



International Workshop on Arctic Ocean Observation:  
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## A Perspective on Strategies for Arctic Research Vessels

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The Arctic is an area of significant dynamics and strongly affected by climate change. Based on oceanographic and climate models it is forecasted that the Arctic has a high probability being ice free in the Arctic summer from the 2030ies on. With respect to commercial shipping this might increase new opportunities for commercial shipping in the Arctic considering routes across the North-Pole. This route would allow transit between Asia and Europe without entering Russian waters. The current political situation and tension between Russia and many other countries due to the Ukraine-war manifested in sanctions, trade stops and territorial restrictions.

Despite the Arctic might be ice free for a short time of the year seasonal ice will still be present as well as floating glacier ice around Greenland and in Antarctica. Models for predicting the performance of ships in ice still lack maturity and require validation against full-scale measurements.

The current problem is that previously recorded data are often of low resolution and fidelity as well as several influencing parameters such as weather data are not recorded at all. These gaps can and should be bridged by modern research vessels that record ice loads and the performance of the ship in a high fidelity, but also a high number of environmental and oceanographic data to assess cross-influences.

In addition to the recordings the data must be processed and saved in formats that are easily accessible and usable for researchers and engineers.

At the same time such data provide the opportunity to ice tanks and research facilities to calibrate and validate their physical models with higher accuracy providing better predictions.

Improved predictions for ice going vessels will also help to optimize their design that might help reducing steel weight and engine power. This ultimately improves efficiency, reduces emissions and has a positive impact on society.