Extending the Ice Watch system as a citizen science project for the collection of In-Situ sea ice observations

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The Ice Watch program coordinates routine visual observations of sea-ice including icebergs and meteorological parameters. The development and use of the Arctic Shipborne Sea Ice Standardization Tool (ASSIST) software has enabled the program to collect over 6 800 records from numerous ship voyages and it is complementary to the Antarctic Sea-ice Processes and Climate (ASPeCt) in the Antarctic. These observations will enhance validation and calibration of data from the Copernicus Sentinel satellites and other Earth Observation missions where the lack of routine spatially and temporally coincident data from the Polar Regions hinders the development of automatic classification products. A critical piece of information for operations and research, photographic records of observations, is often missing. As mobile phones are nearly ubiquitous and feature high-quality cameras, capable of recording accurate ancillary timing and positional information we are developing the IceWatchApp to aid users in supplementing observations with a photographic record.

The IceWatchApp has been funded by the Citizen Science Earth Observation Lab (CSEOL) programme of the European Space Agency and the Polar Citizen Science Collective, which has successfully implemented similar observation projects within atmospherics, biology and marine geosciences, is collaborating in its development. The image database will aid the training of machine learning algorithms for automatic sea ice type classification and provide a mechanism for crowd-sourcing identification through an “ask a scientist” feedback feature. The app will also have the capability to provide near real-time satellite and Copernicus services products back to the user, thereby educating them on Earth Observation, and giving them an improved understanding of the surrounding environment.

Keywords: Polar regions, Arctic, Antarctic, data collection, In-Situ measurements, remote sensing, Sea Ice, user engagement, citizen science, Earth Observation.

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