

## **NAVIGATION ASSISTANCE FOR ICE-INFESTED WATERS THROUGH AUTOMATIC ICEBERG DETECTION AND ICE CLASSIFICATION BASED ON TERRASAR-X IMAGERY**

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### **ABSTRACT:**

Over the last three decades, the Arctic summer sea ice coverage has decreased significantly. This trend is expected to continue due to persistent climate change. Besides increased research efforts in this field, this phenomenon has also attracted attention from maritime end-users. To keep Arctic shipping routes safe, monitoring of icebergs and drift ice are crucial. Satellite borne remote sensing, in particular Synthetic Aperture Radar (SAR), is ideally suited to this purpose. Wide coverage, high-frequency availability, and independence from daylight and cloud coverage are among the major advantages of this data source. We propose automated iceberg detection and sea ice classification algorithms based on TerraSAR-X imagery and their application for near real-time purposes. Operational data acquired during several cruises into ice-infested waters are discussed. We show how maritime users benefit from such value-added SAR based products.