

IceNAV Project Description

IceNAV is a government-led research project to improve the efficiency and safety of maritime navigation in ice-covered waters and to reduce the reliance on manned helicopter flights for ice reconnaissance. IceNAV is being conducted for the Royal Canadian Navy and Canadian Coast Guard through and is supported by various government departments. IceNAV research is being conducted from the CCGS *Henry Larsen* icebreaker as part of the normal Arctic resupply and icebreaking program during the late summer and early fall.

The science team includes researchers from Defence Research and Development Canada (DRDC), the National Research Council of Canada (NRC), Environment and Climate Change Canada (ECCC), the Canadian Ice Service (CIS), NASA's Surface Water and Ocean Topography (SWOT) satellite program, and NATO's Centre for Maritime and Experimentation (CMRE) with support from the Canadian Coast Guard (CCG).

The planned research focuses on measuring and understanding the properties of floating sea and glacial ice using sensors mounted on a ship, on a drone launched and recovered from the ship, on satellites, and on a small underwater autonomous vehicle. Sensors are used to passively measure the ice conditions around the vessel during transit operations. Additionally, the science team will disembark from the ship onto sea ice floes to manually retrieve and measure sea ice characteristics. Manual measurements include extracting sea ice cores, collecting samples of sea ice for mechanical testing, performing temperature and salinity measurements of the water near and under the targeted ice floes, and measuring ice thickness profiles using specialized sensors and subsea acoustics. The manual measurements are used to calibrate the data gathered by sensors.

The research will take place in the regions surrounding the Northwest Passage intersection, including Lancaster Sound, Parry Channel, Peel Sound, M'Clintock Channel and Prince Regent Inlet, between August 20 and August 30. The science team will specifically target large, stable ice floes for manual measurements and will passively record all sea ice conditions along the voyage route. The ship may venture outside of this region to find suitable ice depending on local conditions at the time of sailing. The research will focus on drifting pack ice in navigable waterways.

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