



# MELTING ARCTIC, BURGEONING OPPORTUNITIES AND CHALLENGES

Dr. Suprita Suman\*

## ABSTRACT

*The global warming has made the fabled Arctic accessible and many economic opportunities have emerged. Now the Arctic Ocean has emerged as the core of global geopolitics and geoeconomics and geo strategic interests. But all these have serious implications on the fragile environment of the Arctic. The article presents an analysis of burgeoning global interests in this region and its implications.*

Scott Borgerson states, "Climate change may transform the Arctic Ocean into a third waterway for transcontinental traffic into North America. The result is that the northern tier will become open to the benefits and exposed to the potential costs of worldwide commerce" (Borgerson 2008). The transforming Arctic has intensified the competing claims by Arctic states over territorial waters as well as outer continental shelf extensions. These challenges are of various types: disputes over the territories in which only the Arctic nations are involved, and the disputes in which the Arctic and non-Arctic nations are involved over various matters like fishing, oil drilling and shipping routes. The UNCLOS III which was ratified in 1982 settled a number of important issues related to ocean usage and state sovereignty, viz. navigation rights; limitation of territorial sea boundaries (twelve miles offshore); set exclusive economic zones (up to 200 miles offshore); set up rules for extending continental shelf rights (up to 350 miles offshore); created the International Seabed Authority; and created other conflict resolution mechanisms (i.e., the UN Continental Shelf Commission). Though it is a comprehensive document to govern the Ocean, some of the emerging situations in the Arctic Ocean inhibit its seamless applicability and some territorial disputes have emerged and are unresolved and some are likely to emerge (Proelss, & T Müller 2008).

## **Territorial Disputes and Overlapping Claims:**

The overlapping continental shelf claims in the Arctic are complex because of the configuration and geology of the sea floor and are further compounded by sovereignty claims, territorial claims and maritime passage (Kadir 2014). As the Arctic continental shelf has semi-enclosed shape encircled by littoral states, the extension of the continental shelves and delimitation of maritime boundaries would lead to invariably overlapping claims (Ebinger and Zambetakis 2009). Any sort of such claims are relevant to a range of maritime uses in the Arctic, including resource development, navigation and ocean management (Ilulissat Declaration 2009). In the Arctic region the A5 nations have overlapping claims including continental shelf. Disputed boundaries represent the major security challenge for the countries that border

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\* Ad-hoc Lecturer, Dept. of Pol. Science, Patna Women's College, Patna, P.U., Bihar



each other in the Arctic. These include not only border disputes but also the questions of passage rights, domestic and international waters, the length of the continental shelf and the boundaries of the Exclusive Economic Zones (EEZs). There are two main international laws that provide principles for the nations to settle their differences – the 1958 Continental Shelf Convention and the 1982 UNLOS III. The Convention of 1958 establishes that coastal states have sovereign rights over the natural resources within 200 nautical miles from their baselines. Beyond the EEZ lie the high seas, where the rights of free shipping and flag rights apply. The most problematic question is where the continental shelf starts and where it ends.

Two questions, the first regarding the delimitation of national boundaries and second the respective EEZ, affect almost all Arctic countries and have created several boundary disputes among the Arctic littoral nations. These two questions have become highly controversial in case of existing treaties regarding boundary delimitation before the UNCLOS III. For example, disputes currently exist between Russia and the United States regarding the Bering Sea; the US and Canada over the Beaufort Sea; Canada and Denmark concerning the Davis Straits; Denmark and Iceland with respect to the Fram Strait.

In 1867 the United States purchased the territory of Alaska; the purchase agreement defined a marine boundary between Russia and the newly acquired US territory. The Convention of 1867 determined two geographical lines – one in the Bering Sea and the second one in the Arctic Ocean – to delimit American and Russian territories. "However, in case of the Bering Sea the 1867 Agreement actually not only applied to maritime territories and was not intended for

the delimitation of EEZ", the concept didn't exist at that time (Konyshev and Sergunin 2014). When the UNCLOS III was adopted, the 1867 Treaty line became the most contentious marine boundary in the world because of the indistinct language of the purchase agreement between Russia and the US. The treaty failed to define the type of line, map projection and horizontal datum used to illustrate this boundary. None of these two countries have original or other authenticated maps used during the negotiations to resolve the issue. When the United States and the former Soviet Union implemented a 200 nautical mile Exclusive Economic Zone (EEZ) in 1977, they exchanged diplomatic notes indicating their intent "to respect the line set forth in the 1867 Convention" as the limit to each countries' fisheries jurisdiction where the two hundred nautical mile boundaries overlapped. This boundary was resolved in a 1990 treaty, commonly known as the "Baker-Shevardnadze Agreement, between the United States and the former USSR". Though both the countries made compromise the US still controlled a far greater amount of area in the Bering Sea than what the new agreement proposed, based on the equidistant line principle normally used in international boundary disputes. The US quickly ratified the 1990 Agreement but the USSR didn't ratify (Kaczynski 2007). The United States and Russia have implemented their maritime boundary agreement provisionally while awaiting ratification by the Russian government.

The EEZ boundary in the Arctic is yet to be resolved either formally or provisionally in the US-Canada boundary in the Beaufort Sea; the language of the 1825 treaty between Russia and the United Kingdom failed to define the maritime boundary north of the Arctic coastline.



The Arctic states have reached agreement on most of the maritime boundaries of their seas and sea beds. Russia has negotiated boundary treaties with Norway (Russia-Norway 2010).<sup>1</sup> In April 2010 Norwegian Prime Minister Jens Stoltenberg and Russian President Dmitry Medvedev publicly announced that negotiations had been completed, with the exception of some technicalities. The final agreement was signed in Murmansk, Russia, on September 15, 2010, and has been subsequently approved by the two countries' national parliaments. The document came into force in July 2011 (Konyshev and Sergunin 2014).

There is another dispute regarding the Spitsbergen Archipelago. Norway obtained sovereignty over the Spitsbergen Archipelago – Svalbard – in the Treaty of Paris of 1920. All the other signatories, i.e., some forty countries, got equal rights to fisheries, commercial enterprise, and the exploitation of resources on the land at Svalbard and within 12 nautical miles from shore. With the establishment of 200 nautical miles EEZ, Norway also argues for establishment of EEZ around Svalbard. The other signatories are claiming that the non-discriminatory principle of the Svalbard Treaty must be applicable also to the 200 nautical mile zone, whereas Norway adheres to the literal interpretation of the treaty text. The other signatories' argument is that the wider ocean areas would have been included in the 1920 treaty of commercial activity outside the territorial water which had been an option at the time. To avoid the conflict Norway did not establish an EEZ around Svalbard rather, a so-called fishery protection zone (Ostrued and Honneland 2014).

Norway has resolved disputes with Iceland and Denmark. Denmark and Canada have reached an agreement on their maritime

boundary between Greenland and Canada from Baffin Bay through Nares Strait and the Lincoln Sea, though this agreement has not yet been finalised as a treaty.

Like many legal texts that are written by large committees, Article 76 appears clear on its face but, upon closer examination, bears little relationship to the real world: its terminology is ambiguous and overly simple. Plus the process that is followed inside the Commission has, up to now, not been transparent as it appears in the writing. The provision made under Article 76 of the UNCLOS III seems to be generating some major disputes in the Arctic region. According to this the coastal State is authorised to exploit the resources beyond the 200 nm of its EEZ according to UNCLOS 76(1) for establishing the outer limits of such a continental shelf, a state has to approach the Commission on the Limits of the Continental Shelf (CLCS) with supporting scientific and technical evidences as soon as possible, within ten years after ratifying the UNCLOS III. Article 76(5) UNCLOS provides that, "the outer edge of this continental shelf shall not exceed 350 nm from the baseline or 100 nm from the 2,500 m isobaths, whichever is more favourable to the Applicant State. The latter criterion is particularly significant in light of the overall flat nature of the Arctic Ocean (most parts are no deeper than 2,500 m)." However, there is one exception to this rule with respect to "submarine ridges": if the continental shelf covers parts of such a ridge, "it cannot be extended to more than 350 nm from the coast no matter where the 2,500 meter isobaths falls." This issue lies at the heart of the dispute over the remaining Arctic territory wherein particular the definition of the Lomonosov and Alpha-Mendeleev ridges as "submarine ridges" (or instead as "submarine



elevations" which are natural components of the continental shelf and do not fall under the limit of 350 nm) is disputed. Though the Article 76 requires scientific evidence of a natural prolongation to be submitted to the UN commission on the limits of the continental shelf for review, "the commission

claims it to be an oceanic ridge and thus not an extension of any State's continental shelf, and therefore refutes any claim to its ownership. The Arctic countries have submitted their claims for their extended continental shelf beyond 200 nautical miles. Their claims have been shown in the table-1 below.<sup>2</sup>

**Table-1 : Claims Submitted to the CLCS by the Arctic Countries**

Year	Country	Area	Decision
2001	Russia	Beyond 200M Arctic	Rejected
2009	Norway	Barents Sea	Rejected
2009	Denmark	Faroe Islands	Granted
2009	Norway	Bouvetoya and Dronning Maud Land	Pending
2010	Denmark	Faroe Rockfall Plateau Region	Pending
2012	Denmark	Southern Continental Shelf of Greenland	Pending
2013	Russia	Okhotsk Sea	Granted
2013	Denmark	North-Eastern Continental Shelf of Greenland	Pending
2014	Denmark	Northern Continental Shelf of Greenland	Pending
2015	Russia	Arctic Ocean	Pending

will not issue recommendations with respect to overlapping claims. It is up to the countries involved to negotiate a solution, refer the matter to an international court or tribunal, or simply agree to disagree and not issue exploration licenses for the contested area", therefore the states have to resolve the dispute in their own (Byers 2009; Dorman 2009). In case of the extended continental shelf the coastal countries' right is on the sea bed only; the waters and the ice in this zone would be part of high sea (Byers 2009), where the right of unrestricted passage exists.

Canada, the Kingdom of Denmark and the Russian Federation each assert that the Lomonsov Ridge is an extension of their own continental shelf. Proof of its continuation would give the State access to the seabed and natural resources beyond the current 200 nautical mile (nm) limit. The United States

Pursuant to article 76, paragraph 8 Russia submitted an application to extend its continental shelf in 2001 in which it claimed a huge portion of the Arctic. This was rejected in 2002. Then Russia submitted another claim in the Sea of Okhotsk in 2013 and CLCS decision was in Russia's favor. Again in August 2015 Russia submitted another revised claim on the border in the Arctic Ocean and the decision over this submission is still pending. Denmark submitted five claims; the first in 2009 related to claims on the Faroe Islands has been accepted by CLCS. Decisions on four applications, (i) Faroe Rockfall Plateau Region of 2010, (ii) Southern Continental Shelf of Greenland of 2012, (iii) North-Eastern Continental Shelf of Greenland of 2013 and Northern Continental Shelf of Greenland of 2014 are still pending. Norway's first submission



regarding the limits of the Barents Sea (2009) was rejected by the CLCS and it advised to directly negotiate with Russia, which it subsequently did. This negotiation paved the way for historical 2010 agreement dividing Barents Sea in half between the two Arctic states and ending 40 years of disputes between the two countries. At the heart of that four decades-long dispute were the seas' offshore oil and gas reserves. Again Norway has submitted a second application in 2009 related to Bouvetøya and Dronning Maud Land, which is still pending. This seems that no country is satisfied even after the acceptance of their claims and therefore further submissions are being made (Brutschin and Schubert 2016).

### Prospects of Militarisation

As discussed in previous section that both the superpowers are close neighbours in the Arctic region. The US territory Alaska is much closer to the Russia than the US mainland. The geography played a vital role in making the Arctic region strategically important. In this context Greenland, Iceland and United Kingdom GIUK gap, which is a natural chokepoint which consists of Denmark Strait, and the Norwegian Sea and constitutes the principal outlet to the North Atlantic for the vessels of the Russian Northern Fleet (Oshernko and Young 1989) as shown in the map.

Map 6 The GIUK gap :



. Because they lay athwart the passage these Russian vessels must taken route to the open sea. Thus the Norwegian Coast and Svalbard Archipelago can be target by Russia in case of war against Europe. Both Russia and NATO country Norway share common border in this location and therefore important for NATO and Russia both (Oshernko and Young 1989). The current scenario indicates probability for increasing militarisation and more actors would be involved. As Lincoln Edison Flake states, "As climate change opens up a more accessible theatre of operations in the Arctic for the world's navies, littoral states are increasing the tempo of military manoeuvres' in the region (Flake 2014).

A5 are increasing their investment in building new equipment and deploying troops closer or even north of the Arctic Circle. Norway shifted its base northward, from Jättå (south of the Arctic Circle) to Bodø (north of the Arctic Circle) in 2009 and Canada created four new reserve Arctic units, in north of 60". Throughout 2013–2015 Russia created a new Arctic command spread around the Arctic Circle, with forces installations positioned on Wrangel Island and Cape Schmidt in the Chukchi Sea near Bearing Sea patrolling the Eastern borders of Russia, as well as on Alexandra Land Island (Barents Sea) patrolling the Western borders of Russia. Denmark revived its Arctic command in 2012 with headquarters in Nuuk, Greenland, which operates Station Nord, "the northernmost base in the world" located at 81°3'N, 16°40'W (Brutschin and Schubert 2016).

Many of the military activities in 2014 were concentrated on the investments in new military equipments. After the disintegration of Russia there had been a sign of reduction in Russian presence in the Arctic (Czarny



2016) but Russia has shown retreating from this position and has deployed new radar systems on Wrangel Island and Cape Schmidt (Eastern part of Russia), but it also stationed new combat aircraft on Novaya Zemlya—an archipelago situated between Barents and Kara Seas (Northwestern Russia). Moreover, the Russian military announced plans to increase the number of troops stationed on Novaya Zemlya by 2020. Russia also reported a successful 2500 km flight over the Arctic without a landing by its SU-34 fighter bombers; aircrafts that are "intended for high-precision strikes, including strikes with nuclear weapons, on land and sea targets at any time of day". Canada acquired a new maritime surveillance satellite, "RADARSAT Constellation", which "will provide on average daily coverage of Canada's maritime approaches and frequent coverage of Canada's land". Probably this satellite should be fully operational by 2018 and would facilitate the surveillance capacity of Canada. Canada has planned to acquire six ice-capable ships for Arctic offshore patrol by 2018. The US, Norway and Denmark each has repeatedly declared the intention to increase their respective Arctic capabilities pointing to new investments either in place or in the pipeline (Brutschin and Schubert, 2016).

Beyond the littoral countries a number of non littoral states are also making efforts to seeking military access in the Arctic. The EU has growing its interest in the Arctic and established a cooperative naval presence to build security in the North Atlantic region, just as it has done in the Horn of Africa. Such presence would also complement growing EU discussions about the need to develop a comprehensive maritime strategy to support member interests. As members of NATO and EU nations are continuing to find

opportunities to practices high-intensity operations in winter weather. In 2012 the UK assets joined US and Dutch forces for Norwegian-led Operations 'Cold Response' (Willett 2012).

The growing commercial and strategic importance of the Arctic and its SLOCs and maritime chokepoints has become centre of military deployment for both defensive and offensive purposes. This confers on the GULF gap and the Bering Strait, offensive and defensive submarine capabilities and operations have the potential to alter significantly the region's strategic balance. Russia is investing on Arctic submarine capacity with SSNs and SSBNs. Despite significantly reducing their SSNs flotillas in the post-Cold War period both the US and Russian Navy routinely send SSNs for under ice training. The five major actors- China, France, Russia, the UK and the US are not only the nuclear powers but also possess the SSBNs capability. The sustained presence of the SSBNs is symbolic of militarization in the Arctic (Willett 2012). The figure given in the next page shows the military activities of the Arctic nations in the Arctic region.

#### **Environmental & Governance-related Challenges:**

The melting of ice and increasing human activities are a severe threat to the Arctic environment. The global warming and melting of the ice has a devastating impact on the biodiversity of the Arctic. Many animals like polar bears, ice-dependent seals, walrus and ice-dependent sea birds would face the threat of extinction, as the animals rely on the ice for essential habitat, foraging and reproductive activities and for born or newborn lives.

- (a) **Pollution** : The pollutants are the most dangerous threat for the Arctic



environment. There is a risk to Arctic ecosystems from oil spills which may be caused by several reasons like exploratory drilling, production, pipelines, terminals and shipping, militarisation and other human activities

(b) **Oil Spill :** In the icy waters of the Arctic the oil spill takes significantly long time even decades. Lack of sunlight and freezing temperature inhibits the breakdown of oil. The flowing oil locked up or sandwiched under the various levels of ice and then released when the ice melts. The Arctic ecosystem has not got rid of the devastating impacts of the Exxon Valdez oil spill<sup>3</sup> that occurred 29 years ago. According to BBC News, "around 250,000 seabirds, nearly 3000 sea otters, 300 harbour seals, 250 bald eagles and up to 22 killer whales died as a result of this spill." (BBC, 24 March 1989). Similarly an event of oil spill took place in the Russian Arctic. An oil spill which occurred in the Russian Arctic in late April 2012 took nearly 36 hours to get the leak-age under control. It has been estimated that 2,200 tons of oil were spilled out over at least 1,5 square kilometre of tundra, including reindeer grazing grounds.

Shallow waters are the more prone to pollution, and these areas are important to organisms of all levels of the Arctic food chain. The oil spills in such areas cause "extensive acute mortality in plankton, fish, birds, and marine mammals... [and] there would also be significant... physiological damage, altered feeding behaviour and reproduction, and genetic injury that would reduce the overall viability of populations". Because Arctic animals tend to be concentrated around open areas of water within the ice, a

nearby spill could have a "devastating population level effect" (House of Commons UK 2012).

(c) **Dumping of Nuclear Wastes :** During the Cold War the developed nations usually dumped the nuclear wastes in the oceans which became a major concern and the Arctic Ocean was also not an exception. The first incidence of such kind of nuclear wastage dumping in the Arctic was reported in 1991 by the former Soviet Union into the Arctic Ocean in the Barents and Kara Seas (Rothwell 1995), but Russia denied it whenever it has been questioned. In the Fifteenth Consultative Meeting of the London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter in 1993, the Russian government was asked to provide report on its radioactive waste disposal practices. In response, the Russian government commissioned a report, and the final text, authored by Russian experts, was submitted in April 1993. The report known as the Yablokov Report, "revealed that the former Soviet Union had dumped six nuclear reactors containing fuel, a nuclear icebreaker shielding assembly containing fuel, and 10 nuclear reactors without fuel into the fjords of Novaya Zemlya and the Kara Sea. It also revealed that from 1959 to 1992, the former Soviet Union and later Russia disposed of over 17,000 containers of liquid and solid radioactive waste into the Barents and Kara Seas of the Arctic Ocean" (Nyman 2002). The total radioactivity of the waste estimated to be  $8.5 \times 10^{16}$  TBq,<sup>4</sup> which was ten times greater than the amount the Chernobyl<sup>5</sup> accident and Russian nuclear testing together deposited in the Arctic.



Research conducted in the Arctic region reveals dangerously high concentration levels of caesium and strontium in the aboriginal population and in local food and reindeer. Seals have also been found to be dying of cancer linked to radioactive contamination near the Novaya Zemlya nuclear testing site. The level of radionuclide in the blood of inhabitants of northern Russia is 100 times higher than that found in Moscow residents. In two other incidences Russia was responsible for adding nuclear wastes: one was the sinking of submarine Komsomolets in 1989 with two nuclear warheads in the Barents Sea Continental slope to the south-west of the Bear Island. The corrosion of the cooling system released Co and Ni. The amount of radioactivity was small and therefore a limited impact has been expected. The other was a small amount of radioactive water leaked out of the Kola nuclear power plant near the Finnish border in September 1992.

The topographical and oceanographic features of the Arctic Ocean made it susceptible to radioactive accumulation which is a matter of grave concern. These features are: first, the Arctic is almost enclosed by landmasses. It is essentially an estuary of the Atlantic with limited circulation with it and the Atlantic and the Pacific Oceans. The limited circulation between the Arctic and the Atlantic Ocean and the Barents Sea tends to concentrate and confine such pollution. Second, the majority of the dumping of nuclear wastes and pollution has been occurring in the Eurasian side which consists of shallow waters lying on the continental shelf.

Furthermore the Arctic does not contain deep basins; rather, it contains a higher ratio of freely connected shallow seas. The shallow waters allow the pollution to remain concentrated, making it difficult for the pollutants to be diluted.

(d) **Governance :** The continued strategic importance of the Arctic and absence of treaty to govern the security and other critical issues like nuclear pollution have posed the challenges to govern the Arctic region. Being affected by incidences like the Exxon Valdez, take unilateral instance, which impinge with either international law or with other countries. After the disaster the United States adopted legislation or the Oil Pollution Act (OPA) in 1990<sup>6</sup> to protect its territorial waters. Under this legislation, "ships entering in the American waters are regularly inspected, primarily to ensure that they comply with safety standards and regulations pertaining to the adequacy of qualification and training of the crew members. The OPA also established a double hull requirement for the tanker vessels operating in the American waters. Much of the OPA content has been incorporated into International Regulations as well, including provision of reliable radio technology for on-board communication and vessel identification system to enable shipping activities to check the ships' course and position at the time." The United States which exhibits so much deep concern about the Exxon Valdez accident and was keen to introduce new legislation was against the Canadian step to check pollution in the Canadian Arctic and a serious and unresolved dispute is going



on. Sometimes the problems remain unresolved due to a rigid attitude of the countries. One important example is the Russian deposition of the nuclear waste in the Arctic Ocean. In the international community Russia shows its inability to clear the nuclear wastes in the Arctic Ocean due to its economic problem but at the same time it refuses the assistance of the other neighbouring countries. The countries like Norway with an individual interest in environmental protection or security offered funds and technical expertise to assist Russia in nuclear waste disposal has been often refused by Russia. Russia is not in favour to allow the inspection trips needed for other countries to authorise aid and it has refused to allow technical experts from Western countries to enter its military bases. The refusal might have intended to prevent other countries from observing Russia's current nuclear submarine technology. Norway offered a sum of \$2 million to clean nuclear contamination but Russia rejected the Norwegian proposal to examine the area and even denied to give any information about the fund given to Russia for cleaning the nuclear waste. In another act of defiance, Russia continued to build and operate nuclear-powered submarines. Russian President Vladimir Putin is supports the constructing the nuclear-powered submarines, as a way of reclaiming the superpower status for Russia. Annually 5,000 tonnes of solid radioactive waste is dumped by Russia in the Arctic. Russia's unwillingness to check the dumping nuclear wastes is severe threat for the Arctic region (Nyman 2002). In this background the international laws become helpless.

There is the absence of any treaty to check military confrontation in this region. One major challenge is the exploitation of the seabed beyond the 200 nm EEZ, is controversial because this area is commonly referred to as the High Sea, no State has the right to autonomously exploit natural resources but has to apply to and cooperate with the International Seabed Authority which acts on behalf of mankind as a whole (Articles 137, 153, 157 UNCLOSIII), unless it is proven that the coastal state has rights over the respective resources that lie within its continental shelf (UNCLOSIII).<sup>7</sup>

#### Conclusion:

The Arctic is melting and the whole world is eyeing the Arctic for economic benefits and ignoring the environmental implications. The insensately towards the ecology of the Arctic has cost the life of millions of innocent aquatic lives and the limitations of the international governance would spoil the region's ecology forever.

#### References:

- BBC(1989) Exxon Valdez creates oil slick disaster  
 Borgerson, S. G. (2008), "Arctic melt-down," *Foreign Affairs*-New York-, 87(2).  
 Brutschin, Elina and Samuel R. Schubert(2016), "Icy waters, hot tempers, and high stakes: Geopolitics and Geoeconomics of the Arctic", *Webster University, Vienna, Austria Energy Research & Social Science*, 16.  
 Byers, M., & Lalonde, S. (2009), "Who controls the northwest passage," *Vand. J. Transnat'l L.*, 42.  
 Czarny, Richard M (2015), *The High North: Between Geography and Politics*, Springer. Ebinger, C. K., & Zambetakis, E. (2009). "The geopolitics of Arctic melt," *International Affairs*, 85(6): 1215-1232.



Illulissat Declaration (2008), News Release, Arctic Ocean Conference, Illulissat Greenland 27-18 May

Kaczynski, Vlad M (2007), "US-Russian Bering Sea Marine Border Dispute: Conflict over Strategic Assets, Fisheries and Energy Resources", *Warsaw School of Economics*.

Konyshov, Vally and Alexander Sergunin(2014), "Russia's Policies on Territorial disputes in the Arctic", *Journal of International Relations and Foreign Policy*, 2(1).

Nyman, Jennifer (2002), The Dirtiness of Cold War the: Russia's Nuclear Wastes in the Arctic. *Environmental Policy and Law*, 32(1).

Osherenko, Gail and Oran R. Young, (1989), *The Age of the Arctic: hot conflicts and cold realities*, Institute of Arctic Studies and Dartmouth College.

Østerud, Øyvind and Geir Hønneland (2014), 'Geopolitics and International Governance in the Arctic,' *Arctic Review on Law and Politics*, 5(2).

Proelss, A., & Müller, T. (2008), "The legal regime of the Arctic Ocean", *Heidelberg Journal of International Law*, 68: 653-687.

Rothwell, D R (1996), "International Law and the Protection of the Arctic Environment", *The International and Comparative Law Quarterly*, 44(2).

*United Nations convention on the Law of Sea*, United Nations, UN Doc/31363, Geneva, 10th December. Available on [http://www.un.org/depts/los/convention\\_agreements/texts/unclos/unclos\\_e.pdf](http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf)

Willet, Lee (2012), "Frozen Over Maritime Security Challenge in the High North", *Jane's navy International*.

## Footnotes

1. The dispute between Norway and Russia over maritime boundaries in the Barents Sea was settled by an agreement in September 2010. An area of more than 1,75,000 square kilometres was equally divided between the two countries.
2. 15 Submissions, through the Secretary-General of the United Nations, to the Commission on the Limits of the Continental Shelf, pursuant to article 76, paragraph 8, of the United Nations Convention on the Law of the Sea of 10 December 1982
3. In March 1989, the Exxon Valdez's ran aground near the Prince William Sound in the Gulf of Alaska. Some 2,000 km of stretch was affected by the oil spill over and years later, some areas were still found contaminated with the oil residues, because of the low temperature of Alaska. It was the largest marine spill in the vicinity of the Arctic and led to the death of birds and animals and local flora and fauna.
4. 26 Terabecquerel (TBq) is a radioactivity measurement unit.
5. World's worst nuclear power plant accident occurred at the Chernobyl nuclear power station in the former Soviet Union in 1986. Only after Swedish authorities reported the fallout did Soviet authorities reluctantly admit that an accident had occurred.
6. Oil Pollution Act of 1990: The Oil Pollution Act of 1990 (OPA) (101 H.R. 1465, P.L. 101-380) was passed by the 101st United States Congress and signed by President George H. W. Bush.
7. According to UNCLOS, "the continental shelf is a maritime area consisting of the seabed and its subsoil attributable to an individual coastal State as a natural prolongation of its land territory".