THE NORTHWEST PASSAGE

BY PETER STOYKO

Global warming is melting Arctic ice and changing the ecology. The Northwest Passage—the shipping route through the region—will be open year-round in a few decades. Traffic growth will affect Northern communities and ecosystems in untold ways. Climate change also presents a governance challenge given the sparse population and sprawling coastline. Consider a few trends.

Ice Concentrations

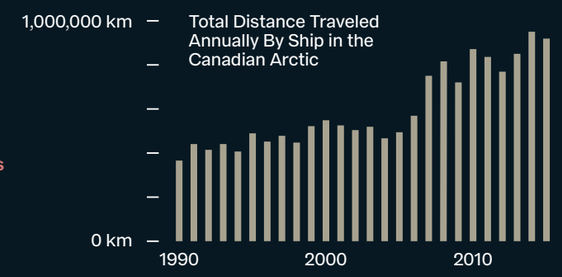
Ships with specially fortified hulls (*icebreakers*) are required to clear the path in waters with thick sea ice. The proportion of the Arctic ocean covered by thick ice (0.5 metres thick or greater) during the navigation period (June to October) is dwindling. The map below shows **projections of sea ice concentrations** based on a "business as usual" climate scenario (rising emission levels throughout the century) as calculated by Aksenov et al. (2017).

Projected average for navigation period in the **2010s**

Projected average for navigation period in the **2030s**

Actual **shipping routes** can vary considerably depending on ship type and conditions but loosely fall into three main corridors.

Ship Traffic



Sources: Ice coverage projections from Yevgeny Aksenov et al., "On the future navigability of Arctic sea routes: High-resolution projections of the Arctic Ocean and sea ice," *Marine Policy*, vol. 75 (2017), pp. 300-317; Ship traffic total kilometers from Dawson et al., "Temporal and Spatial Patterns of Ship Traffic in the Canadian Arctic from 1990 to 2015," *Arctic*, vol. 71, no. 1 (2018), pp. 15-26; Ship traffic trends by type from Dawson et al., *Shipping Trends in Nunavut 1990-2015: A Report Prepared for the Nunavut General Monitoring Program* (Ottawa: Environment, Society and Policy Group, 2017).

www.elanica.com/eye-cues