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## Current Legal Developments: The Arctic

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### Abstract

The planting of a flag in a titanium canister on the seabed at the North Pole in August 2007 on the part of the Russian Federation and efforts by the other Arctic Ocean littoral states to reinforce their territorial and, particularly, maritime jurisdictional claims in the region, led to the Arctic becoming the focus of considerable global media attention in recent months. Much of this coverage has been alarmist in tone, replete with tales of a “scramble” or “race” for the Arctic, talk of an Arctic “land-grab”, and unease over a resultant Arctic resource “gold rush”. Although some of the media and even diplomatic responses have been, to say the least, somewhat misleading, these events have been set against the backdrop of some startling and potentially profound changes to the Arctic environment which have also served to heighten concerns over events in the region. The aim of this paper is to highlight key developments and explore some of the legal and policy issues that arise.

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## Current Legal Developments

### The Arctic

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#### **An Arctic Scramble? Opportunities and Threats in the (Formerly) Frozen North**

The planting of a flag in a titanium canister on the seabed at the North Pole in August 2007 on the part of the Russian Federation and efforts by the other Arctic Ocean littoral states to reinforce their territorial and, particularly, maritime jurisdictional claims in the region, led to the Arctic becoming the focus of considerable global media attention in recent months. Much of this coverage has been alarmist in tone, replete with tales of a “scramble”<sup>1</sup> or “race”<sup>2</sup> for the Arctic, talk of an Arctic “land-grab”,<sup>3</sup> and unease over a resultant Arctic resource “gold rush”.<sup>4</sup> Although some of the media and even diplomatic responses have been, to say the least, somewhat misleading, these events have been set against the backdrop of some startling and potentially profound changes to the Arctic environment which have also served to heighten concerns over events in the region. The aim of this paper is to highlight key developments and explore some of the legal and policy issues that arise.

#### **The Changing Arctic—Unfreezing Seas**

The Arctic Ocean is a semi-enclosed sea<sup>5</sup> surrounded by five coastal states: Canada, Denmark (Greenland), Norway (Svalbard), Russia and the United States of America (USA). A further three states, Finland, Iceland and Sweden,

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<sup>1</sup> For example, see B. Leapman, “Denmark joins race to claim North Pole”, *Sunday Telegraph*, 14 August 2007.

<sup>2</sup> M. Richardson, “Race is on for Arctic resources”, *The Canberra Times*, 10 September 2007.

<sup>3</sup> D. R. Sands, “Sea treaty sparks rivalries”, *Washington Times*, 12 November 2007.

<sup>4</sup> P. Reynolds, “Russia ahead in Arctic ‘gold rush’”, BBC News, 1 August 2007, <<http://news.bbc.co.uk/2/hi/6925853.stm>>; and P. Reynolds, “The Arctic’s new gold rush”, BBC News, 25 October 2007, <<http://news.bbc.co.uk/2/hi/business/4354036.stm>>.

<sup>5</sup> The question of whether the Arctic Ocean qualifies as a semi-enclosed sea within the

are also generally considered to be Arctic states.<sup>6</sup> The Arctic's most pronounced feature, at least until very recently, has been a large, mostly ice-covered ocean throughout the year. However, profound changes appear to be taking place in the Arctic land- and, especially, seascape. The 2004 Arctic Climate Impact Assessment catalogued the range of impacts that are occurring in a warming Arctic from human-influenced climatic change. The report concluded that the temperature has risen at twice the rate as in the rest of the world in the past few decades and there is increasing evidence of widespread melting of glaciers, permafrost and sea ice.<sup>7</sup> These impacts are expected to intensify and over the next 100 years temperatures would rise by 3–5°C over the land and by up to 7°C over the oceans,<sup>8</sup> driving significant changes through the ecological and socio-economic structure of the Arctic.<sup>9</sup>

On 14 September 2007, the European Space Agency reported that the area covered by sea ice in the Arctic had shrunk to its lowest level since the initiation of satellite measurements 30 years ago.<sup>10</sup> The United States National Snow and Ice Data Centre reported that the average five-day mean sea ice extent in September 2007 was 4.13 million km<sup>2</sup>. This was compared to the 1979–2000 average of 6.74 million km<sup>2</sup>—a massive reduction to the average extent of 2.61 million km<sup>2</sup>.<sup>11</sup> The record 2007 sea ice reduction followed the 2005 record minimum of 5.32 million km<sup>2</sup>, an additional loss of over 1 million km<sup>2</sup> from 2005. This sudden and dramatic loss can be viewed in the context of reductions in sea ice cover over the last 10 years of approximately 100,000 km<sup>2</sup>

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meaning of Article 122 of the United Nations Convention on the Law of the Sea (LOSC) has been described as something of a “vexed question” in itself, not least because of the obligation for bordering states to cooperate under Article 123 of the same Treaty. See R. Rayfuse, “Melting Moments: The future of polar oceans governance in a warming world”, *Review of European Community and International Environmental Law* (RECIEL) (2007) 16 (2): 196–216, at 210.

<sup>6</sup> Although the most common definition of the Arctic region as a whole is the area lying north of the Arctic Circle at 66°33' north, a variety of definitions for the Arctic region as a whole exist, dependent on the issue or context under discussion. A useful summary of definitional options is provided by Rayfuse, *ibid.*, at 197.

<sup>7</sup> Arctic Climate Impact Assessment, “*Impacts of A Warming Arctic: Arctic Climate Impact Assessment*” (Cambridge University Press, Cambridge, 2004) 146 pp, available at <<http://www.acia.uaf.edu>>.

<sup>8</sup> *Ibid.*, at 10.

<sup>9</sup> See, for example, D. Barber, L. Fortier and M. Byers, “The incredible shrinking sea ice”, *Options Politiques* (December 2005–January 2006): 66–71.

<sup>10</sup> European Space Agency (ESA), “Satellites witness lowest Arctic sea ice coverage in history” (2007) *ESA News*, available at <[http://www.esa.int/esaCP/SEMYTC13J6F\\_index\\_0.html](http://www.esa.int/esaCP/SEMYTC13J6F_index_0.html)>.

<sup>11</sup> See National Snow and Ice Data Centre (NSIDC), Arctic Sea Ice News, Fall 2007, available at <[http://nsidc.org/news/press/2007\\_seaiceminimum/20070810\\_index.html](http://nsidc.org/news/press/2007_seaiceminimum/20070810_index.html)>.

per year on average. Forecast models of summer sea ice extent show a continuing downward trend of cover,<sup>12</sup> but debate continues over the period when the Arctic will be ice free (in summer). Scientists have commented that despite the uncertainty in forecasting models through the 21st century, the rapid loss of sea ice could result in a sea ice-free summer by 2030,<sup>13</sup> or perhaps even sooner.<sup>14</sup>

Despite this apparently compelling evidence of the impact of human-induced climate change on the Arctic, it has been argued that this is not necessarily the case and that some of the changes being witnessed in high northern latitudes are in fact part of long-term cyclical processes.<sup>15</sup>

### **A Scramble for what?**

Increasing access to Arctic waters and recent moves to support extended continental shelf claims in the central Arctic Ocean are often viewed in resource access terms. In particular, the Arctic has been portrayed as a major potential source, or ‘last frontier’, of (sub)seabed energy resources. Consequently, the Arctic has most commonly been seen through the lens of escalating energy prices and related global energy security concerns. Indeed, at the time of writing, the price of oil was flirting with US\$100 per barrel<sup>16</sup>—a level

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<sup>12</sup> M. Serreze, M. Holland and J. Stroeve, “Perspectives on the Arctic shrinking sea-ice cover” (2007) 315 *Science* 1533–1536.

<sup>13</sup> See comments in: D. Adam, “Ice-free Arctic could be here in 23 years”, *The Guardian*, Wednesday, 5 September 2007, available at <<http://www.guardian.co.uk/environment/2007/sep/05/climatechange.sciencenews>>.

<sup>14</sup> For example, Louis Fortier, Scientific Director of the Canadian research network ArcticNet, suggested that sea ice was melting faster than predicted and that consequently the Arctic Ocean could be free of ice in the summer as soon as 2010 or 2015, “and it’s probably going to happen even faster than that.” See M. White, “‘Frightening’ projection: ice-free passage possible by 2010”, *National Post* (Canada), 15 November 2007. Even more alarmingly it was subsequently suggested in December 2007 that the Arctic could be ice-free in summer by 2013. Professor Wieslaw Maslowski of the Naval Postgraduate School, Monterey, California, whose team includes members from NASA and the Institute of Oceanology, Polish Academy of Sciences (PAS), remarked that the 2013 projection does not take into account the Arctic ice minima of 2005 and 2007 and that as such even this estimate may be “too conservative”. See J. Amos, “Arctic summers ice-free ‘by 2013’”, BBC News, 12 December 2007, <<http://news.bbc.co.uk/2/hi/science/nature/7139797.stm>>.

<sup>15</sup> See “NASA sees Arctic Ocean circulation do an about-face”, available at <[www.physorg.com/news114189626.html](http://www.physorg.com/news114189626.html)>.

<sup>16</sup> See BBC News “Oil price at record \$100 a barrel”, 2 January 2008; <<http://news.bbc.co.uk/2/hi/business/7168664.stm>>.

virtually unthinkable even a few months ago. Such prices and advances in recovery technologies, especially in deep water, help to explain interest in the Arctic as well as other underexplored offshore hydrocarbon provinces.

The statistical authority often cited to support this view is the United States Geological Survey's (USGS) 2000 estimate that the Arctic may hold as much as 25% of the world's undiscovered resources.<sup>17</sup> Russian estimates similarly indicate that the Arctic's potential energy reserves are significant.<sup>18</sup>

Breathless expectations of an Arctic hydrocarbon 'Eldorado' should, however, be treated with considerable caution. Such predictions should be tempered by the fact that little serious exploration has taken place in Arctic waters due to the presence of sea ice coupled with severe environmental conditions. Consequently, exploration efforts have been largely restricted to a narrow peripheral zone of the Arctic Ocean where ice cover has traditionally been absent, or at least thinner, on a seasonal basis. It is also understood that most, if not all, of the oil- and gas-bearing sedimentary basins of the Arctic fall within 200 nautical miles (nm)<sup>19</sup> of the coast and thus within the EEZs of the Arctic littoral states, meaning that claims to the outer continental shelf are unlikely to yield an oil and gas bonanza.<sup>20</sup>

This view has been underlined by a recent report employing detailed geo-scientific analysis of individual Arctic basins, backed by oil industry data on

<sup>17</sup> See, for example, *The Economist*, "Drawing lines in melting ice", 18 August 2007. It is notable that the USGS findings relate to undiscovered oil and that a summary of the report does not, in fact, even make mention of the Arctic specifically. See <<http://pubs.usgs.gov/fs/fs-062-03/FS-062-03.pdf>>.

<sup>18</sup> Russian estimates of potential seabed resources in the Arctic have been reportedly in the range of 9–10 billion tonnes of fuel equivalent, although official Russian government estimates are put at up to 5 billion tonnes. See G. Faulconbridge, "Russia to file Arctic claim to (sic) U.N. this year: radio", *Ottawa Citizen*, 30 October 2007. See also P. Baev, "*Russia's Race for the Arctic and the New Geopolitics of the North Pole*" (October 2007), Occasional Paper, The Jamestown Foundation, 17 pp, at 6–7. Available from: <<http://jamestown.org/docs/Jamestown-BaevRussiaArctic.pdf>>.

<sup>19</sup> Some commentators maintain that the correct abbreviation for a nautical mile is "M" and that "nm" should only be used for nanometres. However, "nm" is widely used by many authorities (for example the UN Office of Ocean Affairs and the Law of the Sea) and appears to cause less confusion than "M", which is often assumed to be an abbreviation for metres.

<sup>20</sup> R. Macnab, P. Neto and R. van de Poll, "Cooperative preparations for determining the outer limit of the juridical continental shelf in the Arctic Ocean: A model for regional collaboration in other parts of the world?", Proceedings of a Continental Shelf Workshop hosted by the Argentine Council for International Relations (CARI), Buenos Aires, 13–15 November 2000. Reprinted with permission in *Boundary and Security Bulletin* (2001) 9(1) (Spring): 86–96, at 88.

exploration wells and existing discoveries, the findings of which were considerably less optimistic than the estimates outlined above.<sup>21</sup> Not only were estimates for Arctic resource potential substantially lower,<sup>22</sup> but it was also concluded that the Arctic is predominantly a gas province.<sup>23</sup> This has significant implications, as gas is much harder to transport to markets and required technologies are still in their infancy, meaning that exploitation of a large portion of Arctic gas resources is likely to be delayed until 2050.<sup>24</sup> Overall it was stated that these findings were “disappointing from a world oil resource base perspective” and “calls into question the long-considered view that the Arctic represents one of the last great oil and gas frontiers and a strategic energy supply cache for the US.”<sup>25</sup>

This is not, however, to wholly discount the idea of major oil and gas finds being made in the Arctic—these may just not necessarily be on the same scale as some optimistic reports may suggest. Furthermore, the strong perception that appears to exist that such seabed riches *may* exist is in itself a powerful factor in motivating claims to maritime jurisdiction.

It has also been suggested that the seabed of the Arctic Ocean may harbour substantial reserves of gas hydrates, which may be exploited in the future.<sup>26</sup> While the potential may well be very large, the technologies required to exploit these resources, especially from such remote areas and in such hostile conditions, mean that their exploitation currently remains over the horizon.

With regard to the marine living resources of the Arctic Ocean, their extent and sustainability are similarly not well known. It is, however, thought that Arctic species, which are generally slow-growing due to their cold environment, are likely to be especially vulnerable to overfishing.<sup>27</sup> In light of the depletion of stocks elsewhere, especially in waters beyond the national jurisdiction of coastal states—the so-called ‘tragedy of the commons’—new

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<sup>21</sup> The joint Wood MacKenzie and Fugro Robertson study, *Future of the Arctic*, was released on 1 November 2007. See “Arctic role diminished in world oil supply”, Wood Mackenzie Press Release, available at <<http://www.woodmacresearch.com/cgi-bin/corp/portal/corp/corpPress-Detail.jsp?oid=751298>>.

<sup>22</sup> 3 million barrels of oil equivalent per day (mboepd) liquids and 5 mboepd gas at peak. *Ibid.*

<sup>23</sup> It was reported that 85 per cent of discovered resource and 74 per cent of exploration potential was as gas. *Ibid.*

<sup>24</sup> *Ibid.*

<sup>25</sup> Andrew Latham, Vice President, Energy Consulting, Wood MacKenzie. See “Arctic role diminished in world oil supply”, *ibid.*

<sup>26</sup> Macnab *et al.*, *supra* note 20, at 88.

<sup>27</sup> Barber *et al.*, *supra* note 9, at 68.

fishing opportunities in an ice-free Arctic will require strict management if they are not to be short-lived.<sup>28</sup> The Arctic may also prove to be a source of useful genetic material in view of the region's unique environmental conditions, raising biodiversity preservation issues and the management of bioprospecting.<sup>29</sup>

The significant reduction in sea ice in recent times has raised the prospects for the opening up of long-sought navigational routes, the Northwest Passage—aptly termed the “Arctic Grail”<sup>30</sup>—and the Northern Sea Route (formerly known as the Northeast Passage),<sup>31</sup> and even a transpolar route.<sup>32</sup> Satellite imagery from September 2007 showed the Northwest Passage to be completely ice free and the alternative route, the Northern Sea Route, to be partially blocked. However, in the 2005 sea ice minimum, the Northern Sea Route was partially open.<sup>33</sup> The prospect of seasonal and permanently open shipping routes in the Arctic could significantly cut the distances that need to be traversed, for instance between Europe and the east coast of North America and Asia. Indeed, it has been suggested that, if navigable, the Northwest Passage would offer a 7,000 km saving on the route between Asia and the East Coast of the USA over the route via the Panama Canal, whilst the Northern Sea Route would entail a 40 percent distance savings on the transit between northern Europe and northeast Asia as compared with a route via the Suez or Panama Canals.<sup>34</sup> With regard to the trans-polar route, the figures are even

<sup>28</sup> See, for example, Rayfuse, *supra* note 5, at 212–213.

<sup>29</sup> Macnab *et al.*, *supra* note 20, at 88; Rayfuse, *supra* note 5, at 213.

<sup>30</sup> See P. Berton, *The Arctic Grail: The Quest for the Northwest Passage and the North Pole, 1818–1909* (McClelland and Stewart, Toronto, 1988). See also M. Byers and S. Lalonde, “Who controls the Northwest Passage?” Discussion paper prepared in advance of a conference on “*Canada's Arctic Waters in International Law and Diplomacy*”, National Arts Centre, Ottawa, 14 June 2006, available at <[www.ligi.ubc.ca/sites/liu/files/Publications/7Jun2006ArcticWatersDiscussionPaper.do](http://www.ligi.ubc.ca/sites/liu/files/Publications/7Jun2006ArcticWatersDiscussionPaper.do)>.

<sup>31</sup> See, for example, W. V. Dunlap, *Transit Passage in Russian Arctic Straits*, Maritime Briefing 1 (7) (International Boundaries Research Unit, Durham, 1996), 84 pp.

<sup>32</sup> Iceland has reportedly been keen to promote such a route across the central Arctic Ocean between the Fram and Bering Straits, whereby cargo-carrying icebreakers could shuttle back and forth between transshipment points in Alaska and Iceland, where cargoes would be exchanged with conventional vessels (R. Macnab, personal communication, November 2007). See also *Breaking the Ice Arctic Development and Maritime Transportation: Prospects of the Transarctic Route—Impact and Opportunities*, Summary of Presentations delivered during a Conference organised by the Icelandic Government, Akureyri, Iceland, March 27–28, 2007, 31 pp; available at <[http://arcticportal.org/uploads/4L/PJ/4LPJQRQYK8NK3h1pOCAST5Q/Breaking-TheIce\\_ensktgfa.pdf](http://arcticportal.org/uploads/4L/PJ/4LPJQRQYK8NK3h1pOCAST5Q/Breaking-TheIce_ensktgfa.pdf)>.

<sup>33</sup> See NSIDC, *supra* note 11.

<sup>34</sup> See Byers and Lalonde, *supra* note 30, at 3–5. Richardson, *supra* note 2, cites the following



more dramatic, with a voyage between Hamburg, Germany and Kobe, Japan being 11,225 nm via the traditional route through the Suez Canal compared with around 5,000 nm over the North Pole.<sup>35</sup> Although the significantly reduced distances involved represent an enticing prospect for the international shipping sector, distance alone does not tell the whole story. Such savings may be at least partially illusory, as reduced distances will not necessarily translate into equivalent savings in terms of transit times and navigational costs. This is because, although sea ice may well have thinned and cleared enough to enable transit of these routes, ice will remain a prominent feature of the high northern latitudes, presenting a significant potential hazard to navigation and thus necessitating cautious and slow navigation.<sup>36</sup>

The prospect of the Northwest Passage opening up to shipping has, however, led to the re-emergence of the dispute between Canada and the US over the legal status of the waterway—an issue that was a largely redundant one whilst the Passage was effectively impassable.<sup>37</sup> There is also legal uncertainty over the status of formerly ice-covered waters in the Arctic and the application of Article 234 of the LOSC that deals with the application of pollution prevention laws applicable to vessels in ice-covered areas within the limits of the EEZ.<sup>38</sup> As previously noted, however, discussion of the Northwest Passage and other Arctic Sea routes opening up to commercial traffic is, however, arguably

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example: “A container cargo ship travelling at 21 knots between Japan’s Yokohama port and Rotterdam in the Netherlands takes 29 days if it goes around the Cape of Good Hope at the southern tip of Africa. It takes 22 days via the Strait of Malacca and Singapore and on to Europe through the Suez Canal and the Mediterranean Sea. But the same ship would take just 15 days via the Arctic Ocean.”

<sup>35</sup> P. R. M. Toomey, “Global Warming: Arctic Shipping”, Canadian Polar Commission, *Meridian* (Fall/Winter 2007), 6–11, at 8; available at <<http://www.polarcom.gc.ca/media.php?mid=3278>>.

<sup>36</sup> For an analysis of the pitfalls involved provided by an experienced former icebreaker captain with the Canadian Coast Guard, see *ibid.* Toomey (*ibid.*, at 8–9), asserts that the great savings associated with the direct route across the Pole will be realized much later than coastal routes as “only very ice capable ships will be able to use it for many years to come, and ice will always cause either damage or delays.” He also suggests that Russia is best placed among the Arctic coastal states to take advantage of these emerging Arctic navigational opportunities.

<sup>37</sup> For recent Canadian and US perspectives on this issue see Byers and Lalonde, *supra* note 30; J. Kraska, “The Law of the Sea Convention and the Northwest Passage”, *International Journal of Marine and Coastal Law* (2007) 22 (2): 257–282.

<sup>38</sup> For a detailed analysis of the legal issues surrounding the Northwest Passage see: D. Pharand “The Arctic Waters and the Northwest Passage: A final revisit” (2007) *Ocean Development and International Law* 38: 3–69.

somewhat premature. It is by no means inevitable that these routes will become swiftly and reliably open and navigable.<sup>39</sup>

### *Polar Flag Waving*

Finally, the geopolitical aspects of extended continental shelf claims should not be discounted. Even though senior Russian officials have emphasised that Russia is acting in accordance with international law (see below), there is no doubt that the symbolic planting of the Russian flag at the North Pole served to invest a legitimate process with geopolitical weight and significance. In particular, Russia's action was greeted with great fanfare in the domestic political context<sup>40</sup> and illustrates a more robust posture internationally.

### **Arctic Maritime Claims**

Despite media portrayals of recent events in the Arctic as constituting some kind of land grab, the past and present conduct of the Arctic Ocean littoral states has been predominantly in accordance with international law and particularly the LOSC.<sup>41</sup> All the Arctic Ocean coastal states, with the notable exception of the USA, are LOSC parties.<sup>42</sup> At the time of writing, ratification of the LOSC was once again on the agenda in the US. Arguably recent events in the Arctic may be a positive influence in this regard; however, the question

<sup>39</sup> Byers and Lalonde, *supra* note 30, at 4, and Toomey, *supra* note 35.

<sup>40</sup> Russian President Putin reportedly stated that the planting of the Russian flag at the North Pole was “fully in line with Russia's strategic interests.” With regard to press reaction, *Rossiiskaya Gazeta's* declaration that Russia's action and the division of the Arctic heralded “the start of a new distribution of the world” was perhaps the most dramatic claim. See, for example, M. Moore, “Russia Arctic stunt celebrated by Moscow press”, *The Daily Telegraph* (London), 4 August 2007.

<sup>41</sup> *United Nations Convention on the Law of the Sea*, Montego Bay, Jamaica, 10 December 1982 (in force as from 16 November 1994), Publication No. E97.V10 (New York, United Nations, 1983). See, for example, I. Townsend-Gault, “Not a carve-up: Canada, sovereignty and the Arctic Ocean”, *International Zeitschrift* (2007)1(3) (August), available at <[www.zeitschrift.co.uk/](http://www.zeitschrift.co.uk/)>.

<sup>42</sup> See United Nations, *Status of the United Nations Convention on the Law of the Sea, of the Agreement relating to the implementation of Part XI of the Convention and of the Agreement for the implementation of the Convention relating to the conservation and management of straddling fish stocks and highly migratory fish stocks* (United Nations, New York, updated to 26 October 2007), available at <[http://www.un.org/Depts/los/reference\\_files/status2007.pdf](http://www.un.org/Depts/los/reference_files/status2007.pdf)>.

of US ratification of the LOSC remains controversial.<sup>43</sup> All of these states, without exception, have also advanced claims to zones of maritime jurisdiction in accordance with those provided for under the LOSC.<sup>44</sup> It is worth emphasising, in the context of these misleading reports, that the EEZ claims that encircle the Arctic Ocean, and the extended continental shelf rights in the central Arctic Ocean beyond 200 nm from the coast, are necessarily claims to specific sovereign rights as laid down in the LOSC and not to sovereignty over these areas, as implied by the current media discourse concerning alleged “land grabs” and the like.

While the USA is not a party to the LOSC, it pursues a policy consistent with the LOSC. Indeed, as the world’s pre-eminent maritime power, the USA has taken a conservative or restrictive view in respect of maritime claims and has routinely protested against what it views as excessive maritime claims.<sup>45</sup> This is illustrated, for example, by the fact that the USA, alone among the Arctic Ocean littoral states, has not claimed straight baselines along its coasts and has taken exception to the baselines claimed by some of the other Arctic claimant states. It should be acknowledged that the application of baselines in the context of ice-covered coasts is problematic and this issue has generated debate.<sup>46</sup>

With regard to maritime boundary delimitation, while the majority of potential maritime boundaries have yet to be delimited, this is hardly remarkable in a global context.<sup>47</sup> While maritime disputes do exist in the region,

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<sup>43</sup> See E. Schor, “Republican rightwingers find an Iraq-on-sea”, *The Guardian*, 25 October 2007; Sands, *supra* note 3.

<sup>44</sup> For a summary of these claims see R. R. Churchill, “Claims to maritime zones in the Arctic—law of the sea normality or polar peculiarity?”, A. G. Oude Elferink and D. R. Rothwell (eds.) *The Law of the Sea and Polar Maritime Delimitation and Jurisdiction* (Martinus Nijhoff, The Hague, 2001), at 105–124.

<sup>45</sup> This is accomplished through the US’s Freedom of Navigation Program. See J. A. Roach and R. W. Smith, *United States Responses to Excessive Maritime Claims* (Martinus Nijhoff Publishers, The Hague, 1996).

<sup>46</sup> For discussion of this issue in the Arctic context see, for example, J. R.V. Prescott and C. H. Schofield, *Maritime Political Boundaries of the World* (Martinus Nijhoff Publishers, Leiden, 2005), at 520–521.

<sup>47</sup> For reviews of these maritime delimitations see A. G. Oude Elferink, “Arctic Maritime Delimitations: The preponderance of similarities with other regions”, in Elferink and Rothwell (eds.), *supra* note 44, at 179–199; Prescott and Schofield, *supra* note 46, at 519–530. See also A. G. Oude Elferink, “Maritime delimitation between Denmark/Greenland and Norway”, *Ocean Development and International Law* (2007) 38: 375–380 for details of this agreement concluded in 2006.

notably between Norway and Russia in the Barents Sea<sup>48</sup> and Canada and the USA in the Beaufort Sea,<sup>49</sup> prospects for the delimitation of boundaries in the Arctic are enhanced by the lack of territorial disputes. The exception to this rule is Canada and Denmark's sovereignty dispute over Hans Island, located in the Nares Strait between Ellesmere Island and Greenland. However, this dispute did not prevent the parties from concluding a continental shelf boundary agreement in 1973, using an equidistance line as a basis for delimitation.<sup>50</sup> The innovative feature of this agreement is that not only was Hans island wholly discounted in the construction of the boundary line, but the line is actually discontinuous in order to accommodate the disputed island.<sup>51</sup>

The retreat of hitherto permanent ice in the Arctic has the potential to complicate matters, however, by revealing additional land territory that could, theoretically, be subject to competing sovereignty claims. In late October 2007 it was reported that a small island dubbed "Stray Dog West" had been discovered around 2.5 miles off the northern coast of Greenland.<sup>52</sup> While there seems to be little doubt that this particular islet will be considered part of Greenland and thus under Danish sovereignty, it is perhaps not entirely inconceivable that other features may be revealed in more contentious locations as ice cover melts, leading to further sovereignty disputes analogous to that over Hans Island.

If the Arctic is arguably generally unremarkable in terms of maritime claims and boundaries within 200 nm of the coast, the same cannot be said of claims

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<sup>48</sup> Although Norway and Russia announced that they had signed a maritime boundary agreement on 11 July 2007, the accord appears to clarify, update and reconfirm an agreement dating from 1957 and extends it into the southern Barents Sea. The two countries' overlapping claims further north in the Barents Sea and their dispute over Norway's maritime claims from Spitsbergen (Svalbard) remain unresolved. See "Agreement signed between Norway and Russia on maritime delimitation in the Varangerfjord area", Press Release, No.83/07, Norwegian Ministry of Foreign Affairs, 11 July 2007. Available at <<http://www.regjeringen.no/en/dep/ud/Press-Contacts/News/2007/Agreement-signed-between-Norway-and-Russ.html?id=476347>>; Elferink, *supra* note 47, at 181 and 185–190; Prescott and Schofield, *supra* note 46, at 524–526; Elferink, *supra* note 47, at 190–194;

<sup>49</sup> H. Gray, "Canada's unresolved maritime boundaries", *Boundary and Security Bulletin* (1997) 5 (3) (Autumn): 61–70, at 63–65; Prescott and Schofield, *supra* note 46, at 526.

<sup>50</sup> See J. I. Charney and L. M. Alexander (eds.) *International Maritime Boundaries*, Vol. I (Martinus Nijhoff Publishers, The Hague, 1993), at 371–385; Gray, *supra* note 49, at 69.

<sup>51</sup> The boundary stops just short of the island to the south of the island at Point 122 and then continues just to the north from Point 123. See *ibid.* and Prescott and Schofield, *supra* note 46, at 265.

<sup>52</sup> The islet reportedly stands up to 12 feet (3.7 m) above sea level and is a 125–feet-long (38 m) depositional feature, meaning that it is vulnerable to erosion under moving pack-ice in winter. See "New land surfaces in Arctic tug-of-war", Reuters, 31 October 2007.

beyond EEZ limits. As the Arctic is a semi-enclosed sea almost entirely surrounded by the territories of littoral states, the maritime entitlements of the coastal states converge. Perhaps inevitably, there is therefore scope for multiple overlapping claims and disputes over extended continental shelf rights. Certainly there are a number of potential maritime boundaries beyond 200 nm from the coast in the central Arctic Ocean which have yet to be delimited.<sup>53</sup>

### **Determining Outer Continental Shelf Limits in the Arctic Ocean**

On 2 August 2007 a Russian expedition used an unmanned submersible to drop a rust-proof titanium casket containing a Russian flag on the Arctic seabed at around 4,200 m depth beneath the North Pole itself.<sup>54</sup> This action generated considerable media coverage, much of which was decidedly alarmist in nature. This tone extended to the diplomatic arena when the Canadian Foreign Minister, Peter MacKay, appeared to dismiss the flag-dropping incident as a stunt, stating “This isn’t the 15th century. You can’t go around the world and just plant flags and say ‘We’re claiming this territory.’”<sup>55</sup>

Despite the bold rhetoric and febrile tenor of some the reaction, however, Russia’s exploits are in keeping with the action of the other Arctic coastal states. The Russian Foreign Minister, Sergei Lavrov, observed that “no one is throwing flags around” and analogies were drawn between Russia’s action and Hillary and Tenzing planting the Union Jack on the summit of Everest.<sup>56</sup> Indeed, Lavrov was at pains to emphasise that Russia was not acting unilaterally; rather, its actions were “in strict compliance with international law.”<sup>57</sup> This view was echoed by the Russian scientific establishment. For example, Victor Posyolov of the Russian Institute of Ocean Geology reportedly stated that: “A unilateral annexation of the area by Russia is impossible. We will strictly abide by the UN Convention.”<sup>58</sup> This point is crucial. In fact, all of the Arctic states appear to be acting in accordance with international law.

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<sup>53</sup> Elferink, *supra* note 47, at 195–197; Prescott and Schofield, *supra* note 46, at 523–529.

<sup>54</sup> It appears, somewhat bizarrely, that some of the Russian footage purporting to show this was “lifted” from the opening sequence of the Hollywood movie *Titanic*. See T. Parfitt, “Revealed: why those Russian submarine heroics might have looked a little familiar”, *The Guardian*, 11 August 2007.

<sup>55</sup> See “Canada dismisses Russia’s ‘15th-century stunt’ of claiming North Pole”, *The Australian*, 4 August 2007, T. Parfitt, “Russia’s Arctic Claim”, *The Guardian*, 10 August 2007.

<sup>56</sup> See “Russia guided by international law in its Polar Shelf probe”, RIA Novosti, 3 August 2007. See also Townsend-Gault, *supra* note 41.

<sup>57</sup> *Ibid.*

<sup>58</sup> See Moore, *supra* note 40.

Although subsequent Danish<sup>59</sup> and US<sup>60</sup> scientific expeditions were portrayed in the media as reactions to Russia's Arctic moves, in reality these surveying efforts were long planned. Such activities reflect the way in which all the Arctic coastal states are engaged in research designed to establish linkage between submarine areas beyond 200 nm from the coast and their respective continental margins in order to bolster their claims ahead of submissions to the United Nations Commission on the Limits of the Continental Shelf (CLCS or the Commission). Indeed, these activities have in large part been prompted by looming deadlines for such submissions (see below). In contrast, the timing of Canada's declaration, in the course of a three-day tour of the Arctic by the Prime Minister Stephen Harper, that it would be reinforcing its own Arctic claims, notably through the establishment of a cold-weather fighting training centre at Resolute Bay and a deep-water port at Nanisivik on Baffin Island, together with the recruitment of 900 troops to reinforce Canada's largely voluntary force of Rangers, in order to 'monitor' potential activity in the Arctic's Northwest Passage and reinforce territorial claims, appear to be more of a reaction to the furore surrounding Russia's claims.<sup>61</sup>

In fact, Russia was the first state in the world to submit a claim to the CLCS.<sup>62</sup> Part of this 2001 claim relates to the Arctic Ocean beyond 200 nm from the coast. This claim, reportedly encompassing approximately 460,000 square miles of seabed,<sup>63</sup> provoked adverse comment from other Arctic claimant states.<sup>64</sup> Canada, Norway and Japan's responses simply served to reserve their positions, especially with regard to undelimited maritime boundaries that each state shares with Russia.<sup>65</sup> The USA, however, indicated that in its view the Russian submission contained serious flaws.<sup>66</sup> The CLCS responded

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<sup>59</sup> Perhaps ironically given the supposed ongoing competition amongst the Arctic littoral states, this expedition took place with the assistance of a chartered Russian nuclear-powered icebreaker. See, for example, "Danish team heads for North Pole", BBC News, 13 August 2007, <<http://news.bbc.co.uk/2/hi/europe/6941134.stm>>; Leapman, *supra* note 1.

<sup>60</sup> The United States Coast Guard icebreaker USCGC *Healy* embarked on a month-long expedition to map parts of the Arctic Ocean sea floor in the vicinity of the northern Chukchi Cap on 17 August 2007. This research cruise followed similar efforts in 2003 and 2004. See "NOAA Coast Survey continues sea floor mapping expedition in the Arctic", United States Coast Guard, Press Release, 13 August 2007, available at <[www.uscg.mil/pacarea/healy/](http://www.uscg.mil/pacarea/healy/)>.

<sup>61</sup> In terms of the timing of the announcement at least. See "Canada PM asserts Arctic claims", BBC News, 10 August 2007, <<http://news.bbc.co.uk/2/hi/americas/6939732.stm>>.

<sup>62</sup> See <[http://www.un.org/Depts/los/clcs\\_new/submissions\\_files/submission\\_rus.htm](http://www.un.org/Depts/los/clcs_new/submissions_files/submission_rus.htm)>.

<sup>63</sup> Baev, *supra* note 18.

<sup>64</sup> See <[www.un.org/Depts/los/clcs\\_new/submissions\\_files/submission\\_rus.htm](http://www.un.org/Depts/los/clcs_new/submissions_files/submission_rus.htm)>.

<sup>65</sup> *Ibid.*

<sup>66</sup> *Ibid.*

in 2002, indicating that Russia should make a revised submission.<sup>67</sup> One of the objectives of the recent Russian expedition, and previous expeditions, was to gather information, notably concerning the linkage between the Mendeleev and Lomonosov Ridges to the Russian continental margin, to be included in Russia's revised submission.<sup>68</sup>

Norway followed suit and made a submission to the CLCS in November 2006, which likewise elicited responses from interested states.<sup>69</sup> Canada's deadline for submission is in 2013 and in Denmark's case it is 2014. As the USA is a non-Party to the LOSC, unsurprisingly no deadline for submission to the CLCS has been set.

The question of extended continental shelf claims in accordance with Article 76 of the LOSC is undoubtedly both legally and scientifically fraught and numerous "complexities and ambiguities" associated with Article 76 have been identified,<sup>70</sup> as well as problems in respect of the way in which the Commission works.<sup>71</sup>

In the Arctic context, it appears that it may be possible for the coastal states to advance legitimate claims to most of the seabed of the Arctic Ocean.<sup>72</sup> Two related analyses of potential extended shelf limits in the Arctic Ocean are particularly instructive on this issue.<sup>73</sup> In 2000 it was suggested that the whole of

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<sup>67</sup> *Oceans and the Law of the Sea; Report of the Secretary-General; Addendum*, Fifty-seventh session of the General Assembly, A/57/57/Add.1, paras. 27–41, at para. 41. See <<http://daccessdds.un.org/doc/UNDOC/GEN/N02/629/28/PDF/N0262928.pdf?OpenElement>>.

<sup>68</sup> R. Macnab, "Submarine ridges and elevations—wild cards in the poker game of Article 76", presented at Symposium on Resources of the Seabed and Subsoil, 15–17 May 2006, Buenos Aires, Argentina, 17 pp, at 3–4, available at <<http://www.caris.com/papers/macnab/WildCards.pdf>>.

<sup>69</sup> See <[www.un.org/Depts/los/clcs\\_new/submissions\\_files/submission\\_nor.htm](http://www.un.org/Depts/los/clcs_new/submissions_files/submission_nor.htm)>.

<sup>70</sup> R. Macnab, "The Outer Limit of the Continental Shelf in the Arctic Ocean", in M. H. Nordquist, J. N. Moore and T. H. Heidar (eds.) *Legal and Scientific Aspects of Continental Shelf Limits* (Martinus Nijhoff Publishers, Leiden, 2004), pp. 301–311. Macnab has also provided a very useful analysis of "sources of ambiguity in the implementation of Article 76". See R. Macnab, "The case for transparency in the delimitation of the outer continental shelf in accordance with LOSC Article 76", *Ocean Development and International Law* (2004) 35: 1–17, at 2–9. Generally see also P. J. Cook and C. M. Carleton (eds.) *Continental Shelf Limits: The Scientific and Legal Interface* (Oxford University Press, Oxford, 2000).

<sup>71</sup> See, for example, T. McDorman, "The role of the Commission on the Limits of the Continental Shelf: A technical body in a political world", *International Journal of Marine and Coastal Law* (2002) 17 (3): 301–324.

<sup>72</sup> For an overview see, for example, A.G. Oude Elferink, "The Outer Continental Shelf in the Arctic: The application of Article 76 of the LOS Convention in a regional context", in Elferink and Rothwell (eds.), *supra* note 44, at 139–156.

<sup>73</sup> Macnab *et al.*, *supra* note 20; Macnab, *supra* note 70. These studies relate to the central Arctic Ocean. The other areas beyond 200 nm from the coast, the so-called 'Loop Hole' in the Barents Sea and 'Banana Hole' in the Norwegian Sea (see map), are not considered here.

the seabed of the Arctic Ocean might well be subject to coastal state claims, with the exception of two ‘donut holes’ beyond national jurisdiction in the central Arctic Ocean.<sup>74</sup> This study was revised in 2004 in light of the Commission’s apparent response to Russia’s submission.<sup>75</sup> In particular the Russian submission contended that the Mendeleev and Lomonosov Ridges were submerged prolongations of the Russian landmass. It is understood, however, that the Commission remained unconvinced.<sup>76</sup>

While a certain amount of what might be termed educated guesswork was required, given the confidential nature of the Commission’s communications with Russia, this follow-up analysis indicated that two further potential ‘donut holes’ may exist, related to the aforementioned Alpha/Mendeleev and Lomonosov Ridges (see map).<sup>77</sup>

A critical issue in this context is the issue of distinguishing between “submarine elevations” and “submarine ridges” and the application of cut-off lines to such features.<sup>78</sup> This issue is complex, contentious and has generated considerable debate.<sup>79</sup> The language used in Article 76 on this issue has been termed “manifestly unhelpful”<sup>80</sup> and has not been substantially clarified by the Commission’s Scientific and Technical Guidelines, which merely state: “the issue of ridges will be examined on a case-by-case basis.”<sup>81</sup> While frustrating for coastal states faced with the task of formulating a submission, this illustrates the difficulties encountered by the drafters of the LOSC and the Commissioners themselves in developing rules applicable to all geographical, geological and geomorphological circumstances.<sup>82</sup>

<sup>74</sup> Macnab *et al.*, *supra* note 20, at 92.

<sup>75</sup> Macnab, *supra* note 70.

<sup>76</sup> With regard to the Alpha-Mendeleev Complex, the Commission apparently cited “alternative hypotheses” regarding its nature and structure and expressed “reservations” concerning the linkage between the Lomonosov Ridge and the shelf of the Laptev and East Siberian Seas. See Macnab, *supra* note 70, at 303. The same author has subsequently noted that “informal indications” suggest that Russia’s arguments were questioned by the Commission “in part because of morphological breaks that were perceived to separate the ridges from the adjacent continental margin.” See Macnab, *supra* note 68, at 3–4.

<sup>77</sup> Macnab, *supra* note 70, at 304–305.

<sup>78</sup> LOSC, Article 76(5) and 76(6).

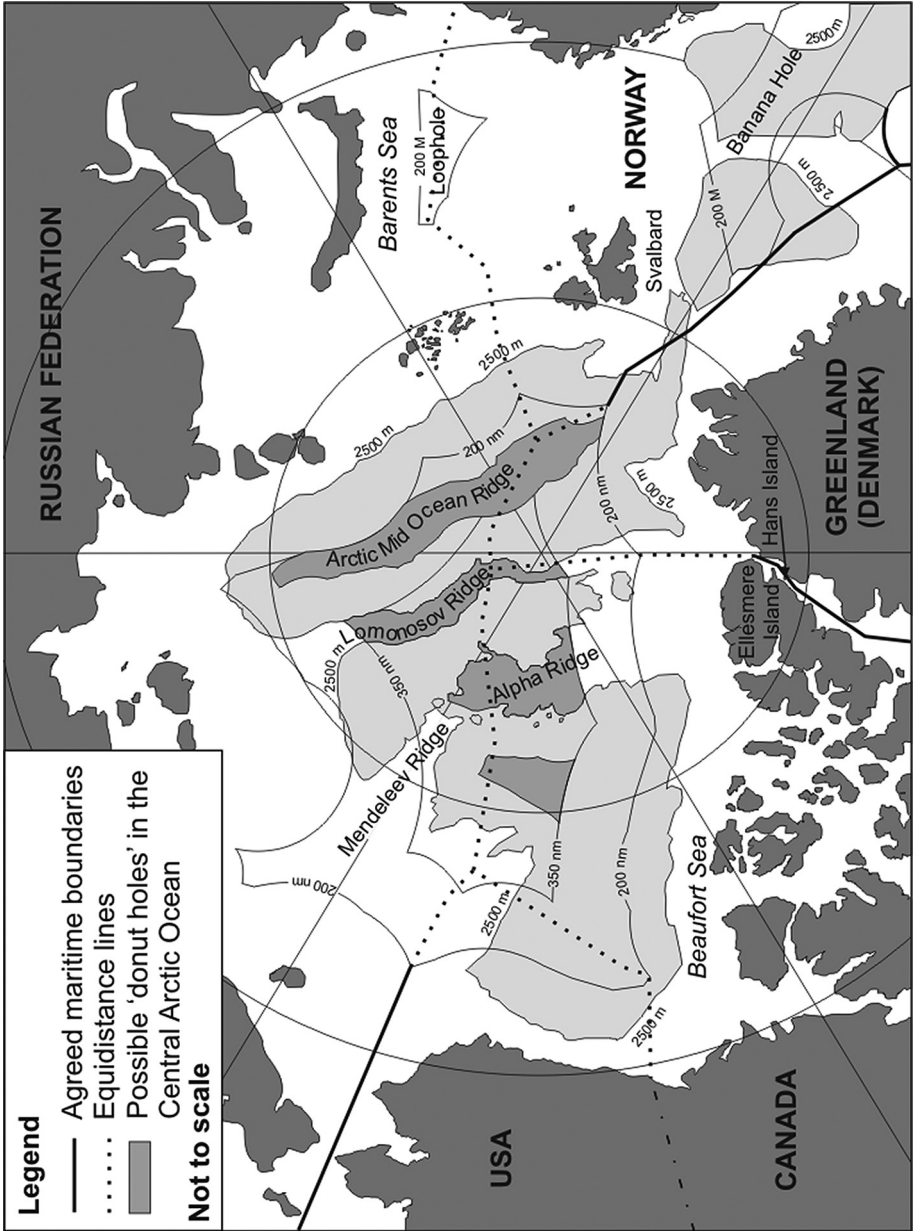
<sup>79</sup> See, for example, P. A. Symonds, M. F. Coffin, G. Taft and H. Kagami, “Ridge Issues” in Cook and Carleton (eds.), *supra* note 70, at 285–307; Macnab, *supra* note 70, at 303–304; R. Macnab, *supra* note 68.

<sup>80</sup> Macnab, *supra* note 68, at 1.

<sup>81</sup> Available at <[http://www.un.org/Depts/los/clcs\\_new/commission\\_documents.htm#Guidelines](http://www.un.org/Depts/los/clcs_new/commission_documents.htm#Guidelines)>.

<sup>82</sup> Macnab, *supra* note 68, at 2.





Indeed, the time-consuming and expensive process of preparing a submission to the CLCS where ridges are involved has been likened to a high-stakes card game, though one where not only are the players unsure of the rules and thus of the value of their cards, but where the dealer (that is, the Commission) may ultimately rule a player's hand to be essentially worthless: "At the end of the game, a coastal state may discover that not only did it misjudge the value of the cards that it was holding, but that it played them all wrong."<sup>83</sup>

This unpleasant scenario is exacerbated by the confidentiality requirements surrounding the Commission's recommendations and decision-making process.<sup>84</sup> This secrecy means that coastal states preparing submissions remain largely in the dark as to why, for example, a particular submission was accepted or rejected. It is therefore difficult for future claimant states to utilise the experience of those states that have gone before and benefit from previous state practice in analogous situations. Consequently, a submitting state may "make the same faulty assumptions concerning ridges and elevations that caused problems for other coastal states", forcing a costly and time-consuming re-evaluation and resubmission as a result.<sup>85</sup> Unfortunately this situation may also result in "suspicion and scepticism" on the part of interested states denied access, on the basis of confidentiality, to the data used to justify a particular submission, and indeed the Commission's rationale for accepting such a submission, potentially breeding "concerns about the impartiality and the integrity of the process."<sup>86</sup> It has also been observed that at the current rate at which submissions are assessed—two per annum—the CLCS will be in existence for a considerable time to come, perhaps until 2035.<sup>87</sup>

In this context, the benefits of cooperative, or at least coordinated, approaches in the Arctic (and elsewhere) have been emphasised.<sup>88</sup> This could allow for the development of common methodologies and, potentially, for data sharing. Contrasting analytical approaches and methodologies may well lead to different limits being constructed from the same data, illustrating that interpretation can have a major role, for instance in the subjective choice of the location of the foot of the slope where several options are available. With regard to data, all the Arctic coastal states face problems associated with data

<sup>83</sup> *Ibid.*, at 2–3 and 6.

<sup>84</sup> See, in particular, Macnab, *supra* note 70.

<sup>85</sup> *Ibid.*

<sup>86</sup> *Ibid.*, at 12.

<sup>87</sup> The projection of 2035 assumes that the current rate at which the CLCS deals with submissions (two per annum) is maintained and that there are 65 submissions in total. This indicates strongly that the CLCS faces serious challenges in dealing with anticipated submissions by the relevant deadlines (R. Macnab, personal communication, December 2007).

<sup>88</sup> Macnab, *supra* note 70, at 307–308.

collection in the Arctic (ironically this may be made significantly easier as a result of the removal of sea ice if this comes to pass as mentioned above).<sup>89</sup> The pooling of data could lead, for example, to the construction of common models of bathymetry and sediment thickness.<sup>90</sup> Where differing data sets are in use amongst claimants (which is certainly the case as a result of confidentiality in respect of data holdings), claimant states are also likely to calculate dissimilar limits even when applying the same analytical techniques.

Cooperative or coordinated submissions to the CLCS are, however, hampered by the fact that, as noted above, not all the coastal states are parties to the LOSC and that those that are became parties at different times, resulting in different deadlines for submission to the CLCS. This has led to a lack of synchronisation amongst the priorities and submission timetables of the interested states.<sup>91</sup>

Although suggesting cooperation may seem far-fetched in light of recent reports emphasising competing claims and disputes among the Arctic littoral states, the arguments in favour, in light of the issues and challenges outlined above, are compelling. In fact, despite discussion of cooperation apparently falling on deaf ears, at the formal political and diplomatic levels at least, and the culture of secrecy that seems to surround the preparation and consideration of extended continental shelf submissions, there are some indications of progress. Cooperation at the informal and technical levels has been proceeding for numerous years, for example resulting in the production of the International Bathymetric Chart of the Arctic Ocean (IBCAO).<sup>92</sup> Furthermore, the fact remains that multiple potential maritime boundaries beyond 200 nm from the coast exist in the central Arctic. The CLCS will not rule on these issues, as its findings are expressly without prejudice to delimitation.<sup>93</sup> Negotiations between the coastal states are therefore inevitable at some point if these boundaries are to be delimited.

The recent announcement on the part of the governments of Denmark and Greenland that they would host a “high-level” meeting on the Arctic in Illulisat, Greenland, in May 2008, perhaps represents a positive development in this regard.

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<sup>89</sup> Macnab *et al.*, *supra* note 20, at 88; Macnab, *supra* note 70, at 305–306.

<sup>90</sup> *Ibid.*

<sup>91</sup> Macnab *et al.*, *supra* note 20, at 86.

<sup>92</sup> Macnab *et al.*, *supra* note 20, at 88–90.

<sup>93</sup> LOSC, Article 76(10) and Annex II, Article 9. For a detailed analysis of the issues arising see A. G. Oude Elferink, “Submissions of coastal states to the CLCS in cases of unresolved and maritime disputes”, in Nordquist *et al.*, *supra* note 70, at 263–285.

## Threats to the Changing Arctic

This paper has highlighted that many threats to the Arctic environment and its peoples will occur from global and regional climatic shifts and associated increased human activity. While the duration, extent and mix of socio-economic activities are open to conjecture, it is likely that in the Arctic terrestrial and marine environment, economic activity will grow as regional warming patterns evolve.<sup>94</sup>

The Arctic is home to a number of environmental threats, due to its proximity to human populations and as a recipient of hazardous material. Pollutants, such as radionuclides, heavy metals, and persistent organic pollutants, are in many cases generated elsewhere and transported by long-range atmospheric mechanisms.<sup>95</sup> Across the region, threats from pollutants exist from economic activities such as mining, heavy industry, tourism, shipping, mineral resource development and military activities.<sup>96</sup> In addition, the harvesting and management of marine living resources such as Arctic Cod, a straddling and high seas stock between Norway and Russia, are a cause for concern.<sup>97</sup>

The dramatic increase of temperatures, as highlighted in the ACIA, and the melting of glacial and sea ice represent a ‘step change’ in the nature of impacts within and external to the Arctic. The rise in global average sea levels, partly driven by melting glacial ice in Greenland and the Antarctic, is an issue of considerable concern. As noted in the IPCC 4th Assessment Report, sea level could potentially rise by 0.6 m by 2099, threatening low-lying areas and islands of countries such as Bangladesh, the Netherlands and the Maldives.<sup>98</sup>

<sup>94</sup> A conference paper by T. Valsson, “*The North: The New European Frontier with Global Warming*” (2005) AESOP Conference, Vienna; available at <<http://aesop2005.scix.net/cgi-bin/papers/Show?id=558>>, identifies a range of global demographic scenarios relating to global warming and the Arctic.

<sup>95</sup> O. S. Stokke “A legal regime for the Arctic? Interplay with the Law of the Sea Convention”. *Marine Policy* (July 2007) 31:402–408 at 404. Stokke stated that the Arctic serves as a reservoir for many hazardous substances, including radionuclides that have originated from European industrial plants, atmospheric nuclear tests from 40 to 50 years ago, and fallout from Chernobyl.

<sup>96</sup> *Ibid.*, at 407. Stokke notes that states within the Arctic generate a significant amount of pollutants, including organochlorides, hydrocarbons, and heavy metals. Several major Russian industrial centers are located on rivers that directly feed into Arctic waters.

<sup>97</sup> See the Norwegian Government fisheries website, listing a summary of concerns about the sustainability of the North East Arctic Cod, available at <[http://www.fisheries.no/marine\\_stocks/fish\\_stocks/cod/north\\_east\\_arctic\\_cod.htm](http://www.fisheries.no/marine_stocks/fish_stocks/cod/north_east_arctic_cod.htm)>.

<sup>98</sup> S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H. L. Miller (eds.) “Summary for Policymakers”, in *Climate Change 2007: The Physical Science*

Within the Arctic region itself, a warming environment will result in significant impacts on natural and human systems. The ACIA identifies the region as very sensitive to climatic changes.<sup>99</sup> Impacts on the environment include the shifting of vegetation zones and ecosystem-scale changes to Arctic habitats. Changes to species migration and breeding behaviour, foraging ecology, and the introduction of invasive species will lead to altered diversity, distribution and abundance of species.<sup>100</sup> In terms of coastal communities in the Arctic and the four million people living in the region, impacts from a warming climate include damage to infrastructure from melting permafrost and coastal erosion, and impacts on health, water supply and local economies.<sup>101</sup> Indigenous cultures are closely linked with the Arctic environment and will be subject to impacts that will influence the loss of traditional culture and way of life in the Arctic.<sup>102</sup>

The retreat of summer sea ice presents an additional range of impacts and opportunities, depending on one's perspective. It is plausible that sustainable economic development in the region could benefit regional communities and Arctic states, even if some of the opportunities identified above, notably in terms of seabed resource development and navigation, remain unrealised for the foreseeable future. However, unregulated, uncoordinated and inappropriate activities, cumulative in nature in a sensitive environment, may present significant risks to the environmental quality of the Arctic.

With regard to navigation, for example, enhanced traffic involves increased risks of maritime accidents and the capacity of coastal states to deal with such an eventuality, both in terms of rescuing those involved and addressing the environmental impacts of, for example, a major oil spill. Recent accidents in both Polar Regions involving tourist operations serve to highlight the issue. In August 2007, the collapse of a glacier onto the *Alexey Maryshev* off Svalbard resulted in injuries to 46 tourists. In November 2007,<sup>103</sup> the *M/S Explorer*

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*Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*" (Cambridge University Press, Cambridge, United Kingdom and New York, USA, 2007), p. 13. The IPCC report notes that this conservative projection does not include the possibility of rapid changes in dynamical ice flow from the Greenland or the Antarctic ice sheets.

<sup>99</sup> ACIA, *supra* note 7, at 991.

<sup>100</sup> See R. Rayfuse, *supra* note 5, at 203; ACIA, *supra* note 7, at 990–1003.

<sup>101</sup> ACIA, *supra* note 7, at 1000; R. Rayfuse *supra* note 5, at 202.

<sup>102</sup> Rayfuse, *supra* note 5, at 202.

<sup>103</sup> "Britons injured by Arctic glacier", BBC News, 9 August 2007, <[http://news.bbc.co.uk/2/hi/uk\\_news/6938940.stm](http://news.bbc.co.uk/2/hi/uk_news/6938940.stm)>.

sank in the Antarctic, necessitating the emergency evacuation of 154 passengers and crew.<sup>104</sup> It is clear that such ‘expedition cruising’ in remote and potentially hazardous waters is growing and it can be reasonably anticipated that this growth will continue.<sup>105</sup> In December 2007, Norway experienced its second largest oil spill, with 25,000 barrels of oil escaping into the North Sea from the Statfjord oil field site, 124 miles west off the Norwegian coast. The incident has further raised concerns about anticipated future expansion of hydrocarbon extraction in the Barents Sea.<sup>106</sup> It has also been suggested that increased maritime traffic will also lead to other undesirable impacts which will, in turn, pose significant security and enforcement challenges to Arctic states.<sup>107</sup> The interpretation and application by states of the requirement in Article 234 of the LOSC to adopt and enforce non-discriminatory environmental provisions in the face of increasing shipping will be a source of future legal debate.<sup>108</sup>

It is clear that in the Arctic mineral resources are of strategic importance and predominantly fall under the jurisdiction of Arctic states.<sup>109</sup> However, as this paper has discussed, the extent of mineral resource reserves and operational capacity is highly uncertain and certainly long term in nature. Any future development must proceed with the mitigation of environmental impacts as its highest priority and as part of a shared vision from Arctic states. In addition to mineral resources, exploitation of living resources will emerge as another economic opportunity with the retreat of summer sea ice. There are significant gaps in the management of high seas stocks in the Arctic, particularly outside the jurisdiction of the North East Atlantic Fisheries Commission (NEAFC)<sup>110</sup> and multilateral agreements, such as the trilateral Loophole agreement between Norway, Russia and Iceland.<sup>111</sup> It is likely that new regional fisheries manage-

<sup>104</sup> See S. Keenan, “The Growth of Arctic cruising”, *The Times*, 23 November 2007; “Stricken Antarctic ship evacuated”, BBC News, 24 November 2007, <<http://news.bbc.co.uk/2/hi/americas/7108835.stm>>; “Chile completes shipwreck airlift”, BBC News, 25 November 2007, <<http://news.bbc.co.uk/2/hi/americas/7112239.stm>>.

<sup>105</sup> Keenan, *ibid.*

<sup>106</sup> “Norway Oil Spill Contained, Stirs Fears for Arctic”, Planet Ark, 14 December 2007, <<http://www.planetark.com/dailynewsstory.cfm/newsid/46027/story.htm>>.

<sup>107</sup> Writing about the possible opening up of the Northwest Passage, Byers and Lalonde (*supra* note 30, at 30) note that such a shipping route could “provide an avenue for the entry into North America of drugs, guns, illegal immigrants and perhaps even terrorists.”

<sup>108</sup> I. V. Stepanov, “*Legal Implications for the Russian Northern Sea Route and Westward in the Barents Sea*” (Fridtjof Nansen Institute, Norway, 2005), 120 pp.

<sup>109</sup> Stokke, *supra* note 95, at 405.

<sup>110</sup> Rayfuse, *supra* note 5, at 212.

<sup>111</sup> For a history of the development of fisheries and straddling stock issues in the Barents Sea,

ment agreements may have to be considered for the Arctic high seas in order to safeguard stocks. The movement of stocks due to changing environmental conditions and the increase of maritime activity will cause further pressures on managing existing Arctic fisheries. This includes coastal, port and market state responses to incidences of illegal, unreported and unregulated (IUU) fishing and the governance of high seas stocks under changing physical conditions, against the backdrop of undelimited international boundaries and thus overlapping maritime claims. An example is the ongoing issue of sustainable management of productive Barents Sea fisheries including Arctic cod, herring, haddock and capelin. This region has been heavily fished since the 1950s and is a key supply of seafood for Europe. Issues of overfishing and IUU pressures on stocks combined with the uncertainties from climate impacts raise complex issues for future management.<sup>112</sup>

## Oceans Governance Challenges

Governance in the Arctic occurs through a mix of domestic and international legal instruments and “soft law” regional agreements. The foundation for regional action has been the Arctic Environmental Protection Strategy 1991, which was superseded by the Arctic Council in 1996.<sup>113</sup> The Arctic Council is a ‘high level forum to provide a means for prompting cooperation, coordination and interaction among the Arctic states with the involvement of the Arctic indigenous communities... on common Arctic issues’.<sup>114</sup> The Arctic

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refer to: European Environment Agency, *Arctic Environment: European Perspectives. Why should Europe care?* (2004) European Environment Agency, Copenhagen, 59 pp, at 19.

<sup>112</sup> The Directorate of Fisheries in Norway regularly reports on the over-harvesting of Barents Sea cod by Russian vessels. Its 2006 report suggests Russia harvested approximately 315,000 tonnes of cod and 87,000 tonnes of haddock. This catch exceeded the 2005 quota by 101,000 tonnes for cod and 36,000 tonnes for haddock. In 2006, calculations show that Russian fishing exceeded the quota by approximately 117,000 tonnes for cod and 28,000 tonnes for haddock. Refer to: Norwegian Directorate of Fisheries, “Report: Status Report for 2005—Russian Cod and Haddock Fishing / transshipment at sea” (March 2006), p. 12; Norwegian Directorate of Fisheries, “Russian fishing of cod and haddock 2006” (March 2007), 8 pp. Available at: <<http://www.fiskeridir.no/fiskeridir/content/download/10057/84126/>>. For discussion on approaches to fisheries management in the Arctic under changing physical and jurisdictional regimes refer to Rayfuse, *supra* note 5, at 213 and Stokke, *supra* note 95, at 403.

<sup>113</sup> L. Nowlan, *Arctic Regime for Environmental Protection* (IUCN, Gland, Switzerland and ICEL, Bonn, Germany, 2001).

<sup>114</sup> Declaration of the Establishment of the Arctic Council, Ottawa (1996), available at <<http://arctic-council.org/filearchive/Declaration%20on%20the%20Establishment%20of%20the%20Arctic%20Council.pdf>>.

Council is not an international organisation with legal personality,<sup>115</sup> but an international forum between Arctic states and permanent participants that represent indigenous nations of the Arctic. Its mandate is to build cooperation and interaction across six working groups.<sup>116</sup> In addition to the Arctic Council, several regional organisations have emerged over the past decade to address a variety of governance issues such as indigenous capacity building, European and Russian cooperation, and sustainable development.<sup>117</sup>

Over recent years questions have been raised by commentators over whether the existing regime is sufficient to protect and manage the Arctic or whether a new regime is required in the face of considerable environmental change and increasing socio-economic activity.<sup>118</sup> Despite the presence and continuity of this debate, the dominant paradigm in the Arctic is one of state sovereignty (or, frequently, sovereign rights in the maritime sphere) and cooperation via regional instruments.<sup>119</sup> In the medium term, it is likely that future socio-economic pressure driven by Arctic environmental changes will operate within this existing legal framework.

Although domestic laws control development and environmental management in areas under national jurisdiction, these laws are influenced by international commitments, particularly in areas relating to the marine environment. International regimes concerning climate change, biodiversity, fisheries, trade and environmental protection are enacted by some or all of the Arctic states, but their application remains patchy, and many of the problems, such as climate change, require solutions stretching far beyond the Arctic. As Arctic states have opted to pursue a “soft law” voluntary regime focusing on the coordination of scientific research, environmental management and sustainable development, efforts to protect and manage the Arctic can suffer from a ‘lowest common denominator’ effect, where a lack of action by one or more states can undermine or hinder the effective action of others. In addition, this approach builds in a lack of multilateral binding enforceable targets and avoids

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<sup>115</sup> See Nowlan, *supra* note 113, at 5.

<sup>116</sup> Working groups include Sustainable Development Program (SDWG), Arctic Monitoring and Assessment Program (AMAP), Emergency, Prevention, Preparedness and Response Program (EPPRP), Protection of Arctic Marine Environment (PAME), Conservation of Arctic Flora and Fauna (CAFF), and Arctic Contaminants Action Program (ACAP). Refer to Arctic Council Homepage (2007), available at <[http://arctic-council.org/working\\_group/acap](http://arctic-council.org/working_group/acap)>.

<sup>117</sup> See Nowlan, *supra* note 113, at 6.

<sup>118</sup> See Stokke, *supra* note 95, at 407; in addition, the Arctic Frontiers conference in Tromsø, Norway, 2007, debated the issues surrounding a potential treaty. See: <<http://www.eea.europa.eu/pressroom/speeches/23-01-2007>>.

<sup>119</sup> Rayfuse, *supra* note 5, at 198.



a level playing field for environmental protection and management activities. On the other hand, the current regionalist approach characterised by the Arctic Council has been identified by commentators as moderately successful and realistic but potentially due for reform<sup>120</sup> as greater international attention is focused on the Arctic.

With the significant present and future changes occurring in the Arctic environment from climatic change and with the corresponding increase in geopolitical and commercial activity, the Arctic faces a complex and challenging future. This paper identifies three scenarios for future governance arrangements—that of an existing or ‘status quo’ regime, a mixed reform regime, and a binding international regime.

The continuance of the existing and moderately successful soft law regime in the Arctic is a highly likely scenario, particularly in the context that Arctic coastal states are unlikely to relinquish their sovereignty to a larger binding international regime.<sup>121</sup> In addition, the divergence of political opinion over the future use of the Arctic, together with continued geopolitical positioning,<sup>122</sup> render it difficult for establishment of a binding agreement and leads to the notion of progressing within existing boundaries. As noted by Stokke, a ‘flexible approach to norm building’<sup>123</sup> within existing frameworks would appear to be a likely way to move forward on difficult issues and continue to improve regional environmental governance on issues such as monitoring and impact assessment, coordinating and harmonising regulations, promoting cleaner production and reducing pollution. In addition, sovereign states, bound by domestic legislation and increasing international commitments, have primary responsibility for performance on environmental standards and implementation of responsibilities under international regimes such as the LOSC. This scenario continues to promote Arctic issues on the world stage whilst at the same time preserving the geopolitical status quo and avoiding the governance complexities from an increasingly active and changing Arctic.

A mixed reform regime would seek to reform the existing governance approach identified above. It would actively seek to address the inefficiencies

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<sup>120</sup> Rayfuse, *supra* note 5, at 216, notes that Arctic states may be better served by greater cooperation and harmonization under the current regime. Stokke, *supra* note 95, at 407, highlights that environmental governance has been strengthened under the existing regime.

<sup>121</sup> See Rayfuse, *supra* note 5, at 21; Stokke, *supra* note 95, at 407.

<sup>122</sup> Baev, *supra* note 18, at 8, highlights recent security actions that may constitute the reemergence of a deterrence system strategy by Russia and the Arctic as a part of a reformed geopolitical agenda.

<sup>123</sup> See Stokke, *supra* note 95, at 408.

and gaps of the existing ‘unambitious regime’<sup>124</sup> and move toward proactively addressing Arctic issues where clear reform is needed. This could be a likely scenario where Arctic coastal states and other states with interests in the region move ahead on an issue-by-issue basis under international frameworks such as the LOSC, particularly in the context of Article 122 on regional cooperation in (semi-)enclosed seas.<sup>125</sup> This approach would retain the principle of sovereign control in the Arctic but increase cooperation and move forward on the difficult and emerging multilateral issues. Commentators have noted that there is a legal, and arguably moral, imperative for Arctic states to cooperate on transboundary issues of common concern, particularly under the banner of scientific research as operates under the Antarctic Treaty.<sup>126</sup> For example, there is a clear gap in the current regime for straddling stocks and high seas fisheries management in the Arctic.<sup>127</sup> With climate-induced changes in the distribution and abundance of fisheries,<sup>128</sup> new pressures will emerge on the management of stocks. The LOSC, through the 1995 UN Fish Stocks Agreement, strongly encourages the development of regimes to conserve and manage fish stocks that straddle national boundaries and the high seas. A regional treaty on high seas, migratory and straddling Arctic stocks could replace the existing complicated bilateral, trilateral and multilateral agreements currently in place and take a precautionary approach to management of fisheries not under national jurisdiction and under changing biophysical conditions. In addition, reform could be made to the protection of Arctic biodiversity<sup>129</sup> through strengthening existing domestic action under international agreements, such as the Convention on Biological Diversity, and promoted through the Arctic Council; strengthening existing international regimes such as the Convention for

<sup>124</sup> See Nowlan, *supra* note 113, at 8.

<sup>125</sup> Refer to note 5, *supra*.

<sup>126</sup> R. Macnab, “Coastal state sovereignty in the Arctic offshore: Is it compatible with the concept of a borderless north?”, Proceedings of the fourth Northern Research Forum, *The Borderless North*, Oulu and Tornio in Finland, and Haparndada and Luleå in Sweden 5–8 October, 2006, available at [http://www.nrf.is/Publications/The%20Borderless%20North/Second%20Theme\\_Macnab.pdf](http://www.nrf.is/Publications/The%20Borderless%20North/Second%20Theme_Macnab.pdf) and R. Macnab, O. Loken and A. Anand, “The Law of the Sea and Marine Scientific Research in the Arctic Ocean”, Canadian Polar Commission, *Meridian*, (Fall/Winter 2007), at 1–6, <<http://www.polarcom.gc.ca/media.php?mid=3278>>.

<sup>127</sup> See Rayfuse, *supra* note 5, at 212; and Baev, *supra* note 18, at 12.

<sup>128</sup> J. McGoodwin, “Effects of climatic variability on three fishing economies in high latitude regions: Implications for fisheries polices.” *Marine Policy* (2007) 17: 40–55.

<sup>129</sup> MPA News “Experts discuss proactive protection of the Arctic Ocean in anticipation of climate change”, *MPA News*, August 2007: School of Marine Affairs, U. of Washington, available at <<http://depts.washington.edu/mpanews/MPA88.pdf>>; Rayfuse, *supra* note 5, at 213; Nowlan, *supra* note 113, at 56.

the Protection of the Marine Environment of the North-East Atlantic (the “OSPAR Convention”) or fishery regimes such as the NEAFC; or through development of a new international regime to cover high seas issues. Commentators have suggested that negotiations under the LOSC for management of areas beyond national jurisdiction may provide a catalyst for nations to agree that cooperation and sustainable development is an appropriate outcome in the face of regional claims and tensions.<sup>130</sup>

The final scenario of a new comprehensive binding international regime, i.e., an ‘Arctic Treaty’, is an unlikely outcome. Clear reform is needed within the existing Arctic system, particularly in relation to a clear vision with established targets and the ability to address emerging transboundary problems. However, it is yet to be demonstrated that Arctic states have the political will or desire to move in this direction, with effort focused on moderately successful voluntary approaches. Several ideas have been discussed in consideration of a binding pan-Arctic treaty mechanism loosely based on the ‘Antarctic’ model.<sup>131</sup>

There is a continuing expansion of international agreements and treaties concerning the regulation of the environment and maritime affairs globally as well as across Arctic states. The many regional, bilateral and multilateral agreements on pollution, resource exploitation, maritime and security issues lead to a highly complex regulatory environment in the Arctic. Arctic states are clearly reluctant to yield domestic power to an international authority in the Arctic. However, a binding treaty does merit further ongoing debate, especially as a means to harmonise the various environmental commitments embedded in international treaties and enacted via states. The emerging negotiations on determining the extended continental shelf, the mooted action of the US in ratifying the LOSC, and the ongoing changes in the Arctic environment may potentially provide the backdrop for a discussion based on the common good rather than national self-interest.

Overall, the future of governance in the Arctic is filled with uncertainty and change. Change is coming from many directions, from the underlying physical and biological ecosystem driven by climatic warming, from geopolitical stances from the Arctic states, and in a resurgent interest in the potential or actual living and non-living resources of the region. While many forecasts of driving forces contain elements of uncertainty, best international practice would develop and apply a precautionary and multilateral approach to the

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<sup>130</sup> Baev, *supra* note 18, at 3.

<sup>131</sup> See Nowlan, *supra* note 113, at 58.

issues, backed by scientific research, an Arctic vision, and the political will to act on identified key issues of concern, such as resource sustainability and maritime jurisdictional claims. Whether these approaches evolve via a continuation of the status quo, a limited reform approach, or a new international regime is yet to be determined, but it is hoped that the future of the Arctic is one of sustainable development, peace and international cooperation.

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