³⁸⁸ After the Cold War, the geostrategic interest of NATO switched to 'out of the area'-regions such as Afghanistan or the Horn of Africa. The Northern Flank became poorly protected.³⁸⁹ Norway soon started bilateral cooperations with Russia. In 1992, joint naval exercises including further NATO member countries were agreed on between Norway and Russia. In 1994, the first exercise, 'Pomor', was conducted. In 1995, Russia and Norway agreed on the establishment of a dialogue on defence and security, and seminars, trainings, and exercises were held.³⁹⁰ In 2002, Norway developed its North Sea Strategy to intensify the defence cooperation with countries at the North Sea, and Finland and Sweden.³⁹¹

In 2010, Norway realized that its defensive capabilities were inadequate. Russia had started to conduct operations with little or no warning, forcing Norway to react at short notice. Norway started to update

³⁸⁵ Petrick, Fritz: *Norwegen. Von den Anfängen bis zur Gegenwart*. Regensburg 2002, p. 15, 17, 20, 22, 46, 115, 165, 168, 215, 274-275, 277, 291.

³⁸⁶ Nordenman, Magnus: Russian Subs Are Reheating a Cold War Chokepoint. In: *Defense One*, March 4th, 2016. In: <http://www.defenseone.com/ideas/2016/03/russian-subs-are-reheating-cold-war-chokepoint/126428/> on April 27th, 2018.

³⁸⁷ Reports about the deployment of military personnel in foreign countries by the US Department of Defense show a permanent number of US military personnel deployed in Norway during the Cold War between 1950 (a total number of 98) and 1990 (a total number of 215). The average was about 270 personnel, peaking in 1956 and 1957 with a total number of 1,942 and 1,900 respectively, and in 1988 with a total number of 1,674. U.S. Department of Defense: *Deployment of Military Personnel by Country. 1950-1976*. Washington, D.C., 1950-1976. U.S. Department of Defense: *Active Duty Military Personnel Strengths by Regional Area by Country (309A). 1977-1990*. Washington, D.C., 1977-1990.

³⁸⁸ Hamre, John J. / Conley, Heather A.: *The Centrality of the North Atlantic to NATO and US Strategic Interests*. In: *Whitehall Papers*, Vol. 87/1/2016, p. 51.

³⁸⁹ Nordenman, Magnus: Russian Subs Are Reheating a Cold War Chokepoint. In: *Defense One*, March 4th, 2016. In: <http://www.defenseone.com/ideas/2016/03/russian-subs-are-reheating-cold-war-chokepoint/126428/> on April 27th, 2018.

³⁹⁰ Efjestad, Svein: *Norway and the North Atlantic: Defence of the Northern Flank*. In: *Whitehall Papers*, Vol. 87/1/2016, p. 63, 68.

³⁹¹ Expert Commission on Norwegian Security and Defence Policy: *Unified Effort*, 2015. Oslo 2015, p. 45.

contingency plans, readiness requirements, and preparations for logistic support.³⁹² In 2012, Norway and the USA re-vitalized the cave system for equipment pre-positioning, housing currently a variety of military vehicles such as snow-capable tracked vehicles and tank recovery vehicles. 330 US Marines have been stationed at Værnes Air Station³⁹³ in Trondheim since 2017; in August 2018, plans to increase the contingent to 700 were announced.³⁹⁴ The deployment is part of the EDI, for which a total of 3.4 billion US Dollar were requested in the US defence budget in 2017.³⁹⁵ In 2016, Norway along with the USA and the UK announced an expansion of the maritime patrol aircraft fleet by purchasing P-8s to improve the monitoring of the GIUK Gap.³⁹⁶ These will replace the six P-3 long-range maritime patrol aircraft which will be decommissioned by 2028.³⁹⁷ The northern North Atlantic is of growing interest to NATO intelligence and surveillance due to the increased military activities of Russia in the region and in the Arctic. Norway – supported by the USA – possesses good capabilities in intelligence and surveillance at the Northern Flank. NATO mainly derives intelligence about the region surrounding Norway from data collected by Norwegian aircraft and surface vessels. Information gathering by other Western countries has barely been needed so far, but provision of high-quality intelligence and surveillance data is very resource-intensive. The acquisition of P-8 aircraft will ensure the future surveillance of the region.³⁹⁸

Norway has already started to fulfil the declaration from the 2014 NATO Summit in Wales on spending minimum 2% of national GDP on national defence (paragraph 14)³⁹⁹, as it committed to increase its defence budget mainly by investing in equipment and in collective defence capabilities. In 2015, 20.5% of the national defence budget were invested in materiel, a number expected to reach 25.3% by 2025, when the construction of a new air base for newly purchased combat aircraft is planned to be completed.⁴⁰⁰

The five Nordic countries have started to arrange common air force exercises with NATO member countries, and the three Northern Flank countries Norway, Finland, and Sweden conduct weekly

³⁹² Ejfestad, Svein: Norway and the North Atlantic: Defence of the Northern Flank. In: Whitehall Papers, Vol. 87/1/2016, p. 63, 68.

³⁹³ Kheel, Rebecca: 330 Marines to deploy to Norway amid tensions with Russia. In: The Hill, October 24th, 2016. In: <http://thehill.com/policy/defense/302586-330-us-marines-headed-to-norway-amid-tensions-with-russia> on September 3rd, 2018.

³⁹⁴ Solsvik, Terje: More U.S. Marines to train in Norway, closer to Russia. In: Reuters, August 15th, 2018. In: <https://www.reuters.com/article/us-norway-usa-russia/more-u-s-marines-to-train-in-norway-closer-to-russia-idUSKBN1L017F?il=0> on September 30th, 2018.

³⁹⁵ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 51, 54.

³⁹⁶ Smith, Julianne / Hendrix, Jerry: Forgotten Waters. Minding the GIUK Gap. A Tabletop Exercise. Center for a New American Security. Washington, D.C., 2017, p. 3.

³⁹⁷ Wezeman, Siemon T.: Military Capabilities in the Arctic: A New Cold War in the High North? SIPRI Background Paper, October 2016. Solna 2016, p. 10, 11.

³⁹⁸ Expert Commission on Norwegian Security and Defence Policy: Unified Effort, 2015. Oslo 2015, p. 76.

³⁹⁹ NATO: Wales Summit Declaration Issued by the Heads of State and Government participating in the Meeting of the North Atlantic Council in Wales. NATO Press Releases 120/2014, September 5th, 2014. In: https://www.nato.int/cps/ic/natohq/official_texts_112964.htm on August 29th, 2018.

⁴⁰⁰ Expert Commission on Norwegian Security and Defence Policy: Unified Effort, 2015. Oslo 2015, p. 50.

cross-border training exercises on their territories.⁴⁰¹ Large military training exercises involving Norway, Sweden, Finland, and further NATO member countries, the so-called Arctic Challenge Exercise (ACE), are to be held every two years. In 2013 and 2015 Norway was the lead country.⁴⁰² Furthermore, in 2016, the annual NATO-led anti-submarine warfare exercise was hosted by Norway as 'Dynamic Mongoose 2016'. In 2017, Norway hosted the 'Trident Javelin' exercise to test air capabilities and secure air superiority.⁴⁰³ In October and November 2018, Norway together with Iceland hosted 'Trident Juncture 18', NATO's largest high visibility exercise since 2015 with 40,000 participants, 130 aircraft, and 70 vessels from over 30 nations. The first part of 'Trident Juncture 18' – a major Live Exercise (LIVEX) – was executed on Norway's territory, in Finland, Sweden, and adjacent waters such as the Baltic Sea and the North Atlantic. The second part was a separate Computer-Assisted Command Post Exercise (CAX/CPX).⁴⁰⁴

Based on the report of an expert commission in 2015, the Norwegian Parliament approved the Long Term Defence Plan in November 2016.⁴⁰⁵ The report mentioned the efforts undertaken by Norway to enhance its defence capabilities, such as the prepositioning of materiel in Trøndelag to support a Marine Air Ground Task Force of 4,500 soldiers and – in case of conflict – the subsequent arrival of an expeditionary brigade of 15,000 to 18,000 soldiers.⁴⁰⁶

The geographical location of Norway between the GIUK Gap and the Russian Kola Peninsula, on the one hand makes Norway a key partner in NATO's ASW efforts at the Northern Flank⁴⁰⁷, on the other hand strengthens Norway's position to maintain dialogue and cooperation with Russia in such areas as Search and Rescue (SAR) and fishery.⁴⁰⁸ Norwegian defence priorities are shifting to the North. In 2007, the Soria Moria Declaration on International Policy prioritized the north of Norway and Svalbard. Several Norwegian military institutions were moved from the south of the country to the north, such as the headquarters of the Norwegian Armed Forces, which were moved from Jåttå to Reitan, near Bodø in 2009, and the headquarters of the Norwegian Army, which were moved to Bardufoss; and the headquarters of the coast guard, which were moved to Sortland in 2010. Only the Norwegian Navy has remained in Bergen. The headquarters of the Norwegian Armed Forces in Reitan

⁴⁰¹ Efjestad, Svein: Norway and the North Atlantic: Defence of the Northern Flank. In: Whitehall Papers, Vol. 87/1/2016, p. 66, 69.

⁴⁰² Wezeman, Siemon T.: Military Capabilities in the Arctic: A New Cold War in the High North? SIPRI Background Paper, October 2016. Solna 2016, p. 11.

⁴⁰³ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 48-49.

⁴⁰⁴ NATO ACT Operational Experimentation Branch: Exercise Trident Juncture 18. In: NATO Allied Command Transformation, August 20th, 2018. In: <https://www.act.nato.int/tj18> on September 3rd, 2018.

⁴⁰⁵ Efjestad, Svein: Norway and the North Atlantic: Defence of the Northern Flank. In: Whitehall Papers, Vol. 87/1/2016, p. 72.

⁴⁰⁶ Expert Commission on Norwegian Security and Defence Policy: Unified Effort, 2015. Oslo 2015, p. 43.

⁴⁰⁷ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 25.

⁴⁰⁸ NATO Parliamentary Assembly: Norway to remain 'NATO in the North'. In: NATO Parliamentary Assembly News, May 10th, 2018. In: <https://www.nato-pa.int/news/norway-remain-nato-north> on August 30th, 2018.

are one of the most modern joint operational headquarters of the European NATO member countries. Primarily, it is a centre for national military operations, but it can also be used as the centre of NATO operations.⁴⁰⁹ The NATO Joint Warfare Centre (JWC) responsible for the preparation of NATO units in joint operational warfare by training and developing computer-assisted Command Post Exercise planning and delivery has remained in Jättå near Stavanger.⁴¹⁰ Besides, Stavanger is Europe's capital city of crude oil as the national Norwegian oil holding Statoil is located there as are agencies of most of the international oil holdings.⁴¹¹

The backbone of Norwegian air defence capabilities, 60 F-16 combat aircraft, are based in Bodø. In 2008 it was decided to replace them with 52 F-35 aircraft armed with new Norwegian anti-ship missiles by 2024. The major part of the new F-35 aircraft will be based in Ørland as Bodø Main Air Station will be closed. A smaller detachment will be based at Harstad / Narvik Airport at Evenes. Ørland and Harstad will by then host the largest concentration of F-35 combat aircraft in Europe. The Ørland Main Air Station is also a forward base for NATO's NAEW&C which are periodically hosted by Norway for national and multinational exercises.⁴¹² Due to the limited range of the F-35 aircraft, in 2014 Norway joined with Poland and the Netherlands to purchase tanker aircraft which are expected to enter in service in 2019. *Shinkman* defined a further role of the F-35 aircraft: *Perhaps more importantly, the potential for military misunderstandings in this part of the world makes the F-35 an essential tool for de-escalations, due to its sophisticated sensors and computers that allow it to serve as more of an airborne intelligence collection hub and combat controller, not just a direct-attack craft.*⁴¹³ The agreement on Collocated Operating Bases – which allows the deployment of US air reinforcement on Norwegian airports in case of conflicts or war – guarantees a continued high grade of interoperability between the Norwegian and the US Armed Forces. The Norwegian Armed Forces have to provide equipment and support besides the airports in Bodø and Sola which are currently the only included airports in the agreement.⁴¹⁴

Norwegian naval capabilities rely on five large frigates based in Ramsund, near Narvik. These frigates are able to operate in Arctic waters and are equipped with the SPY-1F Aegis Weapon System to provide high-performance surveillance, detection, and tracking with a SPY-1 radar⁴¹⁵. Furthermore, a large

⁴⁰⁹ Expert Commission on Norwegian Security and Defence Policy: Unified Effort, 2015. Oslo 2015, p. 79.

⁴¹⁰ <http://www.jwc.nato.int/index.php/organization/who-we-are> on September 6th, 2018.

⁴¹¹ Knoller, Rasso: *Norwegen. Ein Länderporträt*. 1st edition, Berlin 2013, p. 109.

⁴¹² Expert Commission on Norwegian Security and Defence Policy: Unified Effort, 2015. Oslo 2015, p. 82-83.

⁴¹³ Shinkman, Paul D.: NATO's 'Northern Flank' Vulnerable to Russia. Norway, Sweden and Finland are out in the cold against a rise in Moscow's aggressive activity. In: U.S. News, November 3rd, 2016. In: <https://www.us-news.com/news/world/articles/2016-11-03/natos-northern-flank-vulnerable-to-russia> on September 26th, 2018.

⁴¹⁴ Expert Commission on Norwegian Security and Defence Policy: Unified Effort, 2015. Oslo 2015, p. 84.

⁴¹⁵ PRNewswire-FirstCall: Lockheed Martin completes factory testing of final Aegis Weapon System for Norway. In: Lockheed Martin news Releases, June 9th, 2006. In: <https://news.lockheedmartin.com/2006-06-09-Lockheed-Martin-Completes-Factory-Testing-of-Final-Aegis-Weapon-System-for-Norway> on September 3rd, 2018.

combat support ship joined the frigates in 2016 to increase their range and endurance. The Royal Norwegian Navy also operates two large research ships with electronic and signals intelligence equipment which are capable to operate in thin ice. The Norwegian Coast Guard is the only Norwegian unit to hold a patrol or warship which can break ice, the 'Svalbard'. It is only lightly armed, but – as three other large offshore patrol vessels – can operate in icy conditions and is equipped with a helicopter hangar. For undersea operations, Norway holds six diesel submarines which are capable of operating in the Arctic. Their replacement, estimated to be required by 2020, has yet to be decided on.⁴¹⁶ To improve the bleak supply situation of the armed forces in general and the navy in particular, Norway established the National Logistics Command in 2014.⁴¹⁷

Norway and Russia have cooperated since World War II, partly because they share a common border on land and on sea.⁴¹⁸ It will remain a necessity due to the increasing economic interest in the Arctic. 80% of Norway's sea territory is located north of the Arctic Circle⁴¹⁹, and Norway is one of the five littoral countries (Canada, Denmark/Greenland, Norway, Russia, and the USA) in the Arctic which all make territorial claims in the Arctic and the Arctic Ocean, particularly to exploit natural resources. Norway and Russia settled their territorial disputes in the Barents Sea in the Norwegian-Russian Barents Sea Treaty which is consistent with UNCLOS. However, Norway refuses to compromise about the EEZ around Svalbard.⁴²⁰ The archipelago in the waters connecting the Arctic Ocean and the northern North Atlantic (fig. 10) is an issue between Norway and Russia. Svalbard has been a part of Norway since the Svalbard Act of 1925⁴²¹, but Russia maintains a visible presence on Svalbard. The Svalbard Act declared Svalbard to be demilitarised zone and currently, no military forces are deployed in Svalbard. The islands are nevertheless of strategic interest especially to Russia which seeks to ensure that Western countries do not use the islands militarily in the future. Svalbard's economic position is also of major interest. Disagreements on the EEZ around Svalbard might increase as the Arctic becomes a new focus of resource exploitation.⁴²²

Although not directly bordering on the GIUK Gap, Norway's adjacent position makes the country a main geostrategic actor securing NATO's Northern Flank and the eastern flank of the GIUK Gap (fig. 10).

⁴¹⁶ Wezeman, Siemon T.: Military Capabilities in the Arctic: A New Cold War in the High North? SIPRI Background Paper, October 2016. Solna 2016, p. 10-13.

⁴¹⁷ Expert Commission on Norwegian Security and Defence Policy: Unified Effort, 2015. Oslo 2015, p. 86.

⁴¹⁸ Expert Commission on Norwegian Security and Defence Policy: Unified Effort, 2015. Oslo 2015, p. 14.

⁴¹⁹ Expert Commission on Norwegian Security and Defence Policy: Unified Effort, 2015. Oslo 2015, p. 14.

⁴²⁰ Ingimundarson, Valur: Managing a contested region: the Arctic Council and the politics of Arctic governance. In: The Polar Journal, Vol. 4/1/2014, p. 184, 186, 193.

⁴²¹ N.N.: The Svalbard Act. In: Sysselmannen på Svalbard, March 17th, 2016. In: <https://www.sysselmannen.no/en/Toppmeny/About-Svalbard/Laws-and-regulations/The-Svalbard-Act/> on September 3rd, 2018.

⁴²² Expert Commission on Norwegian Security and Defence Policy: Unified Effort, 2015. Oslo 2015, p. 22-23.



Fig. 10: Norway and its core areas of interest in the northern North Atlantic⁴²³

⁴²³ Expert Commission on Norwegian Security and Defence Policy: Unified Effort, 2015. Oslo 2015, p. 15.

4. Russia, the northern North Atlantic, and the GIUK Gap

4.1 General information

‘Wherever we are, there is Russia, perhaps to our east or west, to our north or south – but there is the Russian Bear.’

Tim Marshall: Prisoners of Geography, 2016⁴²⁴

Russia, with a land area of 17,098,242 km², is the largest country in the world and nearly twice as large as the second largest country, Canada. *‘In fact, if Russia were to lop off 7 million [km²], it would still be the largest – and the lopped-off section would rank seventh overall[.]’*⁴²⁵ Russia is home of the Taiga, the world’s largest habitat⁴²⁶ which covers 49.8% of Russia’s land area⁴²⁷. Continental Russia reaches from Europe (Kaliningrad at the Baltic Sea) in the West over 10,000 km to the Far East (Cape Provideniya at the Bering Sea). The most southern point is in Dagestan, the most northern point on the European part of Russia is 4,000 km away on the Kola Peninsula. Russia extends over eleven time zones.⁴²⁸ Russia is mostly a northern country as 65% of its land territory is located north of 65 degrees north latitude.⁴²⁹ In 2017, Russia had 143,990,000 inhabitants.⁴³⁰ The population density is 8.4 inhabitants per km², however, large areas are uninhabited or became depopulated within the past decades due to the major rural exodus, especially in the east of Russia. In 2016, 74.1% of all inhabitants lived in urban regions.⁴³¹ The climate extremities in Russia accelerate the rural exodus: Hot summers make for a subtropical climate in the south, while cold winters place the coldest point in the northern hemisphere at Verkhoyansk, where in 1892 a temperature of -67.7°C⁴³² was measured.⁴³³

The GDP per capita in 2018 is predicted to reach 11,947 US Dollar. After peaking at 15,997 US Dollar in 2013 and a low point of 8,900 US Dollar in 2016, the GDP per capita is thought to approximately

⁴²⁴ Marshall, Tim: Prisoners of Geography. Ten Maps That Tell You Everything You Need to Know About Global Politics. Revised and updated edition. London 2016, p. 4.

⁴²⁵ Mattyasovszky, Miklos: The Largest Countries In The World. The worlds (sic!) largest nations, measured in square kilometers of land area. In: World Atlas, World Facts, March 28th, 2018. In: <https://www.worldatlas.com/articles/the-largest-countries-in-the-world-the-biggest-nations-as-determined-by-total-land-area.html> on September 7th, 2018.

⁴²⁶ Mattyasovszky, Miklos: The Largest Countries In The World. The worlds (sic!) largest nations, measured in square kilometers of land area. In: World Atlas, World Facts, March 28th, 2018. In: <https://www.worldatlas.com/articles/the-largest-countries-in-the-world-the-biggest-nations-as-determined-by-total-land-area.html> on September 7th, 2018.

⁴²⁷ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Russland. April 2018. Wien 2018, p. 4.

⁴²⁸ Quiring, Manfred: Russland. Orientierung im Riesenreich. 1st edition, Berlin 2008, p. 14-15.

⁴²⁹ Åtland, Kristian: Russia’s Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 281.

⁴³⁰ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Russland. April 2018. Wien 2018, p. 1.

⁴³¹ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Russland. April 2018. Wien 2018, p. 3.

⁴³² <https://wmo.asu.edu/content/northern-hemisphere-lowest-temperature> on September 30th, 2018.

⁴³³ Quiring, Manfred: Russland. Orientierung im Riesenreich. 1st edition, Berlin 2008, p. 15.

reach the level of 2010. Russia's population is rather young with 68.9% of Russians between 15 and 64 years old in 2016. At 5.3%, the unemployment rate within this group is rather low. The main economic sectors are service industries including tourism (62.8% of GDP), the manufacturing sector (32.4% of GDP), and agriculture (4.7% of GDP). Russia's top export in 2016 was crude oil (42.3% of all exports), the main trading partners for exports were the Netherlands (10.2% of all exports)⁴³⁴ and China (9.8% of all exports). The main trading partners for imports were China (21% of all imports) and Germany (12.3% of all imports). The main imported goods were road vehicles (8.8% of all imports) and machineries (8.3% of all imports).⁴³⁵

Russia still performs poorly in improving its economy to reach western standards. Agriculture does not reach the productivity of that in western Europe. Industrial production besides military and spacecraft technology is not competitive on the world market. Russian exports mainly consist of crude materials and semi-finished goods.⁴³⁶ Russia's main natural resources are crude oil and natural gas. In 2016, Russia's oil reserves, i.e., sources that can be exploited profitably with present technologies, amounted to 13.4 billion tonnes and were the 7th largest in the world. Oil resources, i.e., sources that currently cannot be exploited profitably, amounted to 35.5 billion tonnes. Both the natural gas reserves – 47.8 trillion cubic metres in 2016 – and the natural gas resources – 152 trillion cubic metres in 2016 – were by far the largest worldwide.⁴³⁷ Russia's main oil field is located in western Siberia and provides around 70% of the country's oil production.⁴³⁸ However, the Russian economy is performing poorly also in crude oil and natural gas extraction. The challenges of extracting shale oil cannot be met completely by Russian oil and gas companies as they lack in capabilities and *'[...] demonstrate[e] a principle unwillingness to modernize'*.⁴³⁹

Russia borders on 14 countries and its land border line is 17,000 km long. Its coast line is more than twice that length: 43,000 km (fig. 11). Nevertheless, Russia is mostly a continental country and not a maritime power due to the location of its coastal regions. The main part of Russia's coasts facing oceans is located north of the Arctic Circle. Harbours and shipping routes along the longest coast line,

⁴³⁴ Data on Russia's main trading partners for exports from 2002 to 2016 show that the Netherlands have ranked among the top 3 every year. <https://www.europa-auf-einen-blick.de/russland/export.php> on November 26th, 2018. Pakhomov, Alexandr: Russia's Trading Partners: 100 Years After. In: Russian Economic Developments, Vol. 2/2014, p. 47. Auckland, Elliot: Russia's 10 Largest Trading Partners in 2014, How Many In The Correct Order Can You Name? In: Russia Insider, September 23th, 2014. In: https://russia-insider.com/en/politics_business/2014/10/30/04-05-18pm/russias_10_largest_trading_partners_2014_how_many_correct on November 26th, 2018. N.N.: Russia Trade Summary 2015. In: WITS – World Integrated Trade Solution, November 20th, 2018. In: <https://wits.worldbank.org/CountryProfile/en/Country/RUSSIA/Year/2015/Summarytext> on November 26th, 2018. Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Russland. April 2018. Wien 2018, p. 6.

⁴³⁵ Wirtschaftskammer Österreich, Stabsabteilung Statistik: Länderprofil Russland. April 2018. Wien 2018, p. 1, 3-4, 6.

⁴³⁶ Goehrke, Carsten: Russland. Eine Strukturgeschichte. Paderborn 2010, p. 304.

⁴³⁷ Kronauer, Jörg: Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg. Köln 2018, p. 55-56.

⁴³⁸ Åtland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 272.

⁴³⁹ Shchelin, Pavel: Russian National Security Strategy: regime Security and Elite's Struggle for 'Great Power' Status. In: Slovo, Vol. 28/2/2016, p. 93.

facing the Arctic Ocean, are frozen over for 180 to 260 days a year. The Sea of Okhotsk is frozen over up to 200 days per year. Even the Azov Sea in the south is partly ice-covered in winter. Russia's other adjacent seas such as the Baltic Sea and the Black Sea, do not offer direct access to the world's oceans as connecting chokepoints are controlled by other countries. The Caspian Sea is an inland sea without connection to any other sea or ocean at all.⁴⁴⁰



Fig. 11: Map of the Russian Federation and its adjacent regions⁴⁴¹

⁴⁴⁰ Goehrke, Carsten: Russland. Eine Strukturgeschichte. Paderborn 2010, p. 47.

⁴⁴¹ <https://www.mapsofworld.com/russia/> on September 14th, 2018.

4.2 Historical development

‘The past is a foreign country: they do things differently there.’

Leslie Poles Hartley: *The Go-Between*, 1953⁴⁴²

Until the 5th and 6th century A.D., Russia was settled by Slavic and Baltic tribes who assimilated the Finno-Ugrian tribes as the latter were agriculturally less developed. These tribes were not united and often at war with each other. For support in their struggles, the tribes called upon Swedish and Finnish Vikings led by Rurik who unified the northern part of today’s western Russia.⁴⁴³ Unification of the western part of today’s Russia started in 882 with the conquests of the Viking chief Oleg (Helgi). By the 11th century, his successors had subdued all tribes even far east of Kiev forming the realm of the Rus. Their realm with its capital Kiev dominated the region from the Baltic Sea to the Black Sea and from Galicia and Volhynia to Suzdal and Murom. Trade was mainly conducted by the rivers connecting the inland seas, as access to the North Sea and the Mediterranean Sea was only possible through the Baltic Sea and the Black Sea, respectively. Therefore, the connection to Constantinople was of major importance. The realm was not a united country, neither politically nor militarily. In 1230, it was divided into 18 territories housing about a dozen principalities each, which all had their own troops under their own command. This facilitated the Mongol conquest of all but the northwest of the realm of Kiev between 1237 and 1240. However, a new power rose in the western region of the former realm between the kingdom of Poland, the realm of the Teutonic Order, and Swedish-occupied Finland: the Grand Duchy of Lithuania. It stopped the expansion of the Mongols and occupied the western part of the former realm of Kiev from the 13th until the 15th century. In the first half of the 15th century, the Mongolian dominated principalities east of the Grand Duchy of Lithuania were brought under control of the Grand Duchy of Moscow to form a unified territorial state. Its leader, Ivan IV, crowned czar in 1547⁴⁴⁴, conquered the khanates of Kazan and Astrakhan in 1552 and 1556 respectively. By the 17th century, with the help of the Cossacks led by the Stroganov family the Russian empire of the czars had expanded through Siberia to the Pacific coast.⁴⁴⁵

In the 16th century, British seamen were hired to discover the North-East Passage to avoid the sea routes to India through the Mediterranean Sea and around Africa dominated by the Portuguese and the Spanish. In 1553, three ships gathered to sail the North-East Passage, but only one, the *Edward Bonaventure* commanded by Richard Chancellor, managed to pass the icy route and reached

⁴⁴² Hartley, Leslie Poles: *The Go-Between*. New York 2002, p. 15.

⁴⁴³ Kinder, Hermann / Hilgemann, Werner / Hergt, Manfred: *dtv-Atlas Weltgeschichte. Von den Anfängen bis zur Gegenwart. Aktualisierte Neuausgabe*. München 2006, p. 133.

⁴⁴⁴ Quiring, Manfred: *Russland. Orientierung im Riesenreich*. 1st edition, Berlin 2008, p. 40.

⁴⁴⁵ Gehrke, Carsten: *Russland. Eine Strukturgeschichte*. Paderborn 2010, p. 47, 65-66, 69-71, 76-79, 82-85.

Arkhangelsk in Siberia. Czar Ivan IV allowed Chancellor to establish British trading posts in Arkhangelsk and Kholmogory which led to the foundation of the Muscovy or Russia Company. In 1555, Ivan IV granted trading privileges to the British Empire in Russia such as exemptions from the payment of customs duties, ownership of warehouses and residences, and trade in Russia's interior. In 1648, czar Alexis of Russia (Aleksey Mikhailovich) repealed the privileges.⁴⁴⁶ Arkhangelsk remained the only Russian trading and military harbour in the Arctic Ocean until 1917. In 1721, czar Peter I the Great transformed the Czarism of Russia into the Russian Empire. He sought to establish naval bases in the ice-free waters of peripheral regions. He founded the Russian military navy and after conquering Livonia deployed it in newly-founded Saint Petersburg at the Baltic Sea, thus establishing Russia's Baltic Fleet. Catherine II the Great expanded the Russian Empire to the south, conquering the northern coast of the Black Sea including the Crimea and the mouth of the river Dniester, Georgia, and the northern Caucasus Mountains. This allowed the foundation of Russia's Black Sea Fleet, but the fleet was – and still is – depending on Turkey for the access to the Mediterranean Sea and on to the North through the Bosphorus and the Dardanelles. Finally, the Partitions of Poland negotiated between the Russian Empire, Austria, and Prussia in 1772-1795 shaped the Russian territory at the end of the 18th century. It extended from the Baltic Sea to the Pacific coast, ruling over the East Slavs such as the Poles in the west of the Russian Empire and several non-Slavic peoples. In 1795, only 48.9% of all inhabitants of the Russian Empire were Russians; amongst others, 19.8% were Ukrainians, 8.3% Belarussians, and 6.2% Poles. In 1809, Russia incorporated Finland as autonomous Duchy, reinforcing dominance in the Baltic Sea. The re-established state of Poland in 1815 was controlled by the Russian czar, who in personal union was also the king of Poland. Russia then shifted its focus on southeast Europe. Between 1801 and 1830, Russia annexed Transcaucasia including Armenia, Abkhazia, northern Azerbaijan, Dagestan, and Georgia. However, Russia was defeated on its own territory by English and French troops allied with the Ottoman Empire in the Crimean War (1853-1856) and by Japan in the Russo-Japanese War (1904-1905). The Russo-Japanese War highlighted the problem of Russia's continentality and destroyed its naval power, impeding its quest to be regarded as a world power. Russia's Pacific Fleet, established in 1813, was destroyed by a Japanese surprise attack, triggering the breakout of war in February 1904. The Baltic Fleet had to step in but reached the battle zone only in May 1905 after sailing around Africa and India to Japan, where it was defeated. The war led to a revolution and major reforms within the Russian Empire, although it still emphasized power politics and aspired prestige rather than promoting interests of economy and society to deal with modernisation and industrialisation. Russian international trade by ship suffered by the Russia Empire's concentration on the domestic shipping and the investment in the navy instead of the merchant

⁴⁴⁶ Phipps, Geraldine M.: The Russian Embassy of London of 1645-46 and the Abrogation of the Muscovy Company's Charter. In: *The Slavonic and East European Review*, Vol. 68/2/1990, p. 257, 276; N.N.: Russia Company. In: Guildhall Library Manuscripts Section, August 2007. In: <https://www.history.ac.uk/gh/russia.htm> on September 11th, 2018.

fleet. Shipping on sea and the building of merchant ships were dominated by foreign countries and companies. In 1910, 66% of Russian imports and 80% of Russian exports were traded by sea, but only 8% of the traded GRT were transported on Russian ships. As a result from the continuous investment in the navy, a naval base was established in Murmansk in 1917 when the railway connection from Saint Petersburg to the Kola Peninsula was completed. This gave the Russian navy a second base to operate from in the Arctic Ocean in addition to Arkhangelsk.⁴⁴⁷

During World War I it became obvious that Russia was not able to endure a long war due to its economic and infrastructural deficiencies. This led to the February Revolution and the October Revolution in 1917 which overthrew the autocracy of the Czardom. In 1922, the USSR was founded encompassing Russia, Belarus, and the reconquered territories of Ukraine, Armenia, Georgia, and Azerbaijan. Territories of the former Russian Empire in the west were not part of the USSR, as Finland, the Baltic States, and Poland had emerged from World War I as independent countries, Bessarabia had become a part of Rumania, and the west of Belarus and Galicia a part of Poland.⁴⁴⁸

In the Russian Civil War the UK, France, the USA, and Japan supported the non-communist side. The USA landed 5,000 troops in Arkhangelsk and 8,000 troops in Vladivostok, but had to withdraw in 1919 and 1920 respectively. The USA and the communist led USSR continued the fight politically, agitating against each other. In reference to the ideological conflict between communists and the Western order, the historian *Carley* raised the question why the majority of historians date the start of the Cold War to 1945, when in his opinion 1917 should be the accepted begin.⁴⁴⁹ In spite of all political hostility, economic interactions between the USA and the newly emerged USSR constantly grew. In 1938, the USA were the USSR's main trading partner, accounting for 28.5% of all Soviet imports. The USA even allowed the trade of armament technology except combat vessels.⁴⁵⁰

During World War II, the USSR – at first siding with Germany to divide Poland – became an ally of the USA and the UK after Germany invaded Soviet territory in 1941. The USSR was at first unable to stop the German advance eastward up to Saint Petersburg (by then known as Leningrad) and Volgograd (by then known as Stalingrad)⁴⁵¹, but until 1945 managed to force back the German invasion and to occupy East Europe up to the Elbe river in Germany and the Enns river in Austria. About 91% of all Russians have at least one relative who died during World War II. An estimated 8.8 million Soviet soldiers died during World War II, and another 3 million were wounded. Including deaths by

⁴⁴⁷ Goehrke, Carsten: *Russland. Eine Strukturgeschichte*. Paderborn 2010, p. 50-52, 61-62, 87-91, 383.

⁴⁴⁸ Goehrke, Carsten: *Russland. Eine Strukturgeschichte*. Paderborn 2010, p. 62, 94, 96.

⁴⁴⁹ Carley, Michael J.: *The Early Cold War*. June 1996, cited in Kronauer, Jörg: *Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg*. Köln 2018, p. 90.

⁴⁵⁰ Kronauer, Jörg: *Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg*. Köln 2018, p. 92-93.

⁴⁵¹ For a detailed portrait about the Battle of Stalingrad see Beevor, Antony: *Stalingrad. The Fateful Siege: 1942-1943*. London 1999.

hunger, compulsory labour, and disease away from the frontlines, the total losses of human lives in the USSR sums up to 20-30 million.⁴⁵² These losses were devastating for the USSR's citizens.⁴⁵³

After World War II, dispute between the western allies and the USSR over the future ruling in Europe divided the victorious former allies and led to the formation of the western block influenced by the USA and the eastern block influenced by the USSR and to the Cold War. Already in 1946, USSR's leader Stalin demanded that Turkey ceded control of the straits to the USSR to maintain the access to the Mediterranean Sea. Turkey resisted the pressure and as a founding member of NATO in 1949 consolidated its affiliation with the western countries.⁴⁵⁴ In the Cold War two superpowers emerged, the USA and the USSR, threatening each other with improved military power and nuclear armament, but cooperating frequently to achieve disarmament such as the Intermediate-Range Nuclear Forces (INF) Treaty signed in 1987. The USSR improved its economy, industry, and armed forces, and increased its influence on countries in East Asia and Africa.⁴⁵⁵

In the 1960ies and 1970ies, the USSR enlarged its two fleets with free access to the oceans: the Pacific Fleet in Vladivostok and on the Kamchatka Peninsula, and the Northern Fleet in Murmansk on the Kola Peninsula. The Baltic Fleet and the Black Sea Fleet continued to perform defensive tasks. As access to the North Atlantic for the USSR's fleets was partially blocked, the USSR established a large nuclear submarine fleet to retain the ability to attack targets worldwide. While the USSR succeeded in building a nuclear submarine fleet rivalling that of the USA, it did not manage to establish an adequate fleet of aircraft carriers. To reduce its limitation in ice-free and conveniently accessible naval bases, the USSR secured harbour usage rights in other countries such as Cuba, Guinea or Somalia.⁴⁵⁶

The Northern Fleet strongly benefited from the major build-up which the USSR continued in the 1980ies, making it the most modern and powerful of the four Soviet fleets. Newly developed vessels were first stationed with the Northern Fleet at Murmansk. In the mid 1980ies, the Northern Fleet consisted of 203 submarines and 220 surface vessels. The number of submarines is striking: 57% of all USSR's submarines and 52% of the strategic nuclear ballistic missile submarines (SSBN) were deployed in the North Atlantic and Arctic Ocean, but only 17% of Soviet surface vessels. To protect the SSBN, 60% of all Kresta-class cruisers and 70% of nuclear attack submarines were also based at the Kola Peninsula. The Northern Fleet was also home of the antisubmarine aircraft carrier 'Kiev' and the Alpha-class submarines which are considered to be the fastest and deepest operable submarines in naval history. By its composition, the Northern Fleet was a strategic submarine fleet, relying on

⁴⁵² Quiring, Manfred: *Russland. Orientierung im Riesenreich*. 1st edition, Berlin 2008, p. 50-51.

⁴⁵³ Altrichter, Helmut: *Kleine Geschichte der Sowjetunion 1917-1991*. 4th updated and extended edition, München 2013, p. 23, 28, 60, 99-100, 107, 114.

⁴⁵⁴ Goehrke, Carsten: *Russland. Eine Strukturgeschichte*. Paderborn 2010, p. 62.

⁴⁵⁵ Altrichter, Helmut: *Kleine Geschichte der Sowjetunion 1917-1991*. 4th updated and extended edition, München 2013, p. 127-128, 130, 146, 179.

⁴⁵⁶ Goehrke, Carsten: *Russland. Eine Strukturgeschichte*. Paderborn 2010, p. 62-63.

SSBN as its main weapon with other vessels acting in supporting roles. The high number of military vessels made the northern North Atlantic a main geostrategic area, particularly the Barents Sea, which boasted the highest density of naval vessels in the world. By 1989, 225 air defence fighters stationed at 16 major airfields, additional Soviet navy land-based bombers and fighters, 100 surface-to-air missile installations, and radar tracking sites were deployed to protect the Kola Peninsula.⁴⁵⁷ However, to reach a convenient launch position for short-range ballistic missiles in the North Atlantic, both submarines and surface vessels had to leave the Barents Sea across the Norwegian Sea and deploy close to the GIUK Gap. As the NATO concentrated its anti-submarine warfare capabilities in the GIUK Gap, avoiding or undermining this chokepoint was a main task for USSR's SSBN (fig. 12). Only with the establishment of the Delta-class and Typhoon-class submarines, the USSR was able to attack US targets from the Arctic Ocean and thus could operate from north of the GIUK Gap and close to the home base in Murmansk.⁴⁵⁸ *Thus, the Arctic waters north of the Norwegian Sea gradually were transformed from a military vacuum prior to World War II, to a military flank in the 1950-1970 period, and to a military front in the late 1980s.*⁴⁵⁹

⁴⁵⁷ Hooker, Richard D. Jr.: NATO's Northern Flank: A Critique of the Maritime Strategy. In: Parameters, June 1989, p. 31.

⁴⁵⁸ Brubaker, R. Douglas / Østreng, Willy: The Northern Sea Route Regime: Exquisite Superpower Subterfuge? In: Ocean Development & International Law, Vol. 30/4/1999, p. 302.

⁴⁵⁹ Brubaker, R. Douglas / Østreng, Willy: The Northern Sea Route Regime: Exquisite Superpower Subterfuge? In: Ocean Development & International Law, Vol. 30/4/1999, p. 302.

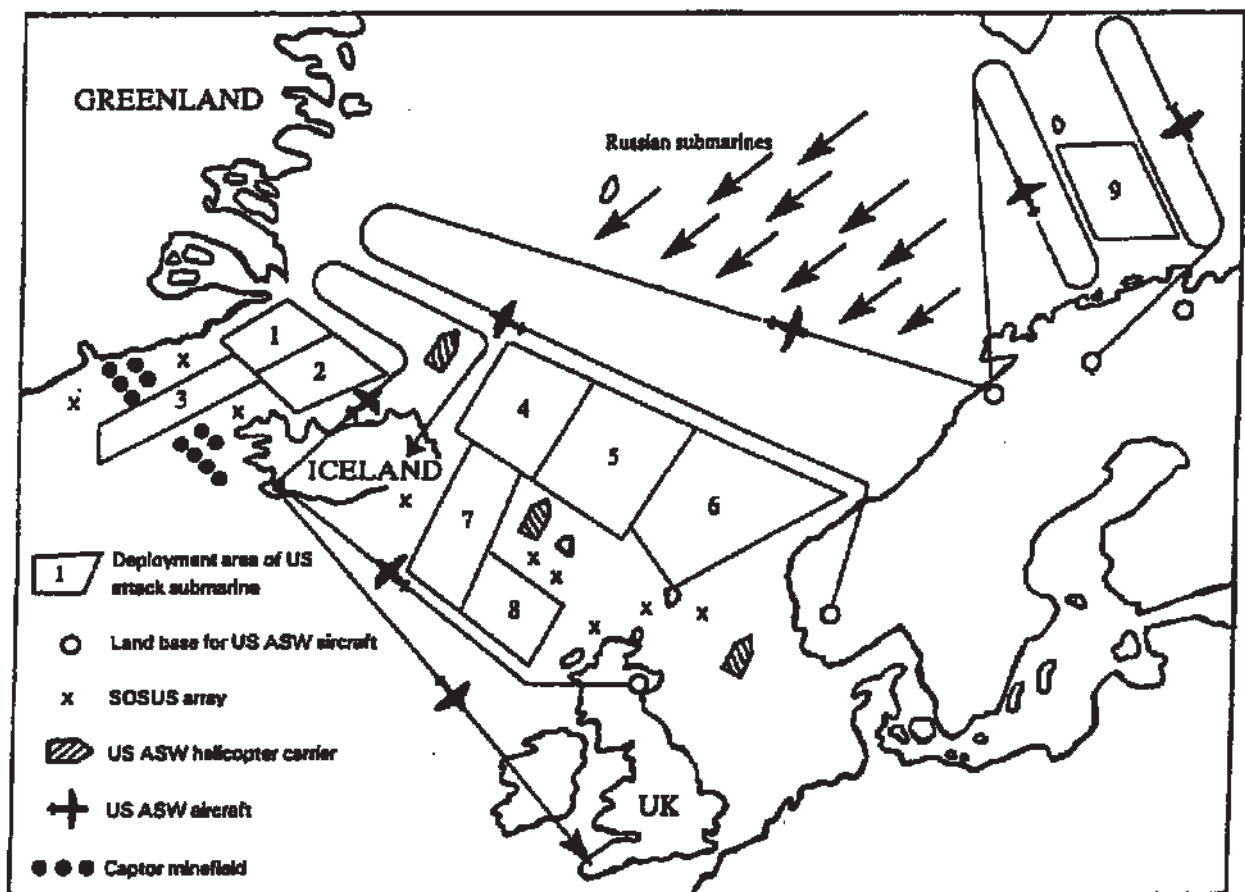


Fig. 12: Soviet perception of the NATO deployments in the GIUK Gap in 1981⁴⁶⁰

Starting in 1990, the ‘satellite’ states in eastern Europe and the Soviet republics one by one declared their ‘independence’ from the USSR. In December 1991, the USSR was formally dissolved and eleven of its former 15 members formed a much looser union, the Commonwealth of Independent States (CIS).⁴⁶¹ The former Russian Soviet Federative Socialist Republic became the official legal successor of the USSR. It changed its name to Russian Federation in 1992, it is commonly referred to simply as Russia.⁴⁶² As legal successor of the USSR, Russia inherited a heavy economic burden. In 1992, the debts the former USSR owed to the Paris Club, an informal group of official creditors⁴⁶³, amounted to 68 billion US Dollar. The main creditor was Germany with a share of 40-45%.⁴⁶⁴ In the 1990ies, the Russian President Boris Yeltsin strongly supported shifting Russia into the western sphere of influence to avoid a resurgence of the communist party.⁴⁶⁵ Russia joined several international

⁴⁶⁰ Wit, Joel S.: Advances in Anti-submarine Warfare. In: Scientific American, Vol. February 1981, p. 41, cited in Brubaker, R. Douglas / Østreng, Willy: The Northern Sea Route Regime: Exquisite Superpower Subterfuge? In: Ocean Development & International Law, Vol. 30/4/1999, p. 303.

⁴⁶¹ Altrichter, Helmut: Kleine Geschichte der Sowjetunion 1917-1991. 4th updated and extended edition, München 2013, p. 191-192, 198.

⁴⁶² Goehrke, Carsten: Russland. Eine Strukturgeschichte. Paderborn 2010, p. 102, 406.

⁴⁶³ <http://www.clubdeparis.org/> on September 12th, 2018.

⁴⁶⁴ Kronauer, Jörg: Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg. Köln 2018, p. 57.

⁴⁶⁵ Goehrke, Carsten: Russland. Eine Strukturgeschichte. Paderborn 2010, p. 104.

organizations under western influence, such as the International Monetary Fund (IMF) in 1992⁴⁶⁶, the Council of Europe in 1996, and the World Trade Organization (WTO) in 2012.⁴⁶⁷ Russia also joined the NACC in 1991 and the PfP in 1994, diminishing the geostrategic significance of the North Atlantic as a zone of conflict between NATO and Russia. The relationship between Russia and NATO intensified when the NATO-Russia Founding Act was installed in 1997 and the NATO-Russia Council in 2002 opened a forum for consultation and cooperation on military and civilian issues.⁴⁶⁸ In the 1990ies, Russia lost influence while the USA rose to the sole global superpower. *Trenin* reported in 2016, that western politicians in the late 1990ies considered Russia to be *'irrelevant and began to envision a global system that would exclude it'*.⁴⁶⁹ Russia under Yeltsin was economically extremely weak. In 1998, the GDP dropped to 55% of the 1990 value. 24% of the Russian population lived in absolute poverty with less than 2 US Dollar per day at disposal. The turnover came when Vladimir Putin was elected president in 2000. The GDP increased from 279 billion US Dollar in 2000 to 820 billion US Dollar in 2005 and to 1.64 billion US Dollar in 2010. In 2000, 29% of the Russian population lived in poverty; in 2010 this number dropped to 19.7%. In the beginning of his presidency, Putin continued the policy of Yeltsin and engaged in cooperation with the west. After the terrorist attacks in the USA on September 11th, 2001, Putin allied with the USA in the invasion of Afghanistan. Russia and NATO coordinated a joint training project for drug control in 2005. In 2008, Russia allowed NATO the transport of military equipment through Russian territory, extended in 2010 to weapon transport. In 2012, Russia allowed NATO to enter its airspace and to use the airport in Ulyanovsk to transport supplies to Afghanistan. These concessions were withdrawn by Russia in 2015 when the conflict in Ukraine heated up.⁴⁷⁰ This withdrawal resulted from a gradual change of Putin's perception of the West. The position of Europe and the USA on regional developments like the so-called 'colour revolutions' in Georgia in 2003, the Ukraine in 2004, and Kyrgyzstan in 2005, raised scepticism in Russia about the intentions of both regarding former Soviet territory.⁴⁷¹ The admission to NATO of all former Warsaw Pact member countries except Russia (1999 and 2004) and the Baltic states (2004) made NATO and Russia direct neighbours in eastern Europe. As plans arose to affiliate Georgia and the Ukraine

⁴⁶⁶ N.N.: List of Members. In: International Monetary Fund, March 7th, 2017. In: <https://www.imf.org/external/np/sec/memdir/memdate.htm> on September 11th, 2018.

⁴⁶⁷ N.N.: Russia's membership in international organizations. In: Russian Investment Agency, undated. In: <https://www.investment-in-russia.com/site/en?view=RUSSIA-AS-A-MEMBER-OF-THE-WTO-AND-OTHER-INTERNATIONAL-UNIONS> on September 11th, 2018.

⁴⁶⁸ Olsen, John Andreas: Introduction: The Quest for Maritime Supremacy. In: Whitehall Papers, Vol. 87/1/2016, p. 4.

⁴⁶⁹ Trenin, Dmitri: Russia's Post-Soviet Journey. From Europe to Eurasia. In: Foreign Affairs, December 25th, 2016. In: <https://www.foreignaffairs.com/articles/russia-fsu/2016-12-25/russias-post-soviet-journey> on September 12th, 2018.

⁴⁷⁰ Kronauer, Jörg: Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg. Köln 2018, p. 125-126, 145.

⁴⁷¹ Foxall, Andrew: From Evropa to Gayropa: A Critical Geopolitics of the European Union as Seen from Russia. In: Geopolitics, December 29th, 2017, p. 3.

with NATO, Russia faced future direct borders with NATO also in the southwest.⁴⁷² Russia considers these countries a part of its exclusive sphere of influence that it infers from Russian Czarism territories and influence⁴⁷³ at the time of Catherine II the Great.⁴⁷⁴ As the integration of the former Soviet Republics in the South Caucasus and Central Asia into the Russian Federation was out of question, Russia tried to bind these countries economically and politically to itself, considering them to be part of the heritage of the Russian Empire.⁴⁷⁵ Putin strongly disapproved of the new world concept of US unilateralism. He saw the new world order in multilateralism with a major impact of a powerful Russia⁴⁷⁶, although in 2008 Khanna declared *Russia's time as superpower is over*⁴⁷⁷. In 2008, Russia's prime minister Dmitry Medvedev explained Russia's commitment to a multipolar world breaching the hegemony of the USA: *'[...] the world should be multi-polar. A single-pole world is unacceptable. Domination is something we cannot allow. We cannot accept a world order in which one country makes all the decisions, even as serious and influential a country as the United States of America. Such a world is unstable and threatened by conflict.'*⁴⁷⁸

Georgia became a focal point of conflict: On August 7th, 2008, Georgian troops were deployed in South Ossetia, an autonomous republic of Georgia which had sought independence since the fall of the USSR. Within the following five days, Russian troops, in part already deployed as peacekeeping force in South Ossetia, occupied the region and advanced into Georgian territory. On August 26th, 2008, Russia officially recognized South Ossetia and Abkhazia, a second Georgian region wishing to secede, as independent states.⁴⁷⁹ Georgia had been actively pursuing integration into a western-dominated Europe since the 2000s, seeking both NATO and EU membership.⁴⁸⁰ However, Russia considered the country to be within its self-proclaimed 'zone of privileged interests' and therefore opposed Georgia's admittance to NATO, which was advocated by the USA. The brief war between

⁴⁷² Kronauer, Jörg: Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg. Köln 2018, p. 106-107.

⁴⁷³ For detailed information about the concept of Russia's sphere of influence see Suslov, Mikhail: 'Russian World' Concept: Post-Soviet Geopolitical Ideology and the Logic of 'Spheres of Influence'. In: Geopolitics, Vol. 23/2/2018, p. 330-353.

⁴⁷⁴ Goehrke, Carsten: Russland. Eine Strukturgeschichte. Paderborn 2010, p. 104.

⁴⁷⁵ Kronauer, Jörg: Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg. Köln 2018, p. 106-107, 109.

⁴⁷⁶ Goehrke, Carsten: Russland. Eine Strukturgeschichte. Paderborn 2010, p. 104.

⁴⁷⁷ Khanna, Parag: The Second World: Empires and Influence in the New Global Order. New York 2008, cited in Gärtner, Heinz: USA – Weltmacht auf neuen Wegen. Berlin 2010, p. 89. Translation by the author.

⁴⁷⁸ Medvedev, Dmitry: Interview given by Dmitry Medvedev to television Channels Channel One, Russia, NTV. In: President of Russia, August 31st, 2008. In: <http://en.kremlin.ru/events/president/transcripts/48301> on September 12th, 2018.

⁴⁷⁹ Kronauer, Jörg: Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg. Köln 2018, p. 148.

⁴⁸⁰ Cecire, Michael Hikari: Whither the Euro-Atlantic Space? Redefining Euro-Atlantic Security in a Post-Post-Cold War Era. In: e-cadernos ces, Vol. 19/2013, p. 211.

Georgia and Russia confirmed Europe's doubts about enlarging NATO into countries within Russia's self-proclaimed 'sphere of influence'.⁴⁸¹

In 2014, NATO and the EU again encountered Russia's opposition to interference with its self-proclaimed 'sphere of influence'. Following the Euromaidan Revolution in Ukraine, Russia strove to hamper a future NATO membership of Ukraine. Already on February 22nd, 2014, Putin agreed to a military invasion of Crimea.⁴⁸² In an internationally not accepted plebiscite on March 16th, 2014, 96.7% of the Crimean population voted for the annexation of Crimea by the Russian Federation. Only four days later, an agreement between Russia and Crimea confirmed the transition of the peninsula in the Black Sea to Russia. In April 2014, separatist groups in the eastern Ukrainian region of Donbass proclaimed the independence of the regions around Donetsk and Luhansk. This led to a military conflict between the western-oriented Ukrainian government on one side and the self-proclaimed independent republics in eastern Ukraine with Russian support on the other.⁴⁸³ The still ongoing military operations of the separatists in the Donbass province are supported by Russia's deployment of about 35,000 troops in the Donbass province applying hybrid warfare tactics. By August 2015, 2,100 dead and 7,020 wounded in the Ukrainian Army, and 2,000 dead and 3,200 wounded in the Russian troops were reported. Up to 9,000 civilian dead⁴⁸⁴ and over a million refugees absorbed by Russia were estimated.⁴⁸⁵ Currently, a sizeable part of the Ukraine is claimed by Russia (Crimea) or under effective control of Russian forces (Donetsk and Luhansk regions in the Donbass province).⁴⁸⁶ Felgenhauer quoted the former commander of Russia-backed rebels in Donbass, Igor Strelkov, that for him *'like some other radical Russian nationalists, [...] true Russian patriots must fight for Russian interests by defending truly Russian land, like in Donbas[s]'*.⁴⁸⁷

The ongoing conflict weakens the Ukraine economically and militarily, and makes its admission to NATO doubtful.⁴⁸⁸ *'The conflict in Ukraine has rapidly transmogrified from what at first appeared to be a limited intervention into Crimea, a recognized bastion of pro-Russian sentiment in Ukraine [...], into a botly-contested 'hybrid'*

⁴⁸¹ German, Tracey: NATO and the enlargement debate: enhancing Euro-Atlantic security or inciting confrontation? In: International Affairs, Vol. 93/2/2017, p. 293, 299-300.

⁴⁸² Graef, Alexander: Wer macht Außenpolitik in Russland? Akteure, Diskurse, Entscheidungen. In: ZFAS – Zeitschrift für Außen- und Sicherheitspolitik, Vol. 10/2017, p. 8.

⁴⁸³ Kronauer, Jörg: Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg. Köln 2018, p. 191.

⁴⁸⁴ Office of the United Nations High Commissioner for Human Rights: Report on the human rights situation in Ukraine. 16 February to 15 May 2018. Geneva 2018, p. 4.

⁴⁸⁵ Payne, Keith B. / Foster, John S.: Russian strategy: Expansion, crisis and conflict. In: Comparative Strategy, Vol. 36/1/2017, p. 27.

⁴⁸⁶ Cecire, Michael Hikari: Whither the Euro-Atlantic Space? Redefining Euro-Atlantic Security in a Post-Post-Cold War Era. In: e-cadernos ces, Vol. 19/2013, p. 206.

⁴⁸⁷ Strelkov, Igor, cited in Felgenhauer, Pavel: Death of Military Contractors Illuminates Russia's War by Proxy in Syria. In: The Jamestown Foundation, February 15th, 2018. In: <https://jamestown.org/program/death-military-contractors-illuminates-russias-war-proxy-syria/> on September 18th, 2018.

⁴⁸⁸ Kronauer, Jörg: Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg. Köln 2018, p. 191.

*war in eastern Ukraine between Moscow-backed proxies and Ukrainian forces loyal to the Kiev government, which includes a mixture of regular government forces and allied, if oftentimes effectively autonomous, pro-Kiev militias [...].*⁴⁸⁹

The interest of Russia in Crimea is closely related to Russia's Black Sea Fleet stationed in Sevastopol on the Crimean Peninsula. The Russian naval base Novorossiysk near Sochi on Russian territory is no viable replacement for Sevastopol because it is too small and does not offer adequate protection from rough sea state for moored ships. The Black Sea Fleet is strategically important to Russia to secure its dominance in the Black Sea region and the approach to the Mediterranean Sea. Therefore, keeping Crimea under its control is desirable for Russia.⁴⁹⁰

After the Russian annexation of Crimea, the EU and the USA have imposed sanctions on Russia since 2014⁴⁹¹, substantially weakening the Russian economy. The shortage of microelectronics industry products and machine tooling resulting from the sanctions is strongly affecting the Russian shipbuilding industry and the modernisation of Russia's Armed Forces.⁴⁹² In the years before the Crimean conflict, Russia had spent an estimated 500 million US Dollar per year on US merchandise that could be used for both military and civilian purposes alike.⁴⁹³ *Felgenhauer* described these products as electronic components and special glass and steel for Russian weapons and satellites, the application of sanctions against which mainly compromised Russian reconnaissance capabilities: *France and Germany were making double-use satellites, which were basically military satellites, recon satellites, for Russia. And all that kind of stopped.*⁴⁹⁴

Since 2015, Russia's navy has been increasingly engaged in the eastern Mediterranean Sea. In Syria, Russia holds a *'very much enlarged'*⁴⁹⁵ naval base in Tartus and an airbase in Hmeimim. A permanent Russian navy squadron has been deployed to the Mediterranean Sea. The airbase in Hmeimim gives Russia air capability and air cover for this squadron even though it lacks an aircraft carrier in the

⁴⁸⁹ Cecire, Michael Hikari: Whither the Euro-Atlantic Space? Redefining Euro-Atlantic Security in a Post-Post-Cold War Era. In: e-cadernos ces, Vol. 19/2013, p. 206.

⁴⁹⁰ Kronauer, Jörg: Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg. Köln 2018, p. 192-193.

⁴⁹¹ Cecire, Michael Hikari: Whither the Euro-Atlantic Space? Redefining Euro-Atlantic Security in a Post-Post-Cold War Era. In: e-cadernos ces, Vol. 19/2013, p. 206.

⁴⁹² Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 17.

⁴⁹³ Felgenhauer, Pavel, cited in Janjevic, Darko: The strengths and weaknesses of Russia's military. In: DW, April 7th, 2018. In: <https://www.dw.com/en/the-strengths-and-weaknesses-of-russias-military/a-43293017> on September 18th, 2018.

⁴⁹⁴ Janjevic, Darko: The strengths and weaknesses of Russia's military. In: DW, April 7th, 2018. In: <https://www.dw.com/en/the-strengths-and-weaknesses-of-russias-military/a-43293017> on September 18th, 2018.

⁴⁹⁵ Felgenhauer, Pavel / Greene, David: Russia's Military Capabilities. David Greene talks with Pavel Felgenhauer. In: npr morning edition, April 12th, 2018. In: <https://www.npr.org/2018/04/12/601759923/russias-military-capabilities?t=1537280609027> on August 19th, 2018.

eastern Mediterranean Sea.⁴⁹⁶ A preliminary agreement between Russia and Egypt about Russian use of Egyptian military bases was signed.⁴⁹⁷

In the mid-2000s Russian leaders started to re-direct their policy focus. Steps were made to increase – mainly economical – interactions with Asian countries, in particular with China.⁴⁹⁸ *Richardson* described this new approach as ‘*somewhat of an eastward reorientation*’.⁴⁹⁹ Already in 2005, Russia supported China in its request for the withdrawal of US Armed Forces from Central Asia.⁵⁰⁰ China welcomed the Russian assistance, but its main focus is not on Russia but on the regions east and south of the country. Russia strives to keep China on benevolent terms, but continues to bolster its position in regions where Russian and Chinese interests compete, such as in Central Asia.⁵⁰¹ *Trenin* explained the focus on China as admiration: ‘*Moscow admires China’s progress and, careful but not fearful of its giant neighb[or], is cooperating ever more closely with Beijing*’.⁵⁰² However, this cooperation is unbalanced. For China, Russia is mainly a raw material supplier and a sales market. The exports from Russia to China are mainly crude oil, natural gas, coal, and wood. The imports from China are mostly finished products.⁵⁰³ In addition, there are Russian fears about a lack of Chinese investment in the far east of Russia, limits of technology transfer, and Chinese enterprises hampering Russian competitors.⁵⁰⁴

In 2011, Putin promoted a Eurasian Union, a supranational economic coalition of post-Soviet-countries in Asia, which would tightly cooperate with the EU. The Eurasian Economic Union (EAEU) was founded in 2015 but as a counterweight to the EU rather than as a partner due to the sanctions imposed on Russia by the EU.⁵⁰⁵

Russia’s reorientation towards the EAEU and China after the imposition of EU and US sanctions is part of what is called ‘Eurasianism’.⁵⁰⁶ The term ‘Eurasianism’ was coined by Russian emigrants in the 1920ies. It referred to a unique synthesis of European and Asian principles such as religion, strong state, and collectivist economy⁵⁰⁷, and by scientific and ideological arguments declared Russia to be

⁴⁹⁶ Felgenhauer, Pavel / Greene, David: Russia’s Military Capabilities. David Greene talks with Pavel Felgenhauer. In: npr morning edition, April 12th, 2018. In: <https://www.npr.org/2018/04/12/601759923/russias-military-capabilities?t=1537280609027> on August 19th, 2018.

⁴⁹⁷ Kronauer, Jörg: Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg. Köln 2018, p. 199-200.

⁴⁹⁸ Trenin, Dmitri: Russia Leaves the West. In: Foreign Affairs, Vol. 85/4/2006, p. 90.

⁴⁹⁹ Richardson, Paul B.: Geopolitical cultures, pragmatic patriotism, and Russia’s disputed islands. In: Eurasian Geography and Economics, January 8th, 2018, p. 6.

⁵⁰⁰ Trenin, Dmitri: Russia Leaves the West. In: Foreign Affairs, Vol. 85/4/2006, p. 90.

⁵⁰¹ Trenin, Dmitri: No Return to the Past for Russia. In: The International Spectator, Vol. 43/3/2012, p. 11-12.

⁵⁰² Trenin, Dmitri: Russia Leaves the West. In: Foreign Affairs, Vol. 85/4/2006, p. 90.

⁵⁰³ Ballin, André: Die neue Allianz im Osten. In: Der Standard, September 12th, 2018, p. 5.

⁵⁰⁴ Richardson, Paul B.: Geopolitical cultures, pragmatic patriotism, and Russia’s disputed islands. In: Eurasian Geography and Economics, January 8th, 2018, p. 7.

⁵⁰⁵ Foxall, Andrew: From Evropa to Gayropa: A Critical Geopolitics of the European Union as Seen from Russia. In: Geopolitics, December 29th, 2017, p. 14.

⁵⁰⁶ Foxall, Andrew: From Evropa to Gayropa: A Critical Geopolitics of the European Union as Seen from Russia. In: Geopolitics, December 29th, 2017, p. 13.

⁵⁰⁷ Foxall, Andrew: From Evropa to Gayropa: A Critical Geopolitics of the European Union as Seen from Russia. In: Geopolitics, December 29th, 2017, p. 13.

the centre of a Eurasian cultural, political, and ethno-linguistic community which is perceptibly different – and even superior⁵⁰⁸ – to Europe. In post-Soviet Russia, the term became a popular keyword to define Russia's role as that of a patron of civilizational values in continental Eurasia while promoting a pernicious anti-Westernism. The best-known proponent of this 'neo-Eurasianism' in post-Soviet Russia is Alexander Dugin.⁵⁰⁹

Within the framework of the vaguely defined ideology of Eurasianism, Russia developed a 'grand Eurasian' strategy. This strategy considers Russia a free unit in the north-central part of Eurasia. Russia should focus on cooperation with China in the east, on trade with the EU in the west, on historical links with India in the south, on challenges emerging in the Muslim world, and on a more pronounced presence in Central Asia. Accordingly, Russia's focus has been on diminishing US influence in Central Asia while increasing its own influence. Russia has developed bilateral relationships and has founded and has been promoting multi-national institutions such as the EAEU, the Shanghai Cooperation Organisation, and the Collective Security Treaty Organization.⁵¹⁰

Since the annexation of Crimea and the Ukrainian war in 2014 and the consequent imposition of sanctions by the EU and the USA, Russian-Chinese cooperation has intensified. Economically, Russia and China already in May 2014 signed a deal about natural gas exports from Russia to China worth about 400 billion US Dollar over 30 years. Further investment contracts in areas such as coal, copper ore, petrochemical production, and machine building have followed. Russia declared China to be its natural ally.⁵¹¹ Geostrategically, the first joint military exercises with China were conducted in 2005.⁵¹² This military cooperation culminated in the exercise 'Vostok 2018', which started on September 11th, 2018 in Siberia. It was the largest military exercise in post-Soviet Russian history. Russia announced that 300,000 soldiers, 36,000 military vehicles, 1,000 aircraft and helicopters, and 80 ships from the Pacific and the Northern Fleet would participate. The participation of Mongolia and China made it the first Russian exercise of similar extent to include armed forces from non-CIS countries. China dispatched 3,000 soldiers, 900 tanks, 24 helicopters, and six aircraft to the exercise. 'Vostok 2018' was opened by the President of the People's Republic of China, Xi Jinping, and Putin in Vladivostok.⁵¹³

⁵⁰⁸ Foxall, Andrew: From Evropa to Gayropa: A Critical Geopolitics of the European Union as Seen from Russia. In: *Geopolitics*, December 29th, 2017, p. 13.

⁵⁰⁹ Richardson, Paul B.: Geopolitical cultures, pragmatic patriotism, and Russia's disputed islands. In: *Eurasian Geography and Economics*, January 8th, 2018, p. 8-9.

⁵¹⁰ Trenin, Dmitri: Collision Rather Than Collusion: Issues in Russian-U.S. Relations. In: *Asia Policy*, Vol. 24/2017, p. 33-37.

⁵¹¹ Richardson, Paul B.: Geopolitical cultures, pragmatic patriotism, and Russia's disputed islands. In: *Eurasian Geography and Economics*, January 8th, 2018, p. 13.

⁵¹² Trenin, Dmitri: Russia Leaves the West. In: *Foreign Affairs*, Vol. 85/4/2006, p. 90.

⁵¹³ Ballin, André: Die neue Allianz im Osten. In: *Der Standard*, September 12th, 2018, p. 5.

4.3 Significance of the northern North Atlantic and the GIUK Gap to Russia

4.3.1 Economic significance

‘Wir stehen vor eine[m] ähnliche[n] Umbruch wie nach dem Zweiten Weltkrieg oder nach dem Kalten Krieg. Wir wissen, was vorbei ist, aber nicht, was kommt.’

We are facing a radical change similar to those after World War II and after the Cold War. We do know what is over, but we do not know what will come.

Heinz Gärtner: USA – Weltmacht auf neuen Wegen, 2010⁵¹⁴

Russia’s main resources are crude oil and natural gas.⁵¹⁵ In the Russian High North, three aspects come together: First, the area above the Arctic Circle holds approximately 13% of the world’s undiscovered conventional oil resources and about 30% of the undiscovered natural gas resources in its continental shelves in seven Arctic basins: the Amerasian Basin, the Arctic Alaska Basin, the East Barents Basin, the East Greenland Rift Basin, the West Greenland-East Canada Basin, the West Siberian Basin, and the Yenisey-Khatanga Basin.⁵¹⁶ Second, Russia’s coast line is 43,000 km long and the main part of Russia’s coasts facing oceans is located north of the Arctic Circle.⁵¹⁷ Russia occupies nearly one half of the landmass adjacent to the Arctic and encircles it in a crescent moon shape. The other half is divided between the USA, Canada, Norway, Iceland, and Denmark via Greenland (fig. 5). This makes Russia *‘the dominant actor in the Arctic’*⁵¹⁸. Third, climate change is transforming the Arctic: Ecologically, the Arctic is facing an environmental disaster in the form of unprecedented ice melting.⁵¹⁹ Economically, the ice melting will allow economic exploitation of the Arctic.⁵²⁰

This combination of resources, adjacent landmass, and melting ice-shields puts Russia at odds with other northern countries: All six countries bordering on the Arctic Ocean claim the exclusive economic exploitation of parts of the Arctic seafloor. According to the UNCLOS, these countries are entitled to exploit the resources within 200 nautical miles from their baseline. The issue is the precise

⁵¹⁴ Gärtner, Heinz: USA – Weltmacht auf neuen Wegen. Berlin 2010, p. 96. Translation by the author.

⁵¹⁵ Kronauer, Jörg: Meinst du, die Russen wollen Krieg? Russland, der Westen und der zweite Kalte Krieg. Köln 2018, p. 55-56.

⁵¹⁶ King, Hobart M.: Oil and Natural Gas Resources of the Arctic. In: Geology.com, undated. In: <https://geology.com/articles/arctic-oil-and-gas/> on August 24th, 2018.

⁵¹⁷ Goehrke, Carsten: Russland. Eine Strukturgeschichte. Paderborn 2010, p. 47.

⁵¹⁸ Depledge, Duncan / Dodds, Klaus: The UK and the Arctic. In: The RUSI Journal, Vol. 156/3/2011, p. 74.

⁵¹⁹ Strnadl, Susanne: Fatale Folgen der arktischen Eisschmelze. In: Der Standard, January 5th, 2018. In: <https://derstandard.at/2000071365221/Die-fatalen-Folgen-der-arktischen-Eisschmelze> on August 23rd, 2018.

⁵²⁰ Oskin, Becky: Cargo Ship Makes 1st-Ever Solo Trip Through Northwest Passage. In: Live Science, October 1st, 2014. In: <https://www.livescience.com/48105-cargo-ship-solos-northwest-passage.html> on August 23rd, 2018.

definition of a country's baseline.⁵²¹ To debate territorial claims, exploitation, and cooperation in the Arctic within a legal forum, Russia, Canada, Norway, the USA, Denmark (via Greenland), Iceland, Finland, and Sweden founded the Arctic Council. This union of the so-called Arctic Eight mainly focuses on preserving the privileged status of its eight members in the Arctic region. The economic opportunities arising from the exploitation of natural resources and from shipping are of the most prominent interest.⁵²²

Territorial claims are a dominant issue (fig. 13). Russia claims a baseline along the Lomonosov Ridge which stretches through the Arctic close to the North Pole. Such a baseline would bring half of the Arctic under territorial control of Russia.⁵²³ To emphasise its claim with a visible sign, Russia planted its flag on the seafloor at the North Pole in August 2007.⁵²⁴ Ingimundarson discounted the flag-planting as part of the '*scramble for the Arctic*'⁵²⁵ and a '*spectacle*'⁵²⁶ which has since been replaced by regional cooperation and diplomatic negotiations. Several disputes were resolved within the Arctic Council, e.g. the disagreement between Russia and Norway on territorial claims in the Barents Sea, which was solved in accordance with UNCLOS in the Barents Sea Treaty.⁵²⁷ After 40 years of negotiations, it was signed in 2010 and came into force on July 7th, 2011. It divides the Barents Sea into two parts along a 1,700 km long delimitation line⁵²⁸ between Russia and Norway from the mainland to the international seafloor in the Arctic Ocean.⁵²⁹ Furthermore, the treaty allows the contracting parties and partner entities such as the EU to conduct infrastructural projects and to promote trading in the Arctic.⁵³⁰ Norway and Russia collaborate in the Chukchi Sea and in the Siberian Kharyaga oilfield where the Norwegian energy company Statoil holds concessions. An expansion of these concessions to the

⁵²¹ King, Hobart M.: Oil and Natural Gas Resources of the Arctic. In: Geology.com, undated. In: <https://geology.com/articles/arctic-oil-and-gas/> on August 24th, 2018.

⁵²² Ingimundarson, Valur: Managing a contested region: the Arctic Council and the politics of Arctic governance. In: The Polar Journal, Vol. 4/1/2014, p. 184, 186, 191.

⁵²³ MacFarlan, Tim: Denmark stakes claim to North pole thanks to Greenland ridge, as three-way battle for vast Arctic oil and gas deposits heats up. In: Daily Mail Online, December 14th, 2014. In: <http://www.dailymail.co.uk/news/article-2873808/Denmark-claims-North-Pole-Greenland-ridge-link.html> on August 24th, 2018.

⁵²⁴ Depledge, Duncan / Dodds, Klaus: The UK and the Arctic. In: The RUSI Journal, Vol. 156/3/2011, p. 74.

⁵²⁵ Ingimundarson, Valur: Managing a contested region: the Arctic Council and the politics of Arctic governance. In: The Polar Journal, Vol. 4/1/2014, p. 185.

⁵²⁶ Ingimundarson, Valur: Managing a contested region: the Arctic Council and the politics of Arctic governance. In: The Polar Journal, Vol. 4/1/2014, p. 185.

⁵²⁷ Ingimundarson, Valur: Managing a contested region: the Arctic Council and the politics of Arctic governance. In: The Polar Journal, Vol. 4/1/2014, p. 184-186, 191.

⁵²⁸ The delimitation line runs along the following coordinates: 70° 16' 28.95" N / 32° 04' 23.00" E; 2.73° 41' 10.85" N / 37° 00' 00.00" E; 3.75° 11' 41.00" N / 37° 00' 00.00" E; 4.75° 48' 00.74" N / 38° 00' 00.00" E; 5.78° 37' 29.50" N / 38° 00' 00.00" E; 6.79° 17' 04.77" N / 34° 59' 56.00" E; 7.83° 21' 07.00" N / 35° 00' 00.29" E; 8.84° 41' 40.67" N / 32° 03' 51.36" E. Treaty between the Kingdom of Norway and the Russian Federation concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean. Article 1. In: Treaty between the Kingdom of Norway and the Russian Federation concerning Maritime Delimitation and Cooperation in the Barents Sea and the Arctic Ocean. Murmansk, September 15th, 2010, p. 2.

⁵²⁹ Åtland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 273.

⁵³⁰ Förster, Christian / Schmid, Josef / Trick, Nicolas: Die nordischen Länder. Politik in Dänemark, Finnland, Norwegen und Schweden. Wiesbaden 2014, p. 147.

Shtokman gas field was envisaged in 2011.⁵³¹ In 2015, Statoil pulled out of the partnership. However, in 2017, the company showed interest in re-joining the project under new conditions.⁵³² The Shtokman gas field lies in the central part of the Barents Sea about 540 km off the coast of the Kola Peninsula. It is one of the world's largest offshore gas fields, holding an estimated 3.7 million cubic metres of gas and 31 million metric tons of gas condensate.⁵³³ However, the sanctions imposed on Russia in 2014 following the annexation of Crimea interferes with the cooperation between European countries and Russia and prohibits the selling of drilling equipment and technology from Europe and the USA to Russia. Oil extraction especially in harsh conditions as in the Arctic is a long-time investment and the sanctions currently slow the exploitation in territories claimed by Russia. However, Russia announced to start active offshore drilling in the Arctic by 2019, as it is highly depending on exporting crude oil and natural gas to sustain its economy.⁵³⁴

Pack-ice is a major obstacle to the economic exploitation of the Arctic. The Russian harbours and shipping routes along the Arctic Ocean are not perennially ice-free.⁵³⁵ However, shipping across the Northeast Passage is increasing as the yearly ice-free period is prolonged by climate change. Currently, the Northeast Passage – called Northern Sea Route by Russia – is ice-free for approximately two months per year. It is estimated that by 2040 the whole Arctic Ocean will be ice-free in summer⁵³⁶. The Northeast Passage connects to the Atlantic Ocean through the chokepoint of the GIUK Gap (fig. 5). Therefore, keeping the GIUK Gap secure and open for economic traffic is essential to Russia. Already in the Russian Security Strategy from 2008 not only the militarisation of the Arctic was a key point but also social and economic development, ecological security, science and technology, and international cooperation.⁵³⁷ In August and September 2018, 'Venta Maersk', operated by the Danish shipping company Maersk, became the first large container ship to successfully sail the Northeast Passage without the help of ice-breakers. The 'Venta Maersk' sailed from Vladivostok to Saint Petersburg according to the planned schedule. However, Maersk stated that this was only a test, and that there were currently no plans for regular shipping on the Northeast Passage.⁵³⁸

⁵³¹ Depledge, Duncan / Dodds, Klaus: The UK and the Arctic. In: The RUSI Journal, Vol. 156/3/2011, p. 74.

⁵³² Staalesen, Atle: Gazprom hints comeback for Shtokman project. In: The Barents Observer, October 5th, 2017. In: <https://thebarentsobserver.com/en/industry-and-energy/2017/10/gazprom-hints-comeback-shtokman-project> on November 26th, 2018.

⁵³³ Åtland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 272.

⁵³⁴ Atkin, Emily: Trump, Putin, and the Race for Arctic Oil. In: The New Republic, April 25th, 2018. In: <https://newrepublic.com/article/148095/trump-putin-race-arctic-oil> on August 24th, 2018.

⁵³⁵ Goehrke, Carsten: Russland. Eine Strukturgeschichte. Paderborn 2010, p. 47.

⁵³⁶ Strnadl, Susanne: Fatale Folgen der arktischen Eisschmelze. In: Der Standard, January 5th, 2018. In: <https://derstandard.at/2000071365221/Die-fatalen-Folgen-der-arktischen-Eisschmelze> on August 23rd, 2018.

⁵³⁷ Depledge, Duncan / Dodds, Klaus: The UK and the Arctic. In: The RUSI Journal, Vol. 156/3/2011, p. 75.

⁵³⁸ APA / dpa: Dänisches Containerschiff durchfährt Beringstraße. In: Die Presse, September 17th, 2018. In: <https://diepresse.com/home/wirtschaft/economist/5498043/Daenisches-Containerschiff-durchfaehrt-Bering-strasse?from=suche.intern.portal> on September 18th, 2018.

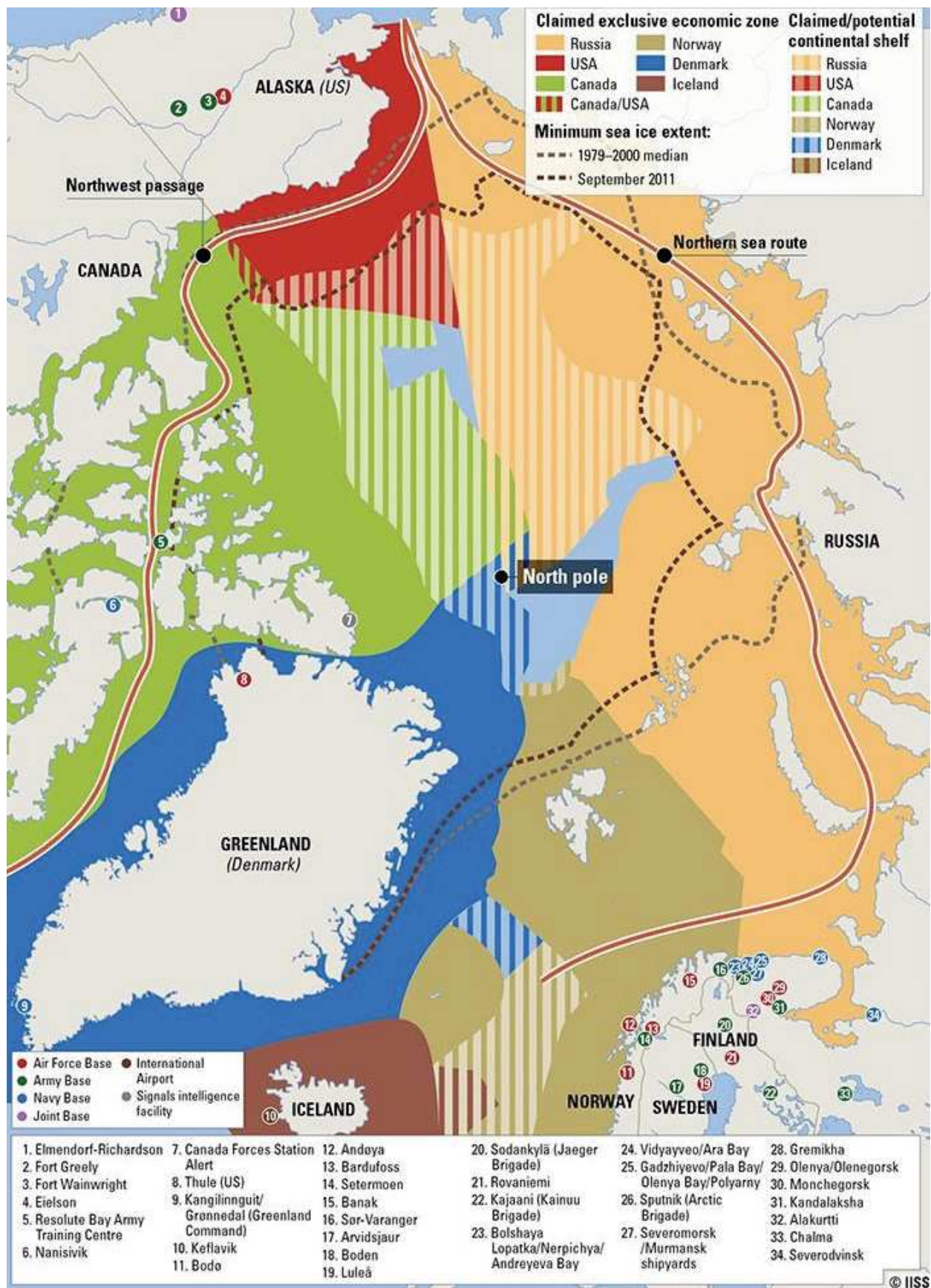


Fig. 13: Map of the territorial claims in the Arctic and the adjacent military bases⁵³⁹

⁵³⁹ <http://adagebiopower.com/map-of-us-army-bases/> on September 5th, 2018.

South of the GIUK Gap, several transatlantic cables are crossing the North Atlantic. Several sources have reported frequent operations of Russian submarines close to these cables. *Tamnes* declared that Russia operated underwater vehicles and surveillance vessels capable of cutting submarine cables. Several times such vessels have been spotted near the UK in the GIUK Gap.⁵⁴⁰ *Hicks / Metrick / Sawyer Samp / Weinberger* mentioned that several Russian submarines had been detected close to the transatlantic cables. Concerns mainly by US officials are that Russia can cut or tap the cables to affect the transatlantic connection. There is proof for Russia's ability to damage submarine cables: In the Baltic Sea several incidents of Russian vessels disrupting the NordBalt submarine cable running between Nybro in Sweden and Klaipeda in Lithuania since 2016⁵⁴¹ have led to diplomatic complaints from Sweden and Lithuania. Of the Russian submarine fleet, its auxiliary diesel-electric submarines (SSA) and auxiliary nuclear-powered submarines (SSAN) are best suited for special missions and deep-sea research. These submarines are equipped to manipulate, tap, destroy, or exploit objects and infrastructure on the seafloor.⁵⁴² Contrary to other authors, *Matsakis* stated that '[t]here have [...] been no ruptures attributed to Russian aggression'⁵⁴³.

⁵⁴⁰ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 22.

⁵⁴¹ TeleGeography: Submarine Cable Map. In: <https://www.submarinecablemap.com/#/> on August 11th, 2018.

⁵⁴² Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 4, 12.

⁵⁴³ Matsakis, Louise: What would really happen if Russia attacked undersea internet cables. In: Wired, May 1st, 2018. In: <https://www.wired.com/story/russia-undersea-internet-cables/> on August 11th, 2018.

4.3.2 Geostrategic significance

‘[...] heavily armed states faced with internal strains may commit risky and dangerous acts.’

Miles Kahler: *Rumors of War: The 1914 Analogy*, 1980⁵⁴⁴

In the aftermath of the Russia-Georgia War in 2008, Russian leadership initiated a major reform of the Russian Armed Forces by reorganizing its forces and investing in its equipment. Insufficient interoperability between the air force and the ground forces, lack of effectiveness in communication, and low quality reconnaissance systems were identified as key problems. The war confirmed that Russia needs to build smaller, more manoeuvrable, rapidly deployable forces to meet the challenges faced by armed forces in the 21st century, i.e., defending borders and fighting regional conflicts rather than waging a world war, which the USSR's Armed Forces were organised for. Besides, the Russian Armed Forces lacked in readiness dramatically: Immediately after the war with Georgia, no more than 17% of Russian army units and only five out of 150 air force regiments were combat-ready. Five areas of reform were identified, and the goals of the reform defined accordingly: all combat formations should be permanently ready for operation; command and control systems should work more effectively; officer training should improve; equipment should be modernised and upgraded; payment, housing, and social amenities for the military personnel should improve.⁵⁴⁵

Between 2008 and 2010, major improvements were implemented. Russian Armed Forces troop strength was reduced from 1.3 million to 1 million. The brigade became the principal combat formation; regimental and divisional levels were eliminated to improve operations in regional and local conflicts. A major reform to equipment acquisition was announced in September 2009 by First Deputy Defence Minister Vladimir Popovkin: Russia was to switch from procuring all military equipment from domestic companies to purchasing equipment from abroad should Russian industry be unable to provide it. In 2010, unmanned aerial vehicles from Israel were the first acquisition from abroad. The military budget increased by 27% between 2008 and 2009 alone.⁵⁴⁶ Between 2006 and 2015 Russia's defence expenditures increased by 91% whilst the US defence expenditures declined by 3.9%.⁵⁴⁷ In 2017, the Russian defence budget amounted to 55.3 billion US Dollar while the US defence budget

⁵⁴⁴ Kahler, Miles: *Rumors of War: The 1914 Analogy*. In: *Foreign Affairs*, Vol. Winter 1979/1980. In: <https://www.foreignaffairs.com/articles/1979-12-01/rumors-war-1914-analogy> on August 22nd, 2018.

⁵⁴⁵ Cohen, Ariel / Hamilton, Robert E.: *The Russian Military and the Georgia War: Lessons and Implications*. ERAP Monograph, SSI – Strategic Studies Institute. Carlisle, Pennsylvania, 2011, p. 49-50.

⁵⁴⁶ Cohen, Ariel / Hamilton, Robert E.: *The Russian Military and the Georgia War: Lessons and Implications*. ERAP Monograph, SSI – Strategic Studies Institute. Carlisle, Pennsylvania, 2011, p. 59, 61-62.

⁵⁴⁷ Globsec NATO Adaptation Initiative / Lindley-French, Julian (ed.): *One Alliance? Change Drivers in a New Strategic Environment*. Bratislava 2017, p. 12.

amounted to 597.2 billion US Dollar.⁵⁴⁸ The US defence budget 2017 constituted 3.1% of the national GDP.⁵⁴⁹ The Russian defence budget 2017 amounted to 4.26% of the national GDP, making Russia one of only nine countries worldwide spending more than 4% of their national GDP on defence.⁵⁵⁰ In 2018, Russia counted 1,038,000 military personnel, the USA 1,625,852.⁵⁵¹ Even though the Russian Armed Forces are about 65% the number of those of the USA, Russia's defence spending amounts to only about 10% of the US defence budget.⁵⁵² Factoring in purchasing power⁵⁵³, this fraction rises to 26%.⁵⁵⁴ Despite the Russian Armed Forces' need to modernise its ageing equipment, Russia spent only 30% of its defence budget on equipment procurement compared to 54% of the defence budget in the USA.⁵⁵⁵ Already in 2010, *Gärtner* stated that the Russian Armed Forces would need several decades just to reach a level equal to the USA let alone to challenge the US hegemony.⁵⁵⁶ Until 2016, investments mostly benefitted the nuclear triad (long-range strategic bombers carrying nuclear weapons, strategic submarines armed with nuclear missiles, and land-based intercontinental nuclear missiles⁵⁵⁷). Russia spends about 1/5 of its defence budget on its nuclear armament.⁵⁵⁸ Conventional forces were also upgraded, with a focus on improved firepower and range. Aircraft, missiles, and submarines were modernised. Cold War strategic submarines were replaced by far quieter models that retain their predecessors' capability for long-range missile strikes.⁵⁵⁹

The Russian Armed Forces face several major issues in their reform process. A shortfall in personnel looms due to the low birth rates in the 1990ies, the decline in the prestige of military careers, the reduction of military service time from two years to one in 2008, and the long-term plan to fully switch from conscription-based to professional armed forces. The navy is affected less by these personnel

⁵⁴⁸ Stockholm International Peace Research Institute (SIPRI): Military expenditure by country, in Constant (2016) US\$ m., 1988-2017. Stockholm 2018, p. 17, 20.

⁵⁴⁹ <https://www.statista.com/statistics/217581/outlays-for-defense-and-forecast-in-the-us-as-a-percentage-of-the-gdp/> on January 29th, 2019.

⁵⁵⁰ <https://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS> on January 29th, 2019.

⁵⁵¹ <https://de.statista.com/statistik/daten/studie/36470/umfrage/die-groessten-armeen-weltweit-nach-aktiver-truppenstaerke/> on June 28th, 2018.

⁵⁵² Cohen, Ariel / Hamilton, Robert E.: The Russian Military and the Georgia War: Lessons and Implications. ERAP Monograph, SSI – Strategic Studies Institute. Carlisle, Pennsylvania, 2011, p. 62.

⁵⁵³ '[Purchasing power parities] convert different currencies to a common currency and, in the process of conversion, equalise their purchasing power by eliminating the differences in price levels between countries.' OECD / Eurostat: Eurostat-OECD Methodological Manual on Purchasing Power Parities. Eurostat Methodologies and Working papers 2012 edition. Luxembourg 2012, p. 13.

⁵⁵⁴ Freedberg Jr., Sydney J.: US Defense Budget Not That Much Bigger Than China, Russia: Gen. Milley. In: Breaking Defense, May 22nd, 2018. In: https://breakingdefense.com/2018/05/us-defense-budget-not-that-much-bigger-than-china-russia-gen-milley/?utm_campaign=Raytheon%20Space%20Symposium%20&utm_source=hs_email&utm_medium=email&utm_content=63108285&hsenc=p2ANqtz-9OmhfK9FHX731JACe5gdddMYWkz9ZCwyc8Wd60gFnrwagIEF-ncu2yRN6bq9z9RF5xsTGXGK48HwVpMhNDj6JDysiXQ&hsmi=63108285 on January 29th, 2019.

⁵⁵⁵ Cohen, Ariel / Hamilton, Robert E.: The Russian Military and the Georgia War: Lessons and Implications. ERAP Monograph, SSI – Strategic Studies Institute. Carlisle, Pennsylvania, 2011, p. 62.

⁵⁵⁶ Gärtner, Heinz: USA – Weltmacht auf neuen Wegen. Berlin 2010, p. 17.

⁵⁵⁷ Gärtner, Heinz: USA – Weltmacht auf neuen Wegen. Berlin 2010, p. 232.

⁵⁵⁸ Gärtner, Heinz: USA – Weltmacht auf neuen Wegen. Berlin 2010, p. 235.

⁵⁵⁹ Olsen, John Andreas: Introduction: The Quest for Maritime Supremacy. In: Whitehall Papers, Vol. 87/1/2016, p. 5.

challenges. Positions in the navy, particularly in the submarine fleet, require thorough technical understanding. Russian navy officers are in general well trained and highly familiar with the naval capabilities of their crews. Therefore, contrary to the other units of the Russian Armed Forces, *‘the Russian submarine force is overwhelmingly manned by professional contract sailors and officers.’*⁵⁶⁰

The financial situation is challenging for the Russian Armed Forces. The Russian economy has been weakening substantially since 2014 by the sanctions imposed in the aftermath of the annexation of Crimea, the instable oil prices, and the devaluation of the Russian ruble, the national currency. Consequently, the defence budget has been facing cuts and was reduced two times between 2015 and 2016 alone. Investments in equipment procurement suffers the most, even though it has been too low from the beginning to efficiently modernise the Russian Armed Forces. The State Armament Program (SAP) 2011-2020 is prioritizing the navy, and within that, mainly submarine construction: 26% of the total ten-year SAP budget of 19.4 trillion ruble (291.9 billion US Dollar⁵⁶¹) is assigned to the navy. Investments in the navy include upgrades of the sea-based antiballistic missile system, of anti-surface warfare capability on a strategic level, of the sea-based deterrent forces, and of the bastion at the Kola Peninsula. Russia’s strategic priority lies on an offensive navy mainly operating in the North Atlantic.⁵⁶² However, building of ships and submarines is strongly affected by the Russian-Ukrainian conflict and the international sanctions as import of microelectronic technology and machine tooling for the military industry from Europe as common before has become difficult, and at the same time access to key Ukrainian industries has been lost. Shipyards already have had to stop the import of parts for submarine and ship construction and have started to re-use parts from retiring vessels and submarines instead. In addition, the Russian shipbuilding industry faces a lack of trained personnel. Such industry depends strongly on knowledgeable workers, but there is a generational gap in Russian shipyards and design houses in all technical fields due to the downsizing of the Russian Armed Forces after the Cold War. Experienced designers and shipbuilders trained in the Soviet era are retiring now, without having trained qualified replacements as personnel had been cut for about 20 years.⁵⁶³

This thesis focuses on three main components of Russia’s geostrategic approach to the northern North Atlantic: maritime hybrid warfare, the Russia’s Northern Fleet at the Kola Peninsula, and Russia’s Northern Strategic Bastion.

⁵⁶⁰ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 2.

⁵⁶¹ Exchange rate from September 20th, 2018: 1 ruble = 0,015 US Dollar. <https://www.finanzen.net/waehrungsrechner/russischer-rubel-us-dollar> on September 20th, 2018.

⁵⁶² Olsen, John Andreas: Introduction: The Quest for Maritime Supremacy. In: Whitehall Papers, Vol. 87/1/2016, p. 6.

⁵⁶³ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 1-2, 17-18.

Maritime hybrid warfare is an enhancement of hybrid warfare. Hybrid warfare as a military strategy has been known since ancient times. The Russian Armed Forces have adopted it perfectly over the past years. The annexation of Crimea highlighted the capability of Russian forces to engage in hybrid warfare in real conflict situations. Hybrid warfare consists of eight key elements:

- the combination of covert and overt warfare;
- the 'little green men': stationing of soldiers in unmarked uniforms;
- the spread of false and incisive rumours;
- the diffusion of disinformation utilising a strong presence on social networks;
- the assault on high-value infrastructure carried out by special operators;
- the demoralizing of the population using insurgent tactics;
- the integration of non-military forces into military activities;
- the implementation of advanced cyberattacks.⁵⁶⁴

There are several advantages to hybrid warfare. First, the incapability to assign the undertaken actions to a specific aggressor extends the aggressor's freedom of action and lowers the extent of criticism and the probability of sanctions imposed by the international community. Second, it gives the aggressor the sole control over timing and pace of events as the actions taken are ambiguous by nature. Third, the costs are distinctly lower than those of deploying conventional military units. Fourth, when timed correctly, cyberattacks and propaganda not only spread fake news, but influence the political situation of the target country.⁵⁶⁵

Maritime hybrid warfare requires further elements to be added. Civilian vessels are included in maritime hybrid warfare action, in particular vessels registered in third-party countries or completely unmarked. The deployed platforms are equipped with a variety of weapons and capable of deploying unmanned sensors overhead, on and under the water surface; sonobuoys, free-floating mines, and missiles; and even of acting as motherships for speedboats. The most important installation is the control of all operations and involved technology from ashore by special forces. The eight key elements of hybrid warfare have to be partially adapted to meet the challenges at sea. The 'little green men', for example, become 'little blue sailors', posing as terrorists, rogue actors, or freelancers acting on their own choice.⁵⁶⁶

Maritime hybrid warfare permits carrying out attacks which are difficult or outright impossible in conventional warfare. Free-floating mines installed at strategic positions, render ports, harbours, or

⁵⁶⁴ Stavridis, James: The United States, the North Atlantic and Maritime Hybrid Warfare. In: Whitehall Papers, Vol. 87/1/2016, p. 94.

⁵⁶⁵ Stavridis, James: The United States, the North Atlantic and Maritime Hybrid Warfare. In: Whitehall Papers, Vol. 87/1/2016, p. 95, 97.

⁵⁶⁶ Stavridis, James: The United States, the North Atlantic and Maritime Hybrid Warfare. In: Whitehall Papers, Vol. 87/1/2016, p. 95-96.

canals unusable, and consequently disrupt or even shut down naval trade. Cutting or destroying submarine cables interrupts the information flow of global networks. Speedboat attacks on oil platforms disguised as actions by ‘*environmental terrorists*’⁵⁶⁷ can affect the global oil market. ‘Little blue sailors’ carrying out ‘pirate’ attacks on the opponent’s naval facilities and mafia-style actions against the civilian fishing industry can interfere with naval operations and destabilise economies, respectively.⁵⁶⁸

Russia’s actions in Georgia and Ukraine showed that it is perfectly prepared to employ hybrid tactics on land. Russia has trained hybrid warfare, referred to as ‘irregular warfare’ or ‘strategic maskirovka’⁵⁶⁹ since the end of the Cold War, developing asymmetric means and technological changes. Presently, it is Russia’s priority to adapt hybrid warfare for use at sea, mainly in the northern North Atlantic. Currently, Stavridis noted, NATO was not fully ready to counter Russian maritime hybrid attacks.⁵⁷⁰

Russia’s Northern Fleet at the Kola Peninsula is Russia’s main military unit in the High North. The Kola Peninsula is the northernmost region of European Russia. It is surrounded by the Barents Sea and the White Sea and is kept perennially ice-free at its coast line by the North Cape Current.⁵⁷¹ The peninsula with an area of 145,000 km²⁵⁷² constitutes the whole of the Russian oblast (province) Murmansk. In 2010, the oblast had 795,409 inhabitants, the majority of which – 315,953 – lived in the capital Murmansk.⁵⁷³ In the west of the Kola Peninsula, Russia and Norway share their only common border (fig. 14).

The Kola Peninsula is best known for its military bases. During the Cold War, it was the most heavily militarized region not only in Russia but worldwide. It held the largest number of nuclear warheads worldwide. Home base of Russia’s Northern Fleet, the Kola Peninsula assumedly still is the area with the most significant military influence in Russia.⁵⁷⁴ In the Cold War, the Kola Peninsula was also the most highly developed fish-processing area in the USSR. It is the site of the deepest borehole on Earth. The Kola Superdeep Borehole, located about 150 km northwest of Murmansk, reaches a depth of 12,262 m. The project offered new scientific insights into the geophysical structure of Earth and

⁵⁶⁷ Stavridis, James: The United States, the North Atlantic and Maritime Hybrid Warfare. In: Whitehall Papers, Vol. 87/1/2016, p. 96.

⁵⁶⁸ Stavridis, James: The United States, the North Atlantic and Maritime Hybrid Warfare. In: Whitehall Papers, Vol. 87/1/2016, p. 96.

⁵⁶⁹ Globsec NATO Adaptation Initiative / Lindley-French, Julian (ed.): One Alliance? Change Drivers in a New Strategic Environment. Bratislava 2017, p. 17.

⁵⁷⁰ Stavridis, James: The United States, the North Atlantic and Maritime Hybrid Warfare. In: Whitehall Papers, Vol. 87/1/2016, p. 93.

⁵⁷¹ N.N.: The Kola Peninsula (Russia): Interesting Facts. In: To Discover Russia, undated. In: <https://todiscoverussia.com/kola-peninsula-russia/> on September 15th, 2018.

⁵⁷² N.N.: Kola Halbinsel – das Land der Schneekönigin. In: Go Russia, undated. In: <https://www.russlander-leben.de/de/kola.html> on September 15th, 2018.

⁵⁷³ N.N.: Russland: Oblast Murmansk. In: citypopulation.de, July 25th, 2018. In: https://www.citypopulation.de/php/russia-murmansk_d.php on September 15th, 2018.

⁵⁷⁴ Hønneland, Geir: Power Institutions and International Collaboration on the Kola Peninsula. In: The Journal of Power Institutions in Post-Soviet Societies. Vol. 4-5/2006. In: <https://journals.openedition.org/pipss/456> on September 15th, 2018.

found temperatures in deep layers to be much higher than anticipated. Within religious groups, rumours spread that the borehole had broken into hell. In 1992, the project was closed due to lack of funds and technical problems.⁵⁷⁵

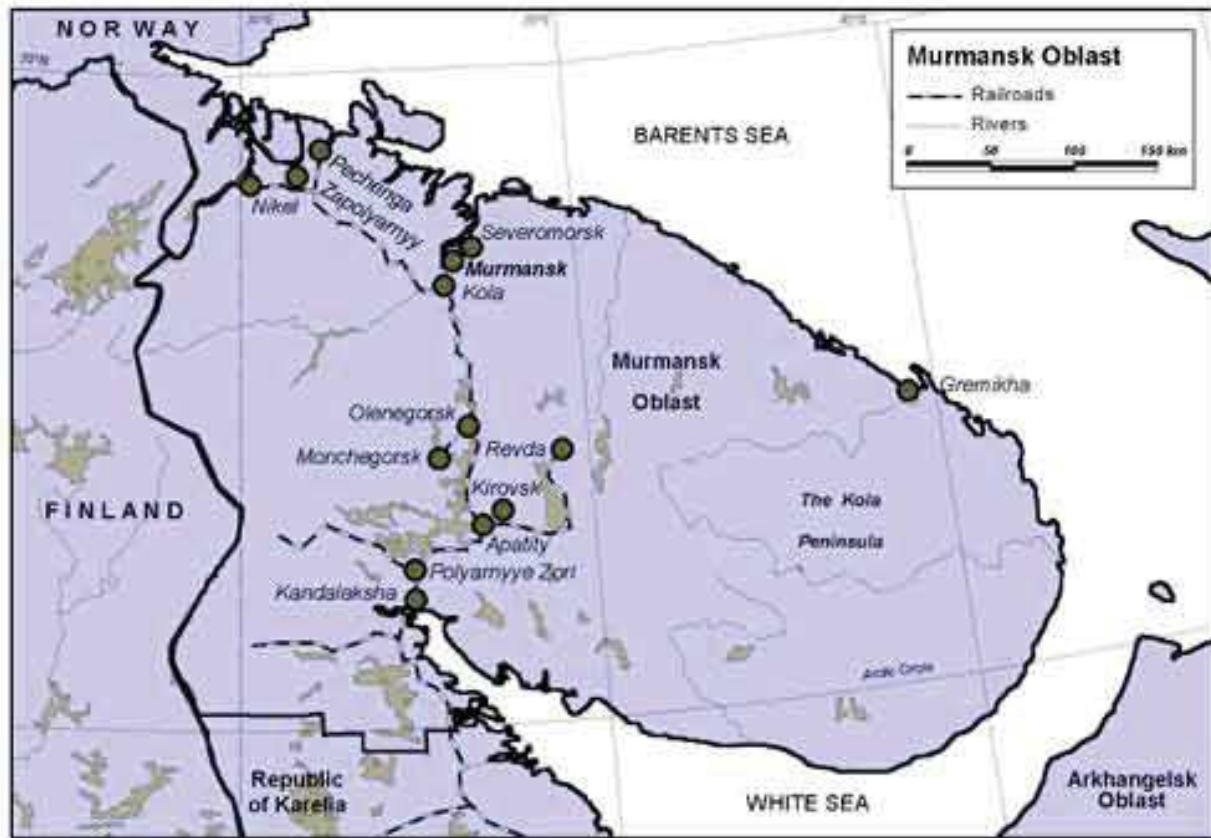


Fig. 14: The Russian Oblast Murmansk at the Kola Peninsula⁵⁷⁶

The main military unit deployed on the Kola Peninsula is the Russian Northern Fleet. The region around the Kola Peninsula is perennially ice-free, and thus Russia's northernmost naval bases located there secure the convenient access of Russian surface and subsurface vessels not only to the North Atlantic through the Norwegian Sea and the GIUK Gap but also to the Arctic Ocean. The coast of the Kola Peninsula makes up only 2.5% of the total Russian Arctic Ocean coastline, but the Russian Navy concentrates its deployment in this small region because the coastline east of the Kola Peninsula is not perennially ice-free, limiting its military value. During the Cold War, the USSR stationed not only the Northern Fleet at the Kola Peninsula, but also a radar of the Soviet early-warning system

⁵⁷⁵ Kringiel, Danny: Hoppla, wir haben die Hölle angebohrt! Russischer Tiefendriß. In: Spiegel Online, April 26th, 2011. In: <http://www.spiegel.de/einestages/russischer-tiefendriß-hoppla-wir-haben-die-hoelle-angebohrt-a-947191.html> on September 15th, 2018.

⁵⁷⁶ Hønneland, Geir: Power Institutions and International Collaboration on the Kola Peninsula. In: The Journal of Power Institutions in Post-Soviet Societies. Vol. 4-5/2006. In: <https://journals.openedition.org/pipss/456> on September 15th, 2018.

SPRN (Sistema Preduprezhdeniya o Raketnom Napadnii) in Olenegorsk, one of eleven long-range bomber airfields along the Russian Arctic Ocean coastline with runways longer than 4 km, and a hydrophone system to detect intruding submarines. From the Kola Peninsula several transits to Kamchatka under the ice of the North Pole were conducted. Although naval operations along the Siberian coast are limited by shallow waters and drift ice, ice-breaker-supported convoys of naval vessels sailed the Northeast Passage to perform inter-fleet transits between the Northern Fleet and the Pacific Fleet. With the breakup of the USSR and the emergence of the new republics, Russia lost most of its naval bases in the Baltic Sea and the Black Sea. Therefore, the importance of the ice-free Kola Peninsula and the access to the high seas it grants has grown over the last decades.⁵⁷⁷

In 2011, Russia possessed 576 sea-based nuclear warheads, 67% of which were deployed on nuclear submarines assigned to the Northern Fleet. Similarly, the distribution of other military resources between Russia's four fleets is still in favour of the Northern Fleet. Although the Black Sea Fleet has been strengthened since the war with Georgia in 2008, this mostly came at the cost of the Baltic Fleet rather than the Northern Fleet, which still receives the major part of Russia's defence spending. Åtland noted in 2011 that *'[...] the Northern Fleet still seems to get the lion's share of the resources allocated for force modernization, exercises, and patrols. The main competition for resources in the years to come is likely to arise between the Northern and the Black Sea fleets.'*⁵⁷⁸ Nevertheless, the Northern Fleet has also faced budget cuts. Some naval bases on the Kola Peninsula were consigned to civilian usage mainly to serve Russian and foreign petroleum companies. These bases include Severodvinsk and Teriberka, the latter a former part of the closed administrative-territorial unit (Zakrytye Administrativno-Territorial'nye Obrazovaniya, ZATO) of Severomorsk, which has been publicly accessible since 2009 and houses the Shtokman gas field's liquefied natural gas plant.⁵⁷⁹

The naval submarine and surface forces on the Kola Peninsula comprise the major share of Russia's military property in the High North. The Northern Fleet's submarine forces have their headquarters in Gadzhievo close to the Kola fiord, the easternmost submarine base on the Kola Peninsula. Further submarine bases are situated in Vidyayevo and Zaozersk, close to the Norwegian border. These bases are home to Typhoon-class SSBN, Delta IV-class SSBN, and Borei-class SSBN. The latter are planned to enlarge the Northern Fleet's submarines forces and to replace the Delta III-class SSBN of the Pacific Fleet. They are armed with 16 Bulava submarine-launched ballistic missiles with a range of over 8,000 km, carrying six to ten warheads each.⁵⁸⁰ Furthermore, the submarine forces include one

⁵⁷⁷ Åtland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 270-271, 281.

⁵⁷⁸ Åtland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 277.

⁵⁷⁹ Åtland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 267, 273, 277.

⁵⁸⁰ Payne, Keith B. / Foster, John S.: Russian strategy: Expansion, crisis and conflict. In: Comparative Strategy, Vol. 36/1/2017, p. 52.

nuclear-powered attack submarine (SSN) of the Yasen-class (in service since 2013), several missile submarines of the Oscar II-class, and several diesel-electric submarines (SSK) of the Kilo-class.⁵⁸¹ The Yasen-class SSN (NATO reporting name Severodvinsk-class SSN) is considered to be on-par with most of the recent western SSN and in some areas even to surpass them. It is the first Russian submarine class equipped with spherical bow sonars replacing the inferior cylinder design, with western-style launch tubes for conventional and nuclear⁵⁸² cruise missiles, and with a 'life of the boat' reactor without the need for midlife refuelling. However, only one vessel has been commissioned after a construction time of nearly 20 years. Construction costs of the Yasen-class are high, with 1.4 billion US Dollar for the first boat and a projected 3.3 billion US Dollar for the second. Considering the economic challenges Russia is facing and the total Russian defence budget of 61.2 billion US Dollar in 2017⁵⁸³, future support for spending 5.4% of the budget for building a single submarine is doubtful. Estimations collected by Hicks / Metrick / Sawyer Samp / Weinberger in 2016 on the number of submarines believed to be active in the Russian Northern Fleet are about one third lower than official Russian claims. The number of active SSN, which the Yasen-class belongs to, is thought to be exaggerated by up to 100% by Russia (fig. 15).⁵⁸⁴ Submarine patrols have risen to major importance, especially close to the GIUK Gap, as this chokepoint is still considered to be '*the Russian Northern Fleet's gateway to the Atlantic Ocean*'⁵⁸⁵. In total, Russian submarine patrols have increased by 50% in 2015 alone. These patrols are mainly conducted by Russian nuclear-powered cruise missile submarines (SSGN), which are designed to attack surface naval group formations with long-range, anti-ship cruise missiles, an ability the US equivalent (Ohio-class SSGN) lacks.⁵⁸⁶

⁵⁸¹ Åtland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 278-279.

⁵⁸² Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 23.

⁵⁸³ https://twitter.com/iiss_org/status/963746653407797248?lang=de on May 8th, 2018. In 2017, the Russian defence budget amounted to 4.3% of the national GDP (in 2016 it even amounted to 5.5% of the national GDP). Stockholm International Peace Research Institute (SIPRI): Military expenditure by country as percentage of gross domestic product, 1988-2017. Stockholm 2018, p. 13.

⁵⁸⁴ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 11.

⁵⁸⁵ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 6.

⁵⁸⁶ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 6, 15.

Type	Northern Fleet	
	Believed Active	Claimed by Russia
SSK	5	6
SSBN	6	8
SSGN	2	3
SSN	7–9	14
SSAN ¹	2–9 ²	9
SSA ³	0	1 ⁴
Total	22–31	42

¹ Auxiliary submarine, nuclear powered (SSAN).

² Reporting on the status and operations of Russia's fleet of auxiliary submarines is tremendously difficult due to the secrecy that surrounds their existence. The team is relatively confident that a small handful of these vessels conduct regular operations. The exact number is unable to be discerned.

³ Auxiliary submarine, diesel powered (SSA).

⁴ The one SSA is not an operational submarine; it is a test platform for new submarine technologies. This makes it difficult to characterize in this quantitative assessment.

Fig. 15: Estimated numbers of submarines in Russia's Northern Fleet in 2016⁵⁸⁷

The naval surface forces of the Northern Fleet include Russia's only aircraft carrier 'Admiral Kuznetsov', which has been in service since 1995 but '*has been plagued by many problems*⁵⁸⁸'; the nuclear-powered heavy missile cruiser 'Pyotr Velikiy' of the Kirov-class⁵⁸⁹; Udaloy-class destroyers for ASW; and Sovremenniy-class destroyers with anti-surface warfare and anti-air capabilities.⁵⁹⁰ To support the naval surface forces in the ice-regions of the High North, the Northern Fleet operates several ice-breakers: the large ice-breaker '50 Let Pobedy' of the Arktika-class which is capable of breaking thick ice, small Project-97 ice-breakers for breaking thin ice, and one Project-21180 ice-breaker capable of breaking 1-metre-thick ice.⁵⁹¹ In 2019 and 2021, two further ice-breakers are expected to be commissioned. They will carry the names of and will be the larger successors to the Soviet-era nuclear ice-breakers 'Arktika' and 'Sibir', both built in the 1970ies and decommissioned in the 2000s. The old 'Arktika' was the first surface vessel to reach the North Pole by sea in 1977. The old 'Sibir' was the first nuclear ice-breaker being dismantled in Russia. The new 'Arktika' and 'Sibir' will be deployed to keep the Northeast Passage perennially ice-free.⁵⁹² Russia is better equipped with heavy ice-breakers than the USA which operates only one heavy ice-breaker for both the Arctic and Antarctic, the USCGC Polar Star.⁵⁹³

⁵⁸⁷ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 11.

⁵⁸⁸ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 25.

⁵⁸⁹ N.N.: Kirov Class (Type 1144.2) (Peter the Great). In: Naval Technology, undated. In: <https://www.naval-technology.com/projects/kirov/> on September 25th, 2018.

⁵⁹⁰ Årland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 279.

⁵⁹¹ Wezeman, Siemon T.: Military Capabilities in the Arctic: A New Cold War in the High North? SIPRI Background Paper, October 2016. Solna 2016, 15-16.

⁵⁹² Digges, Charles: Russia to Dismantle Icebreaker Arktika. In: The Maritime Executive, February 4th, 2018. In: <https://www.maritime-executive.com/editorials/russia-to-dismantle-icebreaker-arktika> on September 26th, 2018.

⁵⁹³ Gao, Charlie: The 'Icebreaker Gap': How Russia is Planning to Build more Icebreakers to Project Power in the Arctic. And why the U.S. and Canada have been slow to respond. In: The National Interest, August 19th, 2018. In:

Russian air forces in the High North also operate out of the Kola Peninsula. Olenya base, situated 92 km south of Murmansk near Olenegorsk features several types of Soviet-era fighters and interceptor aircraft. The Russian Northern Fleet possesses a carrier-based and aerial refuelling-capable fleet of aircraft, and the strategic bomber force patrols the Arctic airspace with turboprop Tu-95 and supersonic Tu-160 bombers.⁵⁹⁴

The strength of Russian ground forces on the Kola Peninsula cannot compare to that in the North Caucasus Military District. The High North seems to be of less importance for Russia in terms of security challenges responded to with ground forces. Only one independent motorized infantry brigade is based in Pechenga near the Norwegian border, supported by another motorized infantry brigade in Kamenka in Karelia.⁵⁹⁵ In 2015, a newly founded Arctic brigade comprising 3,600 troops was deployed to Alakurtti on the Kola Peninsula. A second Arctic brigade, planned already in 2011, is being set up in Yakutia. Both brigades are heavily equipped with tanks and armoured vehicles. Their operational area is the Russian mainland.⁵⁹⁶ However, several regular infantry, airborne, and special forces deployed all over Russia repeatedly exercise in the Arctic, mostly starting from the Kola Peninsula.⁵⁹⁷

The paramilitary Russian Border Guard Service, which also operates as coast guard, is on duty along Russia's northern frontier from the Kola Peninsula in the west to Wrangel Island in the Chukchi Sea in the far east. It is equipped with a fleet of corvette-size patrol vessels and maritime patrol aircraft. Its headquarters are in Murmansk. It is most active in the Barents Sea, where it cooperates with the Norwegian Coast Guard.⁵⁹⁸

On the coast line of the White Sea opposite of the Kola Peninsula is the home of the largest Russian shipyard and the only one capable of building nuclear-powered vessels. By the White Sea Baltic Canal, Severodvinsk is directly connected to the Admiralty Shipyard in Saint Petersburg which builds Russia's diesel-powered submarines. This canal allows rapid exchange of submarines between the Northern Fleet and the Baltic Fleet.⁵⁹⁹

<https://nationalinterest.org/blog/buzz/icebreaker-gap-how-russia-planning-build-more-icebreakers-project-power-arctic-29102> on September 27th, 2018.

⁵⁹⁴ Åtland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 279-280.

⁵⁹⁵ Åtland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 280.

⁵⁹⁶ Wezeman, Siemon T.: Military Capabilities in the Arctic: A New Cold War in the High North? SIPRI Background Paper, October 2016. Solna 2016, p. 15.

⁵⁹⁷ Åtland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 280.

⁵⁹⁸ Åtland, Kristian: Russia's Armed Forces and the Arctic: All Quiet on the Northern Front? In: Contemporary Security Policy, Vol. 32/2/2011, p. 280.

⁵⁹⁹ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 13-14.

Russia's Northern Strategic Bastion (NSB) is installed around Russia's Northern Fleet. Within naval strategies, the term 'bastion' refers to a defensible maritime area in which foreign naval and air forces can be controlled, contained or kept outside. Maritime bastion areas are usually installed in geographically advantageous regions. Tight control of the area is achieved by patrols under and on the sea surface and in air space. Bastions are equipped with sensor systems to detect and track activities of hostile vessels, aircraft, and submarines, to secure the operations of friendly forces. The bastion concept was implemented in and around the Barents Sea in the 1950ies based on the USSR's naval doctrine that all naval and air operations against an adversary will be most successful if conducted from secure home waters.⁶⁰⁰

After the dissolution of the USSR, NATO and Russia considered the bastion as out-dated. Nevertheless, NATO nuclear-powered multipurpose and ballistic missile submarines from the USA, France, and the UK continued to patrol between the Atlantic Ocean and the Barents Sea in the 1990ies. Several close encounters between Russian and NATO submarines near the Kola Peninsula, such as the collisions between the Russian 'Barracuda' and the 'USS Baton Rouge' in 1992, and between the Russian 'K-407' and the 'USS Grayling' in 1993, and the deteriorated state of its sea-based nuclear armament deployed on the Kola Peninsula, made Russia aware about its vulnerable position on the northern flank. Consequently, the Northern Strategic Bastion (NSB) initiative was launched mainly by Russia's First Deputy Minister of Defence Andrei Kokoshin assisted by the 'Rubin' design bureau in Saint Petersburg. The concept included the deployment of the major part of Russia's sea-based nuclear deterrence forces in the High North, accompanied by the forces already installed in the region, and an increase of the air forces. With this, Russia aimed to regain and secure supremacy in the northern North Atlantic and the Arctic. The NSB was designed to have two main functions: '*1. To provide credible nuclear deterrence, and 2. to constitute an independent naval force able of securing Russia's interests on the world oceans.*'⁶⁰¹ Therefore, the NSB is a passive nuclear deterrence force and a flexible policy instrument to secure Russia's interests on the world's oceans. The project leaders chose the Kola Peninsula for the deployment of the NSB as the region had traditionally been of particular significance to Russia's security and is geographically close to potential hostile targets. The project was implemented, and the build-up of the NSB was commenced in 1998. The same year, the first Russian military exercise within the NSB was held.⁶⁰²

⁶⁰⁰ Åtland, Kristian: The Introduction, Adoption and Implementation of Russia's 'Northern Strategic Bastion' Concept, 1992-1999. In: Journal of Slavic Military Studies, Vol. 20/4/2007, p. 499-500.

⁶⁰¹ Kokoshin, Andrei A.: Sderzhivanie vo vtorom jadernom veke. Moskva 2001, p. 96, cited in Åtland, Kristian: The Introduction, Adoption and Implementation of Russia's 'Northern Strategic Bastion' Concept, 1992-1999. In: Journal of Slavic Military Studies, Vol. 20/4/2007, p. 509.

⁶⁰² Åtland, Kristian: The Introduction, Adoption and Implementation of Russia's 'Northern Strategic Bastion' Concept, 1992-1999. In: Journal of Slavic Military Studies, Vol. 20/4/2007, p. 500-501, 505-506, 508-511, 513, 523.

A bastion defence concept is considered to be modern, cost-efficient, and operational flexible.⁶⁰³ However, Åtland stated that the implementation of the NSB in the 1990ies in Russia, *‘[s]een against the background of Russia’s poor economic performance at the time, [...] may appear as an ill-timed manifestation of great power nostalgia.’*⁶⁰⁴

Today, the NSB is still centred on the three elements of the nuclear triad. Submarine-launched ballistic missiles are ten times more expensive than land-based ICBM. However, submarines are more likely to survive a nuclear exchange because they can move quietly around the oceans, hidden under the water surface and pack-ice, and can additionally be covered by surface units. Russia assumes that in case of conflict, NATO’s first aim will be to destroy Russia’s SSBN. Consequently, the concept of sea denial was added to the NSB. To protect the military equipment deployed on the Kola Peninsula from strikes from the sea, the adversary should be denied conducting offensive operations in the neighbouring areas.⁶⁰⁵ The defensive perimeter of the NSB stretches from the Barents Sea to eastern Greenland and further south to the GIUK Gap (fig. 16). In the case of an attack, Russia will try to protect its nuclear missiles on the Kola Peninsula by establishing sea-control in its proximity, sea-denial further west and south to the GIUK Gap, and by deploying attack submarines further west in the North Atlantic to destabilise the North Atlantic SLOC.⁶⁰⁶ The NATO member country Norway would be directly affected as its northern territories lie within the inner layer of the NSB and the Norwegian Sea is split between the inner layer and the outer layer of sea-denial.⁶⁰⁷

⁶⁰³ Åtland, Kristian: The Introduction, Adoption and Implementation of Russia’s ‘Northern Strategic Bastion’ Concept, 1992-1999. In: Journal of Slavic Military Studies, Vol. 20/4/2007, p. 528.

⁶⁰⁴ Åtland, Kristian: The Introduction, Adoption and Implementation of Russia’s ‘Northern Strategic Bastion’ Concept, 1992-1999. In: Journal of Slavic Military Studies, Vol. 20/4/2007, p. 527.

⁶⁰⁵ Åtland, Kristian: The Introduction, Adoption and Implementation of Russia’s ‘Northern Strategic Bastion’ Concept, 1992-1999. In: Journal of Slavic Military Studies, Vol. 20/4/2007, p. 514-515, 517, 521, 523-524.

⁶⁰⁶ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 9, 11, 21-22.

⁶⁰⁷ Allport, Rowan: Fire and Ice: the Defence of Norway and NATO’s Northern Flank. In: Human Security Centre, April 2nd, 2017. In: <http://www.hscentre.org/uncategorized/fire-and-ice-the-defence-of-norway-and-natos-northern-flank/> on August 24th, 2018.

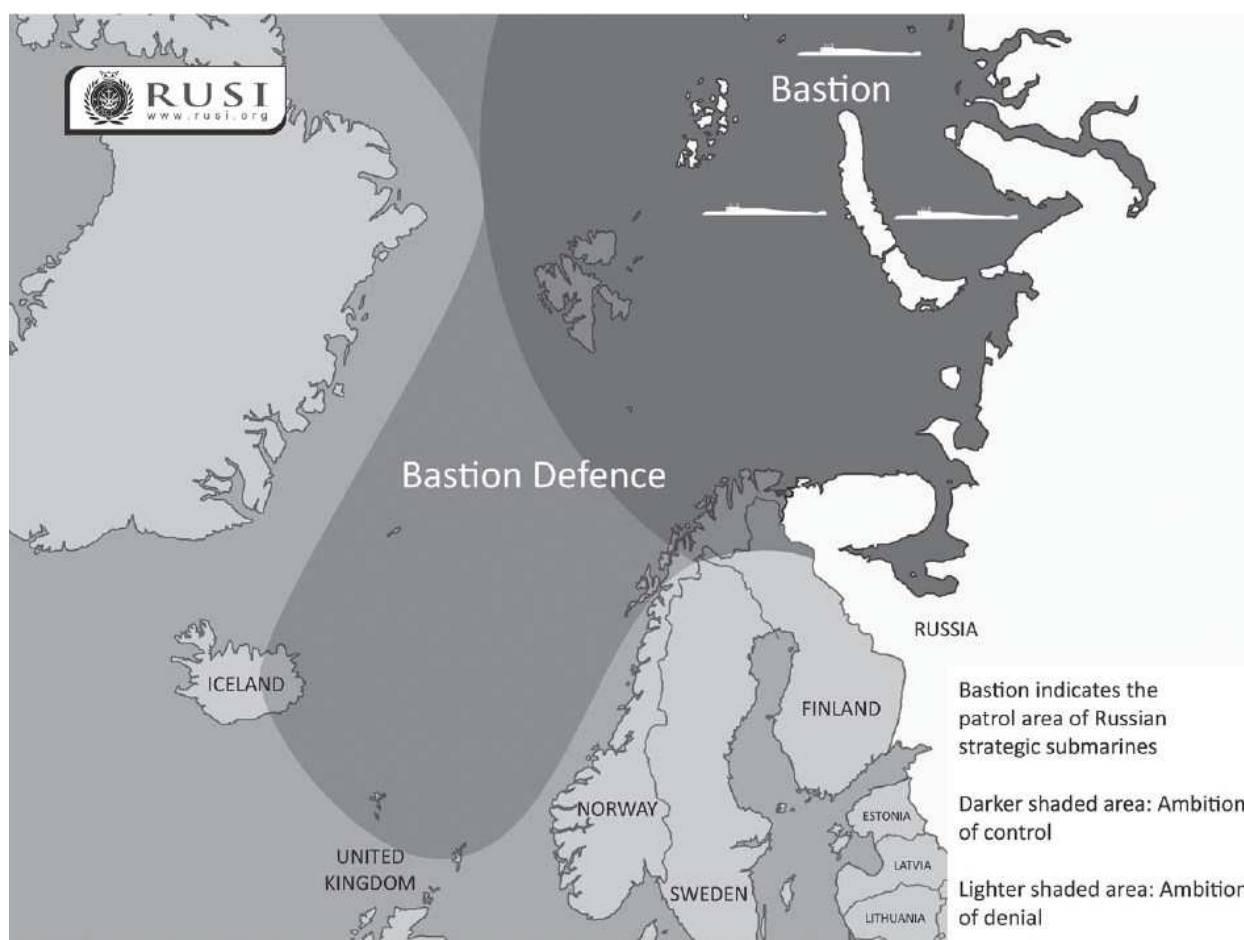


Fig. 16: Defensive perimeter of the NSB at the Kola Peninsula⁶⁰⁸

The NSB at the Kola Peninsula is supported by underwater intelligence. Russia re-activated the sea-floor sonar listening system installed during the Cold War by re-using Soviet hydrophone arrays deployed in the Barents Sea and the Kara Sea. A new warning system was implemented which was developed based on hydrographic and hydrologic research conducted over decades in the USSR in the region adjacent to the Kola Peninsula.⁶⁰⁹

Russia has also deployed attack submarines to the Northern Fleet, both to protect the strategic submarines in the NSB and to impede the movements of NATO submarines in the sea-denial zone of the NSB.⁶¹⁰

Since 2016, Russia has been rebuilding and modernising its air bases along its Arctic coast line and on the adjacent islands such as Novaya Zemlya and Wrangel Island. These improvements will enable the deployment of intermediate- and long-range air defence systems between the NSB and the bastion

⁶⁰⁸ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 22.

⁶⁰⁹ Åtland, Kristian: The Introduction, Adoption and Implementation of Russia's 'Northern Strategic Bastion' Concept, 1992-1999. In: Journal of Slavic Military Studies, Vol. 20/4/2007, p. 511.

⁶¹⁰ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 24.

established at the Pacific Fleet to secure Russian control over the major part of the Arctic and the Arctic Ocean.⁶¹¹

However, missiles are a bastion's main offensive and defensive armament. They defend the bastion, protect strategic submarines, ensure sea-denial, defend land territory against invasion, threaten distant targets, and disrupt the SLOC of hostile alliances. In the NSB, they are the backbone of Russia's access-denial strategy on the northern flank. Russia has deployed four types of missile systems in the NSB. First, to provide air defence, S-400 ground-launched anti-aircraft missiles are deployed near the Norwegian and the Northern European borders. Their range is 250 km to 400 km. An upgrade to the new S-500 system is currently being implemented. The new S-500 missiles are able to destroy ICBM, hypersonic cruise missiles, and aircraft with high accuracy, speed, and range. Second, Iskander tactical missiles with a range of 400 km to 500 km, are deployed in Kaliningrad and Russia's mainland Baltic region. They can be armed with conventional and nuclear warheads and used ballistically and in a cruise variant. In 2013, Putin described them to be '*in its segment, [...] the most effective weapon in the world*'⁶¹². In addition to the already deployed Iskander missiles, new R-500 long-range cruise missiles will bolster the NSB. Third, Kalibr missiles will be deployed on Russia's newly designed submarines and larger surface vessels. This missile is a modular system for conventional and nuclear warheads which is available in anti-shipping, land-attack, and anti-submarine variants. Its operational range is 2,500 km. The supersonic missile can perform precision strikes against land and sea targets such as aircraft carriers and is mainly deployed on the Yasen-class SSN.⁶¹³ Fourth, the Kh-101 is a conventionally armed air-launched long-range cruise-missile with a supposed range of 4,000 km. These missiles can strike targets almost unhampered as they have stealth capability, high-subsonic speed, and a low-altitude flight profile.⁶¹⁴ The coverage of the four types of missiles deployed in the NSB is presented in fig. 17.

⁶¹¹ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 21.

⁶¹² Putin, Vladimir: Press Conference, 2003, cited in N.N.: 'Don't provoke anyone': Putin says Iskander missiles not yet deployed near NATO borders. In: RT, December 19th, 2013. In: <https://www.rt.com/news/putin-iskander-abm-deployment-489/> on September 26th, 2018.

⁶¹³ Payne, Keith B. / Foster, John S.: Russian strategy: Expansion, crisis and conflict. In: Comparative Strategy, Vol. 36/1/2017, p. 53-54.

⁶¹⁴ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 25-26.

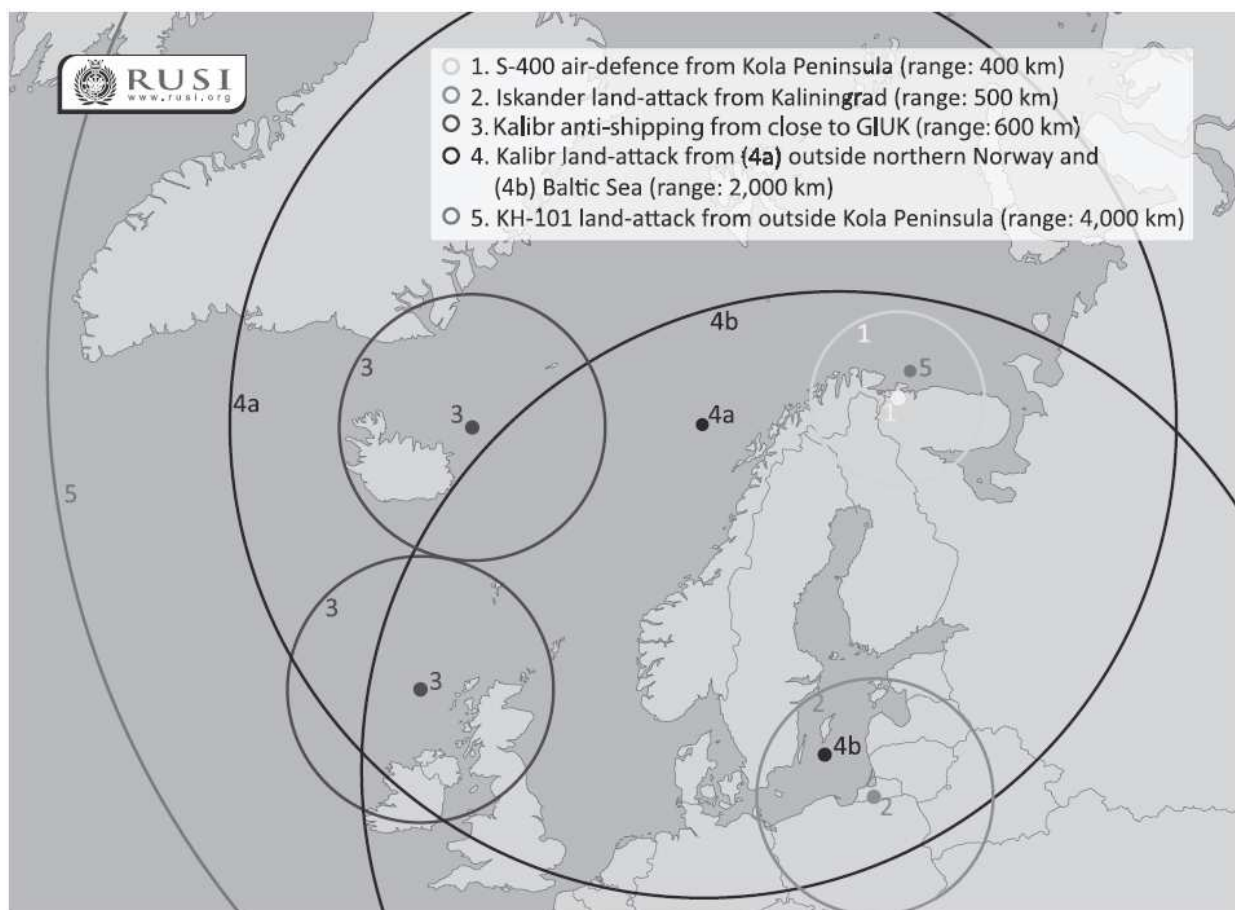


Fig. 17: The Russian missile systems deployed in the NSB by position and range⁶¹⁵

In 2014, Russia installed the Arctic Joint Strategic Command to co-ordinate the various branches of service in the NSB and to strengthen them for successful operations in the Arctic and the northern North Atlantic down to the GIUK Gap. Various units from Russia's Western, Central, and Southern Military Districts were merged under its command to augment the Northern Fleet as the main strike force. *The command and the fleet have become the pivot in Russia's anti-access strategy in the maritime domain.*⁶¹⁶ This strategy does not only secure the Russian waters and the weapon placement in the NSB, but also threatens the connection between North America and Europe in the northern North Atlantic and thus poses a strategic challenge in the region surrounding the GIUK Gap.⁶¹⁷

⁶¹⁵ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 23.

⁶¹⁶ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 23.

⁶¹⁷ Tamnes, Rolf: The Significance of the North Atlantic and the Norwegian Contribution. In: Whitehall Papers, Vol. 87/1/2016, p. 21, 31.

Reports by NATO indicate that Russia's naval activity in the northern North Atlantic and in the GIUK Gap has returned to the level shortly after the Cold War.⁶¹⁸ Russia's navy is operating in areas and at a speed which remind NATO representatives of the Cold War, endangering NATO's northern flank.⁶¹⁹

Particularly an increase of submarine activities in the North Atlantic regions covered by NATO is *'testing [NATO's] defences, confronting [NATO's] command of the seas, and preparing the complex underwater battlespace to give [Russia] an edge in any future conflict.'*⁶²⁰ Sightings of Russian submarines have been reported by various NATO member countries for years. In 2015, the UK suspected a submarine in its territorial waters close to Faslane submarine base in Scotland which is home to the UK nuclear deterrent. The submarine was presumed to be Russian and tracking the arrival and departure of British SSBN. As Faslane is located on the western coast of Scotland near Glasgow, the suspected submarine was definitely operating in the GIUK Gap. In 2016, a Russian submarine armed with nuclear missiles was detected in French territorial waters in the Bay of Biscay by the French navy. Also in 2016, two nuclear-powered submarines and one diesel-powered submarine from the Northern Fleet armed with Kalibr cruise missiles were tracked by the UK on their way to the Mediterranean Sea after having entered the North Atlantic from their home base at Murmansk.⁶²¹ In 2017, Sweden and Finland hunted suspected submarines in their territorial waters in the Baltic Sea.⁶²² Iceland has repeatedly detected Russian submarines sailing through the GIUK Gap heading for the transatlantic cables and the North American mainland.⁶²³

Activities of Russian surface vessels close to NATO member countries have also intensified. In 2015, the Russian naval intelligence ship 'Viktor Leonov' was detected near the US Navy's Trident ballistic missile submarine base in Kings Bay, Georgia. The ship is equipped for monitoring sonar and communications and carries defensive weaponry. In 2017, it was again spotted off the east coast of the USA sailing to Cuba.⁶²⁴ Russian operations near the transatlantic cables have been increasing for years. Another Russian intelligence ship, the 'Yantar', crossed the North Atlantic along the transatlantic cables in 2015, and also sailed along the US east coast to Cuba. It is equipped with deep-sea unmanned

⁶¹⁸ Nordenman, Magnus: Back to the Gap. In: The RUSI Journal, Vol. 162/1/2017, p. 26.

⁶¹⁹ Olsen, John Andreas: Introduction: The Quest for Maritime Supremacy. In: Whitehall Papers, Vol. 87/1/2016, p. 5.

⁶²⁰ Foggo III, James / Fritz, Alarik: The Fourth Battle of the Atlantic. In: Proceedings Magazine, Vol. 142/6/I, 360/2016. In: <https://www.usni.org/magazines/proceedings/2016-06/fourth-battle-atlantic> on September 27th, 2018.

⁶²¹ Nilsen, Thomas: Two nuclear submarines from Kola sail into Mediterranean. In: The Barents Observer, October 30th, 2016. In: <https://thebarentsobserver.com/en/security/2016/10/two-nuclear-submarines-kola-sails-mediterranean> on September 27th, 2018.

⁶²² Nordenman, Magnus: Back to the Gap. In: The RUSI Journal, Vol. 162/1/2017, p. 26.

⁶²³ Thordarson, Gudlaugur Thor: Speech at the Stockholm International Peace Research Institute (SIPRI). Stockholm, January 18th, 2018. In: Government Offices of Iceland, January 18th, 2018. In: <https://www.government.is/news/article/2018/01/18/Speech-at-the-Stockholm-International-Peace-Research-Institute-SIPRI/> on August 28th, 2018.

⁶²⁴ Hauser, Christine: Trump, the Russian Ship and Suspicious Minds. In: The New York Times, February 16th, 2017. In: <https://www.nytimes.com/2017/02/16/us/politics/russian-ship-vessel-usa.html> on September 27th, 2018.

submersibles which are able to sever submarine cables in great depth.⁶²⁵ The Russian aircraft carrier ‘Admiral Kuznetsov’ and escort vessels were observed traversing the English Channel in 2016 on the way to the eastern Mediterranean Sea, triggering the UK to escort the Russian convoy with its own warships.⁶²⁶

Most breaches of territorial integrity of NATO and European countries in the High North, however, were detected in the airspace. NATO declared that its member countries intercepted Russian military aircraft 400 times in 2014, twice the number of 2013.⁶²⁷ Iceland started to register Russian strategic bomber flying close to its shores after the US Armed Forces left Keflavik Air Base in 2006.⁶²⁸ In 2015, two Russian Tu-95 bombers passed Icelandic airspace twice, 26 nautical miles off the coast. This marked the closest flyby since 2006. Russian aircraft have performed transit flights close to Iceland for years, but since 2016 multiple circumnavigation flights by Russian aircraft have been registered.⁶²⁹ In 2014, Russian aircraft performed a simulated attack on the Danish island of Bornholm, breached Finnish airspace several times, and traversed the Swedish airspace south of the island of Öland.⁶³⁰ In 2015, two Russian Tu-95 bombers carrying nuclear warhead missiles flew over the English Channel supposedly to seek British SSBN of the Vanguard-class.⁶³¹ In 2016, at the same time as the USA and Finland signed a security cooperation agreement, two Russian armed Su-27 fighter jets breached the Finnish airspace for about a minute before returning to Russia.⁶³² A growing number of low-level, high-speed Russian aircraft flybys of US naval vessels were noted in the past years.⁶³³ In 2016, a Russian fighter jet came within yards of the USS Donald Cook in the Baltic Sea.⁶³⁴ Russia also has increased

⁶²⁵ Kochis, Daniel / Slattery, Brian: Iceland: Outsized Importance for Transatlantic Security. In: The Heritage Foundation Backgrounder, Vol. 3121, June 21st, 2016. Washington, D.C., 2016, p. 6.

⁶²⁶ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 57. Shinkman, Paul D.: Russia’s Ramping Up for War Where Nobody’s Looking. The Nordic countries of Norway, Sweden and Finland fear greater likelihood of conflict with Putin. In: U.S. News, November 2nd, 2016. In: <https://www.usnews.com/news/world/articles/2016-11-02/russias-ramping-up-for-war-where-nobodys-looking> on September 26th, 2018.

⁶²⁷ Payne, Keith B. / Foster, John S.: Russian strategy: Expansion, crisis and conflict. In: Comparative Strategy, Vol. 36/1/2017, p. 38.

⁶²⁸ Thordarson, Gudlaugur Thor: Speech at the Stockholm International Peace Research Institute (SIPRI). Stockholm, January 18th, 2018. In: Government Offices of Iceland, January 18th, 2018. In: <https://www.government.is/news/article/2018/01/18/Speech-at-the-Stockholm-International-Peace-Research-Institute-SIPRI/> on August 28th, 2018.

⁶²⁹ Kochis, Daniel / Slattery, Brian: Iceland: Outsized Importance for Transatlantic Security. In: The Heritage Foundation Backgrounder, Vol. 3121, June 21st, 2016. Washington, D.C., 2016, p. 6.

⁶³⁰ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 47.

⁶³¹ Payne, Keith B. / Foster, John S.: Russian strategy: Expansion, crisis and conflict. In: Comparative Strategy, Vol. 36/1/2017, p. 39.

⁶³² Shinkman, Paul D.: Russia’s Ramping Up for War Where Nobody’s Looking. The Nordic countries of Norway, Sweden and Finland fear greater likelihood of conflict with Putin. In: U.S. News, November 2nd, 2016. In: <https://www.usnews.com/news/world/articles/2016-11-02/russias-ramping-up-for-war-where-nobodys-looking> on September 26th, 2018.

⁶³³ Smith, Julianne / Hendrix, Jerry: Forgotten Waters. Minding the GIUK Gap. A Tabletop Exercise. Center for a New American Security. Washington, D.C., 2017, p. 3.

⁶³⁴ Shinkman, Paul D.: Russia’s Ramping Up for War Where Nobody’s Looking. The Nordic countries of Norway, Sweden and Finland fear greater likelihood of conflict with Putin. In: U.S. News, November 2nd, 2016. In: <https://www.usnews.com/news/world/articles/2016-11-02/russias-ramping-up-for-war-where-nobodys-looking> on September 26th, 2018.

its activities in the Arctic. In 2007 alone, Russian bombers illegally entered the airspace of Alaska 18 times. In 2014, two Russian long-range strategic bombers and a refuelling tanker entered the EEZ of Alaska.⁶³⁵ In many cases, the Russian military aircraft illegally entering NATO airspace are bombers capable of carrying nuclear missiles⁶³⁶ with turned off transponders.⁶³⁷

Western countries and alliances have started to identify Russia's military actions as elements of a Russian assertive and threatening grand strategy. These direct military actions have been accompanied by defence initiatives, expanded conventional and nuclear arms programs, internal repression, and egregious non-compliance with arms control. Russian rhetoric has become increasingly hostile toward the West. In addition, hybrid warfare has become an important part of Russia's military strategy. According to Payne / Foster, '[...] contemporary Russian [...] strategy is intended to coerce the West and enforce Moscow's expansionist moves [...]'.⁶³⁸ While Russia and the West had been adversaries since after World War II, the balance of power has shifted after the end of the Cold War. In the light of the renewed arms build-up on both sides, Trenin considered war avoidance to be of major importance and the accidental eruption of military conflict a legitimate threat '[...] against the background of opposing strategies and policies and in the thick atmosphere of deep mutual distrust'.⁶³⁹

⁶³⁵ Hamre, John J. / Conley, Heather A.: The Centrality of the North Atlantic to NATO and US Strategic Interests. In: Whitehall Papers, Vol. 87/1/2016, p. 47.

⁶³⁶ Payne, Keith B. / Foster, John S.: Russian strategy: Expansion, crisis and conflict. In: Comparative Strategy, Vol. 36/1/2017, p. 38-39.

⁶³⁷ Globsec NATO Adaptation Initiative / Lindley-French, Julian (ed.): One Alliance? Change Drivers in a New Strategic Environment. Bratislava 2017, p. 18.

⁶³⁸ Payne, Keith B. / Foster, John S.: Russian strategy: Expansion, crisis and conflict. In: Comparative Strategy, Vol. 36/1/2017, p. 2.

⁶³⁹ Trenin, Dmitri: Collision Rather Than Collusion: Issues in Russian-U.S. Relations. In: Asia Policy, Vol. 24/2017, p. 37-38.

Conclusions

‘I see the bad moon arising,
I see trouble on the way.’

From the song ‘Bad Moon Rising’, John Fogerty for
Creedence Clearwater Revival, 1969⁶⁴⁰

‘Mind the gap!’ has become a standard expression in railway traffic systems. However, to most people it is a synonym for the London underground system and thus directly connected to the British capital. The phrase ‘Mind the gap!’ can be heard in all Londoner underground stations the whole day. The identification of London with this exclamation has led to the creation of a variety of souvenirs such as T-shirts, fridge magnets, and socks.⁶⁴¹ The sentence is used to make passengers aware of a lingering danger easily overlooked: the train and the platform do not always align perfectly and it is easy to get a foot stuck in the small gap between the platform and the departing train. However, awareness of this danger seems to be vanishing as such accidents increased by over 400% between 2006 and 2016.⁶⁴²

The Greenland-Iceland-United Kingdom (GIUK) Gap can be described as a region of little public awareness holding a lingering danger. After being a hotspot of geostrategic planning during the Cold War, its significance waned at the end of the 20th century. The northern North Atlantic and the GIUK Gap seemed to be of less – if not no – importance to the future world as the bipolar system vanished after the dissolution of the Union of Soviet Socialist Republics (USSR) and the ongoing integration of eastern Europe into the formerly western European alliances. In the 1990ies and the 2000s, North Atlantic Treaty Organization (NATO) member countries reduced their presence in the northern North Atlantic, withdrew from military bases, and decreased the surveillance of the GIUK Gap. The orientation of NATO switched to the Middle-East, and cost cuts entailed the decrease of military presence in Europe. However, latest since 2014 and Russia’s annexation of Crimea, Europe and NATO switched their focus back to the northern North Atlantic as a geostrategic hotspot and rediscovered the GIUK Gap as a possible field of confrontation.

Both NATO and Russia have started to raise awareness again of the northern flank and of the GIUK Gap as the connecting chokepoint between the Arctic and the broader Atlantic Ocean. This awareness of the GIUK Gap can be identified in geostrategy as well as in economy.

⁶⁴⁰ Fogerty, John: Bad Moon Rising, 1969. In: <https://genius.com/Creedence-clearwater-revival-bad-moon-rising-lyrics> on August 17th, 2018.

⁶⁴¹ <https://www.lambertsouvenirs.com/mind-the-gap-london-transport> on October 3rd, 2018.

⁶⁴² Horton, Helena: Londoners aren’t minding the gap – 400% more people have been falling between the platform and the train in the last 10 years. In: The Telegraph, January 20th, 2016. In: <https://www.telegraph.co.uk/news/uknews/12111303/mind-the-gap-between-the-train-and-the-platform.html> on October 3rd, 2018.

This thesis aimed to elaborate on the current importance of the GIUK Gap. Consequently, the following questions were addressed: How did the northern North Atlantic develop historically? How did the GIUK Gap develop historically? What is the current economic and geostrategic significance of the northern North Atlantic? What is the current economic and geostrategic significance of the GIUK Gap? What is the approach of the Nordic NATO member countries Iceland, Greenland (Denmark), and Norway to the GIUK Gap? What is the Russian approach to the GIUK Gap? What are the particular economic and geostrategic interests of Russia in the northern North Atlantic and the GIUK Gap?

The questions ‘How did the northern North Atlantic develop historically?’ and ‘What is the current economic and geostrategic significance of the northern North Atlantic?’ are addressed in chapter 1.

The Atlantic Ocean gained importance in the Age of Discovery, especially after the Discovery of America in 1492. No longer a marginal sea largely ignored or feared, it became central to European interests. Today, the northern North Atlantic is the main connecting sea route between North America and Europe. It is the busiest shipping area, one of the busiest flying regions, and boasts the highest number of submarine cables worldwide. This transatlantic bridge is the backbone of the most strongly integrated region worldwide and needs to be secured geostrategically and economically.

Economically, the northern North Atlantic offers some of the most productive fishing grounds, and is rich in mineral resources and fossil fuels, i.e., crude oil and natural gas. Trade transit across the North Atlantic amounts to 4 trillion US Dollar per year. This intense connection depends on shipping routes, busy harbours, oil rigs, submarine cables, vital infrastructure, and a highly secured surrounding. Its economic potential makes the northern North Atlantic the centre of geostrategic concepts and potential conflicts. The connection of Europe and North America is built upon sea lines of communication (SLOC) and strategic economic routes. A well-planned and organized defence of these in potential crises, conflicts, or wars is essential for the North Atlantic region and all surrounding territories. With the increasing military activities in the northern North Atlantic and in the Arctic – conducted mainly and aggressively by Russia –, exercising maritime control and demonstrating dominance in the eastern part of the northern North Atlantic is of growing interest to NATO.

The questions ‘How did the GIUK Gap develop historically?’ and ‘What is the current economic and geostrategic significance of the GIUK Gap?’ are addressed in chapter 2.

In the 20th century, the GIUK Gap began to evolve as a major part of military planning in the northern North Atlantic. Especially in World War II, the GIUK Gap became a chokepoint in naval warfare between the Allied powers and Germany. It was part of the Mid-Atlantic Gap called the ‘Greenland air gap’ – an air gap between the UK and North America which in the beginning of World War II

was not covered by aircraft. This is where the usage of ‘gap’ for the GIUK Gap derives from. In the Mid-Atlantic Gap, shipping on the North Atlantic had no air force assistance, facilitating German submarine attacks on Allied convoys. Only in September 1943 the gap was finally closed by covering all ship traffic between the UK and North America.

In the aftermath of World War II and the rise of the USSR, in 1949 the USA, Canada, and the UK founded the military alliance NATO along with nine other western European countries including Norway, Denmark, and Iceland, which were considered a strategic bottleneck in the northern North Atlantic. Thus, the GIUK Gap is under total NATO control as it is completely surrounded by NATO member countries. During the Cold War the GIUK Gap became the key maritime chokepoint as Soviet ships and submarines had to cross it in order to access the North Atlantic, and US forces had to cross it in order to move towards the Kola Peninsula if they planned to attack the Soviet fleet and its base. After the dissolution of the USSR, the public awareness of the GIUK Gap nearly faded into oblivion. Currently, the GIUK Gap re-emerges as a strategic chokepoint due to the changing security situation in Europe and the renewed tendencies of Russian aggression against Europe. Geostrategically, the GIUK Gap today is a major hotspot as Russia’s Northern Fleet has to sail through it to reach the broader Atlantic Ocean, but the GIUK Gap itself is completely under control of NATO member countries. The adjacent countries are Greenland (Denmark), Iceland, the United Kingdom (UK), Norway, and in broader perspective Canada, the United States of America (USA) and France. Especially the Nordic NATO member countries (Iceland, Greenland (Denmark), Norway) have in the past years re-raised awareness of the GIUK Gap within NATO.

The economic significance of the GIUK Gap derives in the north from the up-coming exploitation of the Arctic and the future use of the Northeast Passage for shipping traffic, and in the south from the SLOC and the submarine cables. In the north, climate change causes major ice-melting north of the Arctic Circle. This area holds approximately 13% of the world’s undiscovered conventional oil resources and about 30% of the undiscovered natural gas resources in its continental shelves, representing approximately 412 billion barrels oil equivalent. Six countries (Canada, Denmark (Greenland), Iceland, Norway, Russia, and the USA) border the Arctic Ocean and thus claim the exclusive economic exploitation of parts of the Arctic seafloor. Territorial disputes are a major issue. Furthermore, the Northeast Passage is estimated to be ice-free during summer by 2040. Ship traffic through the Northeast Passage will reduce sailing time significantly. The Northeast Passage connects to the Atlantic Ocean through the chokepoint of the GIUK Gap. South of the GIUK Gap, submarine cables cross the North Atlantic. About 99% of international data worldwide is transmitted by submarine communication cables. Currently, 20 submarine communication cables cross the North Atlantic. They are an important factor in today’s globalized economy: about 15 million financial transactions with a total volume of 10 billion US Dollar are processed via the transatlantic submarine cables every day.

The question ‘What is the approach of the Nordic NATO member countries Iceland, Greenland (Denmark), and Norway to the GIUK Gap?’ was addressed in chapter 3.

Iceland is located in the middle of the GIUK Gap, often referred to as ‘*the unsinkable aircraft carrier in the middle of the Atlantic that you can fly from.*’⁶⁴³ In 1949, Iceland became a NATO founding member country even though it did not maintain national armed forces. The membership of Iceland was imperative for securing the GIUK Gap. All NATO founding members were aware that Iceland is perfectly positioned to protect the North Atlantic connection between North America and Europe, and they wanted Iceland to be an ally rather than a neutral country to deal with or – even worse – a Soviet satellite in the middle of the GIUK Gap threatening the transatlantic alliance. Today, Iceland is investing in supporting assets, purchasing search-and-rescue helicopters, improving radar stations, and maintaining the air field at Naval Air Station (NAS) Keflavik. Furthermore, Iceland established four radar sites and an Air Command and Control System within the NATO Integrated Air and Missile Defence system which safeguards and protects the Alliance territory against air and missile attacks. Aircraft of NATO member countries and the non-NATO member countries Sweden and Finland survey the North Atlantic on a rotational principle from NAS Keflavik. The USA re-deployed F-15 aircraft and air force personnel to Iceland and invest 14.4 million US Dollar in the NAS Keflavik airfield. This upgrade of the NAS Keflavik will allow the deployment of P-8 aircraft used for maritime patrolling. The UK is planning to install a permanent UK Royal Navy carrier group in the GIUK Gap between Iceland and Scotland to protect NATO’s SLOC in the North Atlantic.

Greenland, being a part of Denmark and therefore a NATO member country since 1949, hosts today the northernmost US base worldwide at Thule Air Base in Pituffik near Qaanaaq. Currently, Thule is the home base of the 12th Space Warning Squadron and the only US Air Force base without aircraft. An upgrade for missile and space defence at Thule, investing 40 million US Dollar in a software upgrade for the radar, enables ground-based radar tracking of missiles trajectories. Denmark installed the new joint military Arctic Command in Greenland’s capital Nuuk, which is responsible for the deployment of Danish military units in the northern North Atlantic and the Arctic. Danish F-16 aircraft use Sondrestrom Air Base and Thule Air Base for stop-overs. Three Danish unarmed maritime patrol aircraft operate off Greenland. Troops have been doubled within the past years in the small special forces units Frømandskorps (Frogman Corps), Jaeger special forces, and the Slædepatrulje Sirius (Sledge Patrol Sirius), the only sledge patrol in the world. At the Danish Navy base at Kangilinnuit (Grønnedal), a comparatively large number of ocean patrol vessels and frigates (three Iver-Huitfeldt-class frigates, two Absalon-class command and support ships, four Thetis-class frigates, and

⁶⁴³ Nordenman, Magnus, cited in Montgomery, Nancy: No permanent basing for Navy sub hunters in Iceland despite construction projects. In: Stars and Stripes, January 9th, 2018. In: <https://www.stripes.com/news/no-permanent-basing-for-navy-sub-hunters-in-iceland-despite-construction-projects-1.505835> on February 27th, 2018.

three Knud Rasmussen-class light corvettes) are based which are specifically optimised for Arctic operations. The radar systems on the Iver Huitfeldt-class frigates will be integrated into the NATO ballistic missile defence (BMD) system to guarantee a more robust and mobile radar coverage.

Norway is the only Nordic NATO member country which shares a border to Russia. Compromise with Russia has therefore been inevitable. In the Arctic, Norway and Russia settled their territorial disputes in the Barents Sea in the Norwegian-Russian Barents Sea Treaty. However, Norway refuses to compromise about the exclusive economic zone (EEZ) around Svalbard. The archipelago in the waters connecting the Arctic Ocean and the northern North Atlantic was declared to be a demilitarised zone and Russia seeks to ensure that Western countries do not use the islands militarily in the future. Norway borders on the Norwegian Sea and has regained importance to geostrategic projects regarding the GIUK Gap over the last decade because of this position and the renewed build-up of Russian naval forces, in particular of the submarine fleet anchored at the Kola Peninsula. Norway and the USA re-vitalized equipment pre-positioning in Norwegian cave systems. Additionally, 330 US Marines have been stationed at Værnes Air Station in Trondheim, a number which is planned to be increased to 700. Norway along with the USA and the UK is purchasing P-8s to improve monitoring of the GIUK Gap. Several Norwegian military institutions were moved from the south of the country to the north. The headquarters of the Norwegian Armed Forces in Reitan are one of the most modern joint operational headquarters of the European NATO member countries. Primarily, it is a centre for national military operations, but it can also be used as the centre of NATO operations. 52 F-35 aircraft armed with new Norwegian anti-ship missiles will be based in Ørland and at Harstad / Narvik Airport at Evenes making these airfields hosts to the largest concentration of F-35 combat aircraft in Europe. Due to the limited range of the F-35 aircraft, Norway joined with Poland and the Netherlands to purchase tanker aircraft. Furthermore, Norway owns five large frigates equipped with the SPY-1F Aegis Weapon System to provide high-performance surveillance, detection, and tracking, a large combat support ship, two large research ships with electronic and signals intelligence equipment, and a patrol vessel which can break ice and is equipped with a helicopter hangar. In Jättå near Stavanger, the NATO Joint Warfare Centre is based, which is responsible for the preparation of NATO units in joint operational warfare by training and developing computer-assisted Command Post Exercise planning and delivery.

The questions ‘What is the Russian approach to the GIUK Gap?’ and ‘What are the particular economic and geostrategic interests of Russia in the northern North Atlantic and the GIUK Gap?’ were addressed in chapter 4.

NATO’s main adversary at the northern flank is Russia. As Russia’s access to the world’s oceans is limited due to its geographical location, securing passage rights through naval choke points is decisive.

Russia's major fleet – the Northern Fleet – is based at the Kola Peninsula. Its access to the broader Atlantic Ocean is only possible through the GIUK Gap which is completely covered by NATO member countries. The GIUK Gap is considered to be *'the Russian Northern Fleet's gateway to the Atlantic Ocean'*⁶⁴⁴. Russia's geostrategic approach to the northern North Atlantic encompasses three main components: maritime hybrid warfare, the Russia's Northern Fleet at the Kola Peninsula, and Russia's Northern Strategic Bastion (NSB).

Maritime hybrid warfare is an enhancement of hybrid warfare. As a military strategy hybrid warfare was not developed by Russia, but the Russian Armed Forces have adopted it perfectly. The annexation of Crimea highlighted the capability of Russian forces to engage in hybrid warfare in real conflict situations. In maritime hybrid warfare civilian vessels are included; deployed platforms are equipped with a variety of weapons and capable of deploying unmanned sensors overhead, on and under the water surface; sonobuoys, free-floating mines, and missiles are installed; and motherships for speedboats are deployed. The main targets of maritime hybrid warfare are ports, harbours, or canals to disrupt or even shut down naval trade; submarine cables to interrupt the information flow of global networks; oil platforms to affect the global oil market; opponent's naval facilities and the civilian fishing industry to interfere with naval operations and destabilise economies. Russia's priority is to adapt hybrid warfare for use at sea, mainly in the northern North Atlantic. NATO is currently not thought to be fully ready to counter such hybrid attacks.

Russia's Northern Fleet at the Kola Peninsula is Russia's main military unit in the High North. The waters around the Kola Peninsula are perennially ice-free, and thus Russia's northernmost naval bases located there secure the convenient access of Russian surface and subsurface vessels not only to the North Atlantic through the Norwegian Sea and the GIUK Gap but also to the Arctic Ocean. In 2011, Russia possessed 576 sea-based nuclear warheads, 67% of which were deployed on nuclear submarines assigned to the Northern Fleet. This submarine fleet within the Northern Fleet consists of Typhoon-class strategic nuclear ballistic missile submarine (SSBN), Delta IV-class SSBN, Borei-class SSBN armed with 16 Bulava submarine-launched ballistic missiles with a range of over 8,000 km, carrying six to ten warheads each, one nuclear-powered attack submarine of the Yasen-class, several missile submarines of the Oscar II-class, and several diesel-electric submarines of the Kilo-class. The Yasen-class nuclear-powered attack submarine (SSN) is considered to be on-par with most of the recent western SSN and in some areas even to surpass them. The naval surface forces of the Northern Fleet include Russia's only aircraft carrier 'Admiral Kuznetsov'; the nuclear-powered heavy missile cruiser 'Pyotr Velikiy' of the Kirov-class; Udaloy-class destroyers for ASW; and Sovremenniy-class destroyers with anti-surface warfare and anti-air capabilities. To support the naval surface forces in the ice-regions

⁶⁴⁴ Hicks, Kathleen H. / Metrick, Andrew / Sawyer Samp, Lisa / Weinberger, Kathleen: Undersea Warfare in Northern Europe. CSIS International Security Program Report, July 2016. Washington, D.C., Lanham 2016, p. 6.

of the High North, the Northern Fleet operates several ice-breakers: the large ice-breaker '50 Let Pobedy' of the Arktika-class, small Project-97 ice-breakers, and one Project-21180 ice-breaker. Two further ice-breakers are expected to be commissioned to keep the Northeast Passage perennially ice-free. Russian air forces in the High North feature several types of Soviet-era fighters and interceptor aircraft. The Russian Northern Fleet possesses a carrier-based and aerial refuelling-capable fleet of aircraft, and the strategic bomber force patrols the Arctic airspace with turboprop Tu-95 and supersonic Tu-160 bombers. Russian ground forces on the Kola Peninsula include two independent motorized infantry brigades, a newly founded Arctic brigade comprising 3,600 troops, and a second Arctic brigade heavily equipped with tanks and armoured vehicles.

Russia's Northern Strategic Bastion is installed around Russia's Northern Fleet. The bastion concept was implemented in and around the Barents Sea in the 1950ies based on the USSR's naval doctrine that all naval and air operations against an adversary will be most successful if conducted from secure home waters. It was revived in 1998 as a passive nuclear deterrence force and a flexible policy instrument to secure Russia's interests on the world's oceans, centred on the three elements of the nuclear triad. Russia assumes that in case of conflict, NATO's first aim will be to destroy Russia's SSBN. Consequently, the concept of sea denial was added to the NSB. To protect the military equipment deployed on the Kola Peninsula from strikes from the sea, the adversary should be denied conducting offensive operations in the neighbouring areas. In the case of an attack, Russia will try to protect its nuclear missiles on the Kola Peninsula by establishing sea-control in its proximity, sea-denial further west and south to the GIUK Gap, and by deploying attack submarines further west in the North Atlantic to destabilise the North Atlantic SLOC. The NSB at the Kola Peninsula is supported by underwater intelligence by a new warning system based on hydrographic and hydrologic research. Furthermore, it is supported by attack submarines to protect the strategic submarines in the NSB and to impede the movements of NATO submarines in the sea-denial zone of the NSB. Additionally, Russia has been rebuilding and modernising its air bases along its Arctic coast line to deploy intermediate and long-range air defence systems between the NSB and the bastion established at the Pacific Fleet to secure Russian control over the major part of the Arctic and the Arctic Ocean. The main offensive and defensive armament at NSB are missiles to defend the bastion, protect strategic submarines, ensure sea-denial, defend land territory against invasion, threaten distant targets, and disrupt the SLOC of hostile alliances. Russia has deployed four types of missile systems in the NSB: S-400 ground-launched anti-aircraft missiles to provide air defence, Iskander tactical missiles (deployed in Kaliningrad and Russia's mainland Baltic region) to bolster the NSB, Kalibr missiles (deployed on Russia's newly designed submarines and larger surface vessels) to perform precision strikes against land and sea targets, and the Kh-101 to strike targets almost unhampered as they have stealth capability, high-subsonic speed, and a low-altitude flight profile.

Within the past years the emergence of a new contest in the northern North Atlantic, centred on the GIUK Gap, has become obvious. Both parties involved, NATO and Russia, started an arms build-up to secure or deny control of the important chokepoint. Defending control over the GIUK Gap is essential to NATO to strengthen trans-Atlantic security. Achieving access to the GIUK Gap is essential to Russia to secure access to the broader Atlantic Ocean. Geostrategic and economic approaches to the northern North Atlantic are changing and the involved countries and alliances are becoming aware of the consequences, as the head of NATO's military committee, General Petr Pavel, pointed out: *'We can call it modernization, we can call it adaptation. We simply have to adapt to a new reality'*⁶⁴⁵. NATO efforts to deter further Russian aggression in Europe is most visible in Europe's east. However, awareness of the resurgence of a Cold War geostrategic hotspot slowly manifests itself in NATO's and Russia's military conceptions: *'The GIUK [G]ap is back'*⁶⁴⁶. Various measures put in effect by the opposing parties draw attention to this maritime hotspot: Mind the GIUK Gap!

⁶⁴⁵ Pavel, Petr, cited in Emmott, Robin: Echoes of Cold War as NATO mulls new North Atlantic command. In: Reuters, November 6th, 2017. In: <https://www.reuters.com/article/us-nato-russia/echoes-of-cold-war-as-nato-mulls-new-north-atlantic-command-idUSKBN1D61ZP> on August 24th, 2018.

⁶⁴⁶ Nordenman, Magnus: Russian Subs Are Reheating a Cold War Chokepoint. In: Defense One, March 4th, 2016. In: <http://www.defenseone.com/ideas/2016/03/russian-subs-are-reheating-cold-war-chokepoint/126428/> on April 27th, 2018.

Acknowledgments

First things first: I would like to thank Professor Mueller for giving me the opportunity to complete my master studies by supervising the writing of this thesis. His immense experience has been highly stimulating, and his patience has seemed endless. My friend Ulrike once called me the most pacifistic person she has ever encountered, but somehow with Professor Mueller I often discussed topics regarding geostrategy and military alliances: Iceland as founding member of NATO, the United States Armed Forces as part of the group research work 'Team USA' with KAMM (Konstantin, Andrea, Milosz, and me), and finally the GIUK Gap in this thesis.

Second things second: I am very grateful to all members of the M.E.S. class of 2017/2018: Andrea, Aude, Jenny, Karoline, Lara, Valerie, Tekle, David, Konstantin, Maximilian, Milosz, Peter, Philip, Robert. Within this intense year we experienced together day by day, you have become much more than mere colleagues, you have become friends. Interacting and working together, discussing intensely, sharing experiences and opinions have made the year a very enriching experience, and the cheerful atmosphere we have created is second to none. Sincere thanks go to Andrea, with whom I not only once but twice invented, developed, and designed board games to be played during the lessons. Deepest thanks go to the class for having accepted our 'creative' approach and cheerfully played with us both board games.

Third things third: My heartfelt thanks go to my family, who is always there for me.

Last things last – and lasting forever: My deepest gratitude goes to Daniel. Thank you for encouraging me to face the challenge of a postgraduate master. Thank you for supporting me in going back to schooling after working for 18 years. Thank you for backing me with your scientific experience. Thank you for accompanying me through the writing of this thesis – I know this was no easy task. Thank you for being in my life, for changing my life, for enriching my life. Without you, I would not be the person I am able to be every day.

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