

Climate Change and Maritime Traffic in the Arctic

Highlights

1. The changing climate in the Arctic is opening up new sea lanes for vessels faster than communities and governments are currently able to adapt.
2. Increased maritime traffic is already impacting international, national, and human security in the Alaska region and throughout the Arctic.
3. Governance of the Northwest Passage and the Northern Sea Route is developing in fundamentally different ways, with each regime facing a unique set of challenges.

How is climate change affecting shipping and other maritime traffic in the Arctic?

The Arctic is warming, with temperatures rising at twice the global average.ⁱ As a result, ice coverage in the Arctic Ocean is diminishing (see Figure 1), creating new maritime navigational opportunities. Arctic navigation depends on several factors: the trajectory of climate change, geophysical factors, the level of cooperation among Arctic states, the prices of natural resources like oil, infrastructure investments, emergency management, and advancements in technology, among others. Nonetheless, maritime traffic in the Arctic is expected to increase.ⁱⁱ This includes both transit and destination traffic. Arctic transit navigation passes through the Arctic as an alternative to routes passing through the Panama or Suez Canals, while Arctic destination navigation originates or ends voyages in the Arctic (including resupplying Arctic coastal communities and moving natural resources from the Arctic to global markets). Presently, Arctic vessels require icebreaker escorts, but projections show that as early as the 2030s, unescorted navigation in the Arctic might be possible; by the 2050s, it is probable.ⁱⁱⁱ

What Arctic routes are viable?

The Arctic has four routes: the Northwest Passage (NWP), the Northern Sea Route (NSR), the Transpolar Sea Route (TSR), and the Arctic Bridge (see Figure 2). Although vessels have traversed all four routes, the Northwest Passage and Northern Sea Route are likely to become more viable before the other two.

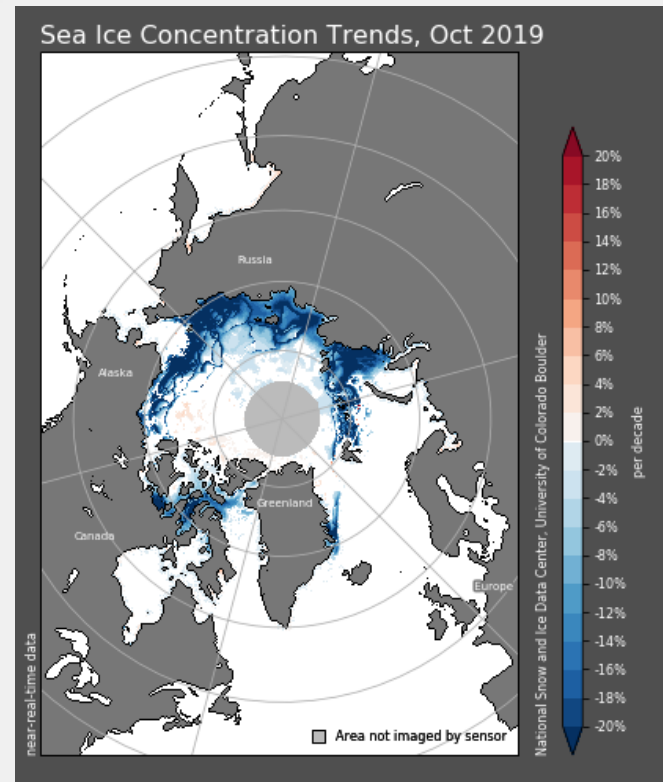
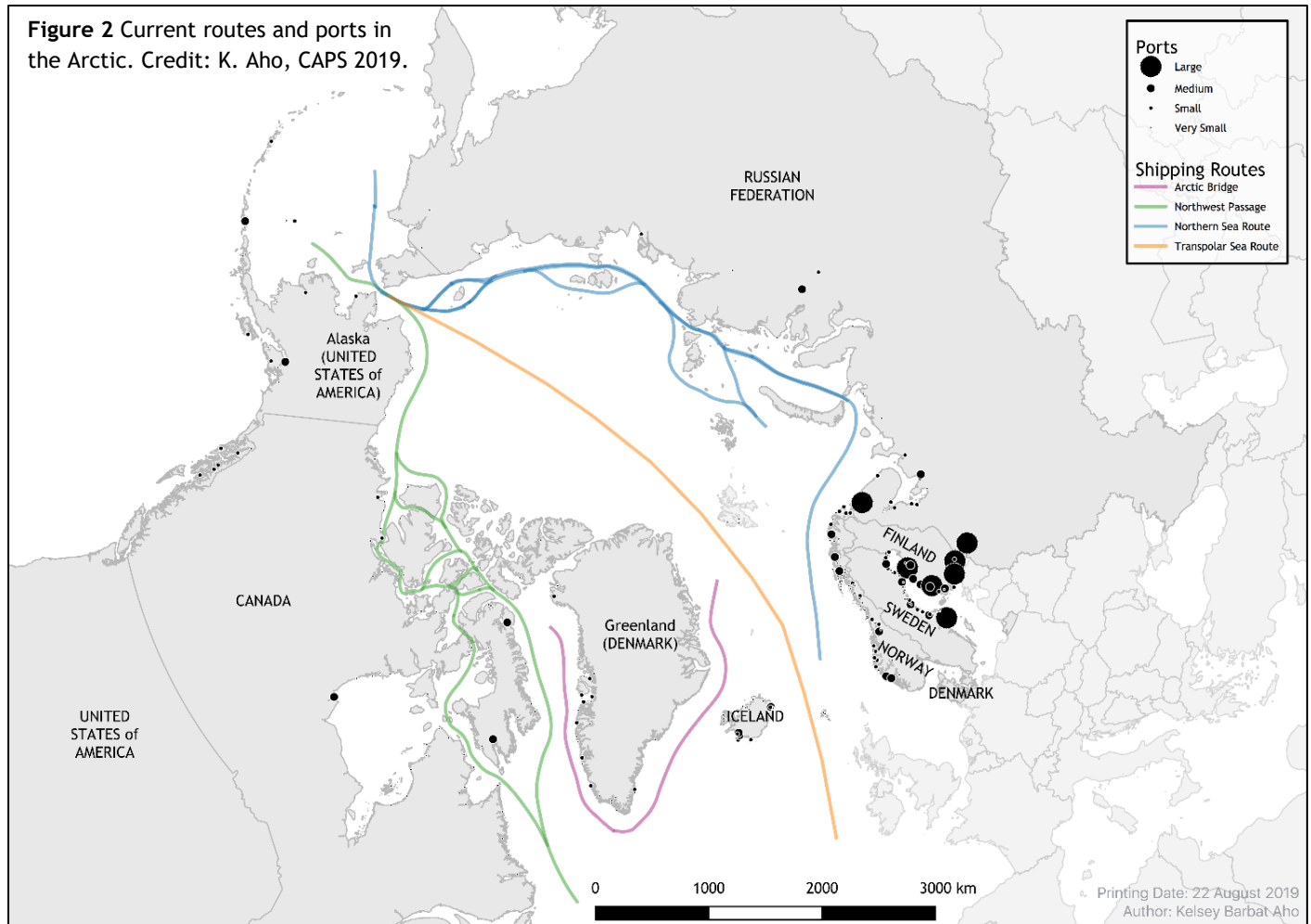


Figure 1 The ice along both the NSR and NWP is being reduced at the highest rate across the Arctic, making the routes visibly easier to navigate. The NSR is likely to open more quickly, with the ice reduction being most heavily concentrated along the entirety of Russia's Northern EEZ. Source: Uma Bhatt et al., "Sea Ice Outlook August Report." *Arctic Research Consortium of the United States*, August 22, 2018, <https://www.arcus.org/sipn/sea-ice-outlook/2018/august>

Figure 2 Current routes and ports in the Arctic. Credit: K. Aho, CAPS 2019.



The NWP is a sea route that extends from the Pacific Ocean, over Alaska, through the Canadian archipelago, and then between Canada and Greenland into the Atlantic Ocean. Much of the route runs in Canada's exclusive economic zone (EEZ) (see Figure 3). Currently, it is navigable only in summers with icebreaker escorts. Annual shipping distances have nearly tripled between 1990 and 2015, with two-thirds of the growth occurring since 2006.^{iv} In the period 2008-2018, vessels transiting the NWP were mainly adventure craft or cruise ships, and of the 222 complete transits in this period, only eight were hauling commercial cargo.^v In 2016, the *Crystal Serenity*, with a capacity of 980 passengers and over 600 crew members, became the largest passenger ship to navigate the Northwest Passage when it completed a voyage from Vancouver to New York. However, the vast majority of traffic on the route is destination, primarily resupplying rural communities, rather than transit shipping that neither originates nor ends along the route.^{vi}

The NSR is a shipping route along the north coast of Russia, extending from the Kara Sea in the west through the Bering Strait in the east. It is a large component of the Northeast Passage, which runs from the Atlantic to the Pacific Ocean. The route lies within Russia's EEZ. Sections of the route are free of ice for approximately two months per year in the summer. Since 2011, over 220 vessels have traversed the NSR, including cargo, passenger, and fishing ships from Europe, Central America, and Asia.^{vii} Similar to the NWP, more shipping is destination than transit in the NSR.^{viii} The route has been used for the resupply of remote communities located along the Irtysh, Yenisei, and Lena Rivers. According to Humpert, "[t]he growth in traffic primarily comes from the export of liquefied natural gas, crude oil, and coal. The exploration of natural resources in Russia's Arctic has resulted in a five-fold increase in cargo volume since 2014."^{ix}

How will governance of Arctic traffic develop?

Governance of Arctic shipping and other traffic will likely develop in a bifurcated manner, with the NWP and NSR managed separately and differently. In some cases, states governing the NWP and NSR will likely compete to attract ships. If so, Arctic states will not co-manage the routes and associated ports. The United States (including Alaska), Canada, and perhaps Denmark (including Greenland) will likely cooperate to govern the NWP, and a North American league of ports is possible. But Canada and the international community, particularly the United States, will need to resolve the issue of whether Canada's claim over the NWP is legitimate and legal. Rooted in a historical precedent, Canada argues that the route passes through its internal waters. If indeed so, Canada would govern traffic in the NWP. However, the international community currently regards the route as an international strait, thus open to free navigation. Moreover, the United States will need to revisit becoming a signatory of the United Nations Convention of the Law of the Sea (UNCLOS), and the United States and Canada will likely need to resolve their maritime boundary dispute in the Beaufort Sea.

Meanwhile, Russia is unlikely to share management of the NSR given that the route runs

through its EEZ. Although per UNCLOS, foreign ships have the right to "innocent passage" to traverse the route, Russia demands that all vessels receive its permission, pay fees, and submit to Russian regulation. Russia justifies this policy in part by citing Article 234 of UNCLOS. According to this provision, "[c]oastal states have the right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from vessels in ice-covered areas within the limits of the exclusive economic zone, where particularly severe climatic conditions and the presence of ice covering such areas for most of the year create obstructions or exceptional hazards to navigation, and pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance. Such laws and regulations shall have due regard to navigation and the protection and preservation of the marine environment based on the best available scientific evidence."^x

Despite these challenges, Arctic states are cooperating on some issues relating to maritime traffic. Entering into force in 2013, the Search and Rescue Treaty, ratified by the Arctic states, coordinates search and rescue (SAR) coverage and establishes each state's area of SAR responsibility. Moreover, the International Maritime Organization's Polar Code specifies design,



Figure 3 Each state has an exclusive economic zone (EEZ) extending from its baseline to two hundred nautical miles, where coastal states may exercise sovereign rights to explore, exploit, conserve and manage the living resources in the exclusive economic zone, as established within the United Nations Convention on the Law of the Sea.

Source: "Law of the Sea: A Policy Primer," Fletcher School of Law and Diplomacy, Tufts University, 2019. <https://sites.tufts.edu/lawofthesea/>

construction, equipment, operations, training, SAR, and environmental protection requirements of ships traversing polar waters.

What does this all mean for Alaska?

Alaska can benefit from opening waters in the Bering Sea and Strait and Chukchi and Beaufort Seas. Large ships passing through the Bering Strait and onto either the Northwest Passage or the Northern Sea Route could stop at a deep water port on Alaska's west coast. Although Alaska does not yet have a deep water port in the Arctic, the U.S. Army Corps of Engineers is investigating the placement of one in Nome. Shipping and tourism can bring economic development to the region, particularly if a road or rail connects the deep water port community to interior Alaska. Meanwhile, the United States will need to secure Alaska's borders and waters as the region becomes more open to traffic. A port in Nome, and perhaps another on the North Slope, could be places from which to stage Coast Guard operations, which would be particularly helpful with the use of six polar security cutters that Congress recently authorized.^{xi} Currently, the Coast Guard service responsible for western and northern Alaska is

based in Kodiak, limiting its SAR capacity in the region. As traffic increases around Alaska, it is also not unthinkable that the federal government will consider placing a naval base in Alaska.

Stakeholders focus on the benefits and opportunities of a changing environment to Alaska and the rest of the Arctic. Former Lieutenant Governor of Alaska Mead Treadwell and his colleagues envision a "league of Arctic ports" to foster collaboration among Arctic states and promote trans-Arctic shipping that will benefit both private business and state government.^{xii} Alaska Senator Lisa Murkowski has proposed the Shipping and Environmental Arctic Leadership (SEAL) Act to establish a seaway development corporation for fostering cooperation among Arctic states and to collect maritime shipping fees for funding infrastructure and responding to environmental needs associated with regional shipping.^{xiii} Although these plans will contribute to the formation of a regime governing shipping and ports, coastal communities are concerned with invasive species from climate change and pollution from maritime traffic. Furthermore, shared management is unlikely to cover ports or activities along the NSR given Russia's position.

ⁱ Matthew Collins et al., "Long-term Climate Change: Projections, Commitments and Irreversibility," chap. 12 in *Climate Change 2013: The Physical Science Basis. IPCC Working Group I Contribution to AR5*, eds. Thomas F. Stocker et al. (New York: Cambridge University Press, 2013), 1029-1136; Brooks Hays, "NOAA: Arctic Warming at Twice the Rate of the Rest of the Planet," *UPI*, December 12, 2018, https://www.upi.com/Science_News/2018/12/12/NOAA-Arctic-warming-at-twice-the-rate-of-the-rest-of-the-planet/5141544580754/.

ⁱⁱ U.S. Committee on the Marine Transportation System, *A Ten-Year Projection of Maritime Activity in the U.S. Arctic Region, 2020-2030*, (Washington, D.C.: 2019).

ⁱⁱⁱ Yevgeny Aksenov et al., "On the Future Navigability of Arctic Sea Routes: High-Resolution Projections of the Arctic Ocean and Sea Ice," *Marine Policy* 75 (January 2017): 300-317.

^{iv} Jackie Dawson et al., "Temporal and Spatial Patterns of Ship Traffic in the Canadian Arctic from 1990 to 2015," *Arctic* 71, no 1 (March 2018): 1-113.

^v U.S. Committee on the Marine Transportation System, *Ten-Year Projection*.

^{vi} Dawson, "Temporal and Spatial Patterns," 1-113.

^{vii} Pavel Devyatkin, "Russia's Arctic Strategy: Maritime Shipping (Part IV)," *The Arctic Institute*, February 27, 2018,

<https://www.thearcticinstitute.org/russias-arctic-strategy-maritime-shipment-part-iv/>

^{viii} Ibid.

^{ix} Malte Humpert, "US and Russia Propose Two-Way Shipping Routes in Bering Sea," *High North News*, February 6, 2018, 2, <https://www.highnorthnews.com/en/us-and-russia-propose-two-way-shipment-routes-bering-sea>.

^x United Nations Convention on the Law of the Sea," opened for signature: December 10, 1982, *United Nations Treaty Series*, vol. 2167: 3.

https://www.un.org/depts/los/convention_agreements/texts/unclos/UNCLOS-TOC.htm

^{xi} Ben Werner and Sam LaGrone, "Coast Guard Renames New Icebreaker Program 'Polar Security Cutter'" *USNI News*, September 27, 2018, <https://news.usni.org/2018/09/27/36846>.

^{xii} Mead Treadwell, "Arctic Circle Shipping and Ports Report: Working Draft," *Arctic Circle*, May 2018, <https://arcticcircleseawayreport.wordpress.com/>.

^{xiii} United States Senator for Alaska Lisa Murkowski, *Murkowski Unveils Arctic Legislation to Reinvigorate America's Arctic Role (Press Release)*, December 12, 2018, <https://www.murkowski.senate.gov/press/release/murkowski-unveils-arctic-legislation-to-reinvigorate-americas-arctic-role>.

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