Submission: T-2020-162-93

Last Name of PRESENTING Author Miller-Hooks
Middle Name or initials of PRESENTING Author
First Name of PRESENTING Author Elise
Country of PRESENTING Author United States

Institution, organization or general address George Mason University

Theme -Theme 2: Observing in Support of Adaptation and Mitigation

Author list (in order) Elise Miller-Hooks, Sara Cobb, Celso Ferreira, Anne Garland, Ralph Pundt, Thomas Ravens, Jinlun Zhang

Poster title (brief) An Expanding Global Maritime Network, its Arctic Impacts and Reverberations

Abstract - text box
As the Arctic thaws, new opportunities for resource exploration and exportation, as well as new routes to support global trade, are expected. Increased passage of commodities through these routes and related industrialization of the Arctic will introduce both opportunities and risks. They will require international agreements and rules of governance to maintain global stability and protect not only the commercial viability of the U.S. Arctic, but the local peoples, environment and natural resources. These new opportunities in the Arctic will have impacts that reverberate across the globe. This poster describes a U.S. National Science Foundation supported project to develop: high resolution sea-ice forecasting capabilities for predicting Arctic sea ice thickness, ice ridge stability, storm surges and risks from icing and accidents to ships; models of Arctic coastal dynamics, incorporating complex systems of physical, thermal, oceanographic and meteorological processes at different scales, and accounting for unstable permafrost; an understanding of risks from increased maritime Polar traffic and commercial activity to the natural and social ecosystems of Arctic peoples, their lands, cultures and economic welfare; conflict early warning signs, techniques for conflict risk assessment and design of governance approaches; and mathematical models and solution methods that exploit risk predictions from ice physics, coastal dynamics and social/governance insights to forecast expected cargo traffic through Arctic passageways over time, along with corresponding changes to traffic flows along alternative world trade routes and supply chains. Aligned with the Arctic Observing Summit's themes, this convergence research will create data related to storm surge, ice conditions and pollutants, and will exploit data from Arctic and global shipping observing systems with an aim of facilitating greater resilience, economic growth and sustainable development in the Arctic.