



A R C T I C E

Ice Conditions Index for the Arctic

In collaboration with USCG and other government agencies, the ADAC team is developing Arctic Ice Condition Index (ARCTICE). In this project, the team is focused on the ice laden waters of the Bering, Chukchi and Beaufort Seas (corresponding to the U.S. Arctic Extended Economic Zone (EEZ). The project produces an easy-to-understand numeral to communicate ice conditions that are relevant to the capabilities of an individual vessel. This index will be available for current and future ice conditions, providing forecasts from 72 hours up to 1 month in advance. Based on completed and transitioned Great Lakes ICECON investigations, proposed research will result in providing marine operators a transition destination ready access to this information, in particular the U.S. National Ice Center (USNIC) and the Alaska Ocean Observation System supporting vessel captains and officers in route planning and in determining associated risk with traveling through a particular region in the Arctic Waters.

Accordingly, project researchers plan workshops and seminars (using distant technologies as appropriate) in coordination with USCG D17 to collaborate with ice and maritime transportation experts. These experts are from a range of organizations including (but not exclusive to): NOAA, the U.S. National Ice Center, the US Army Corps of Engineers Cold Regions Research and Engineering Laboratory (CRREL), USCG RDC, USCG D17, Transport Canada, the Canadian Ice Service, the Finish Meteorological Institute, and the University of Alaska. Transitioned ARCTICE is planned to publish to U.S. National Ice Center and will be readily to USCG D17 and Arctic mariners.

Similar to the completed project creating ICECON for the Great Lakes region, ARCTICE research, guided by the USCG-led “council of experts” will create a visualized decision support product, a numeric index that combines marine vessel size, gross tonnage and hull strength polar classification to contrast against current and forecast ice of the planned route of sail, to provide USCG and shipmasters improved safe passage insight in Arctic ice laden waters. In order to achieve improved usefulness and utility, ARCTICE will include an inclusive and iterative process principally with meteorological, marine traffic, and safety experts.

In order to provide vessel masters environmental data to create an ARCTICE decision support tool, the decision support will leverage existing (and will be able to select between) available sea-ice characterization models. It is important these factors include and model (forecast) available Arctic region ocean current, sea-ice presence, thickness, movement and ridging factors.

