

# KAMON

## Kara-Arctic Monitoring and Operation Planning Platform

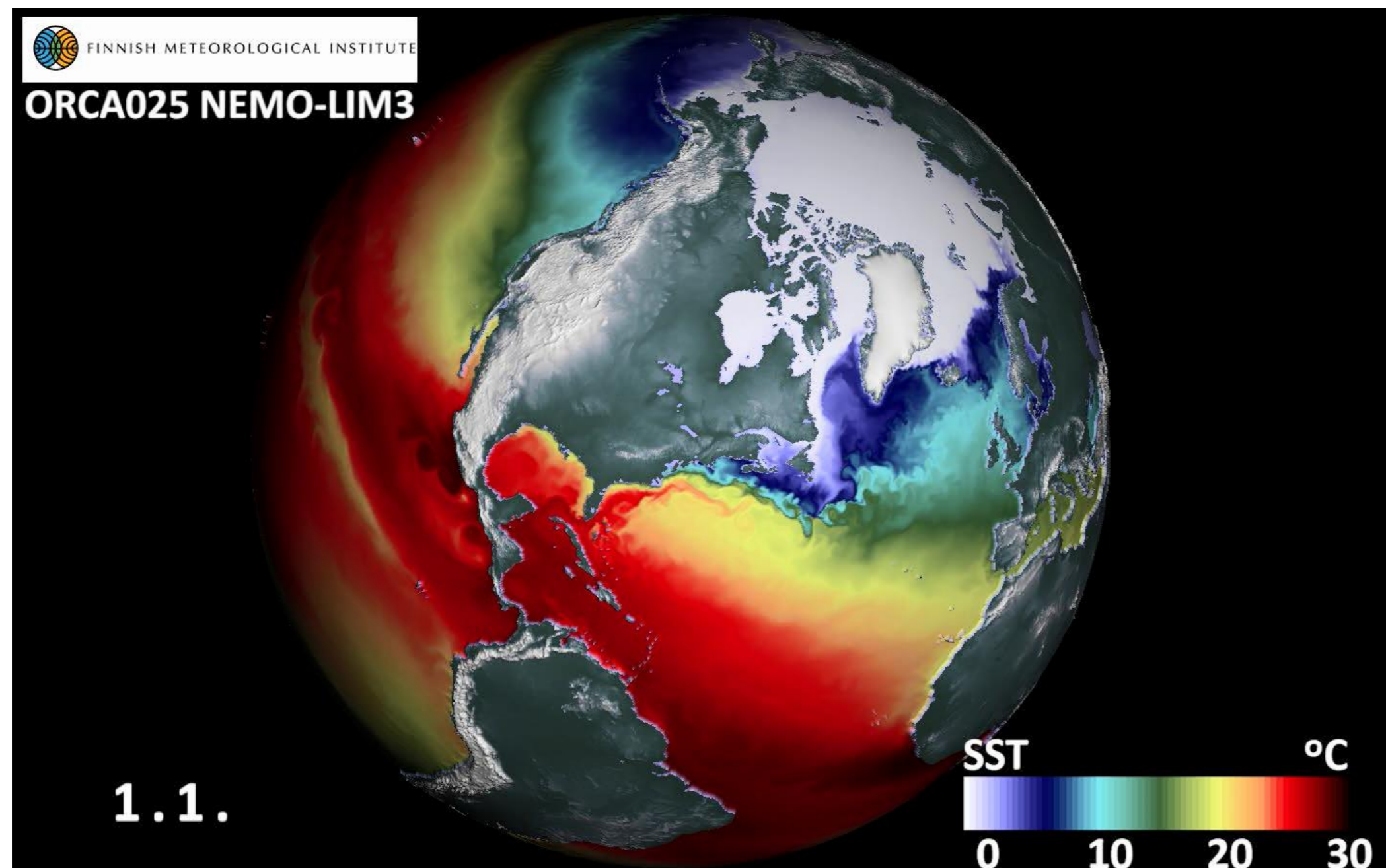


Mikko Lensu, Andrea Gierisch, Petteri Uotila, Markku Similä, Jukka-Pekka Jalkanen, Jukka Tuhkuri, Pentti Kujala, Jakub Montewka, Arttu Polojärvi, Lauri Kuuliala

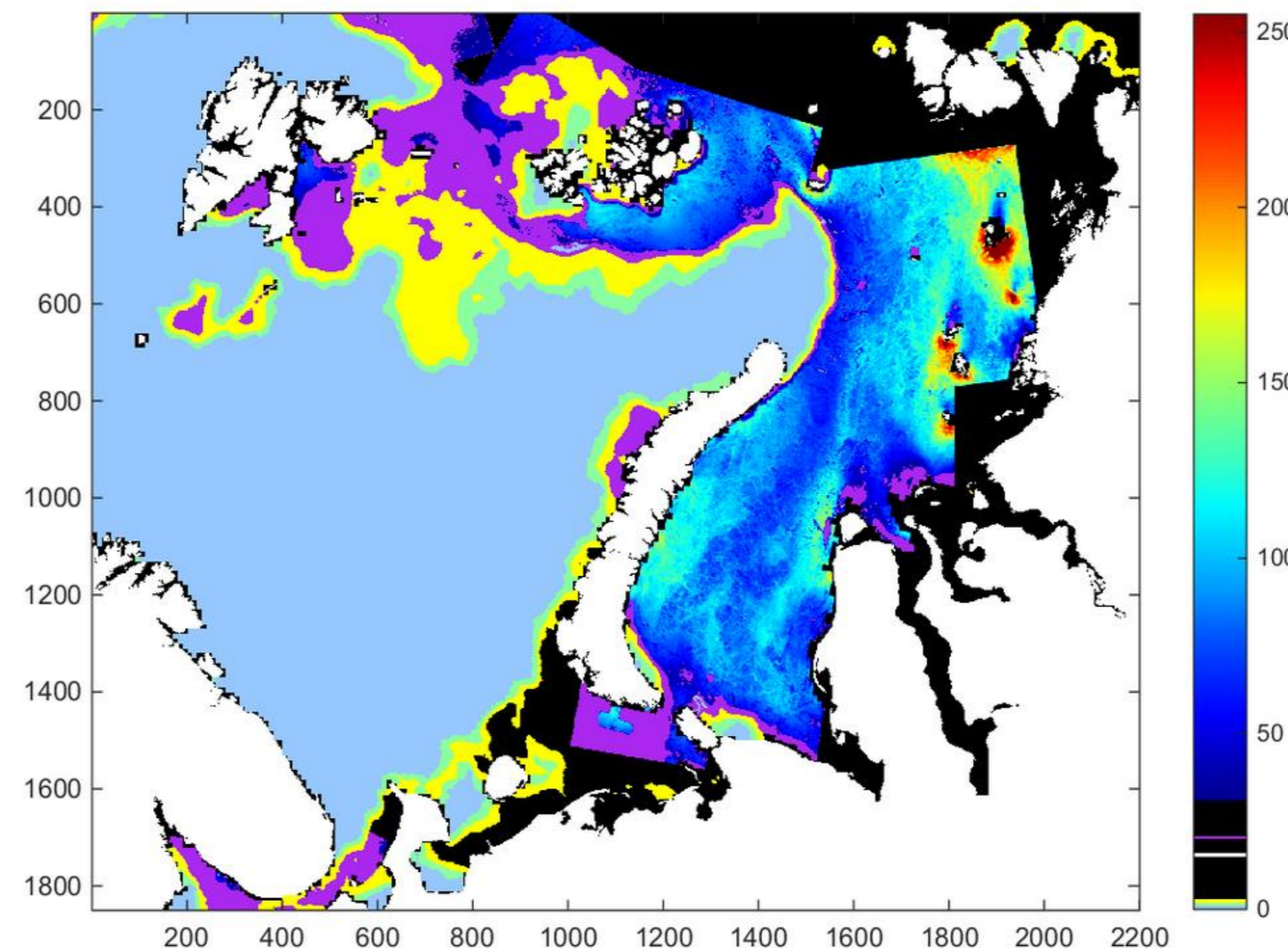
ARCTIC New services for ice covered Arctic seas  
 KARA Special focus on Kara Sea  
 MONITORING Monitoring of ship emissions and environment  
 OPERATION Real time information for ships and offshore  
 PLANNING Short and long range tools for all Arctic actors  
 PLATFORM Ice information + ship traffic + application tools

Finnish Meteorological Institute  
 Aalto University, Department of Applied Mechanics

**KAMON will integrate ice information and ship traffic to a versatile platform, develop new models and satellite data products, and conduct unique research on sea ice, ice ridges, ice going ships and ship emissions**



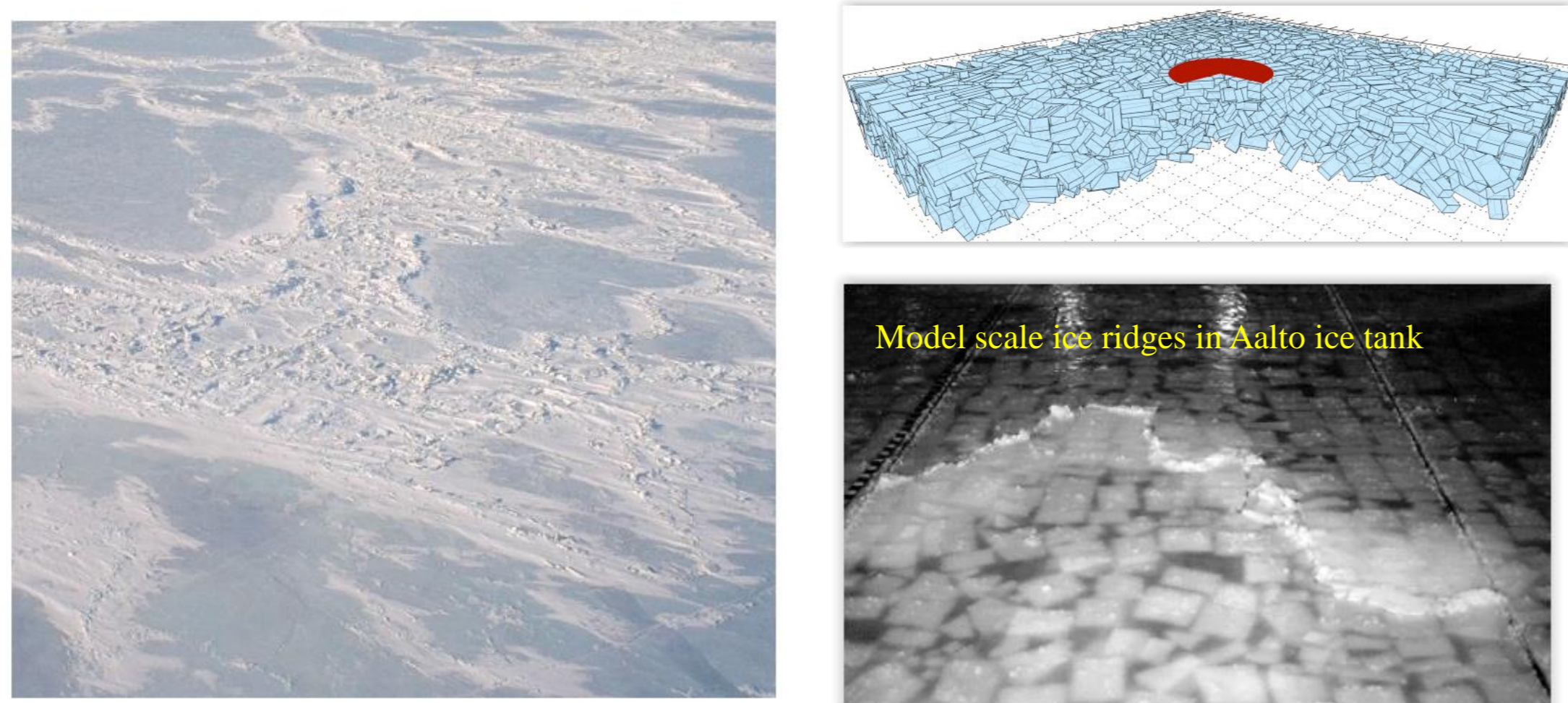
Global ice-ocean modelling based on NEMO community model with navigation oriented enhancements



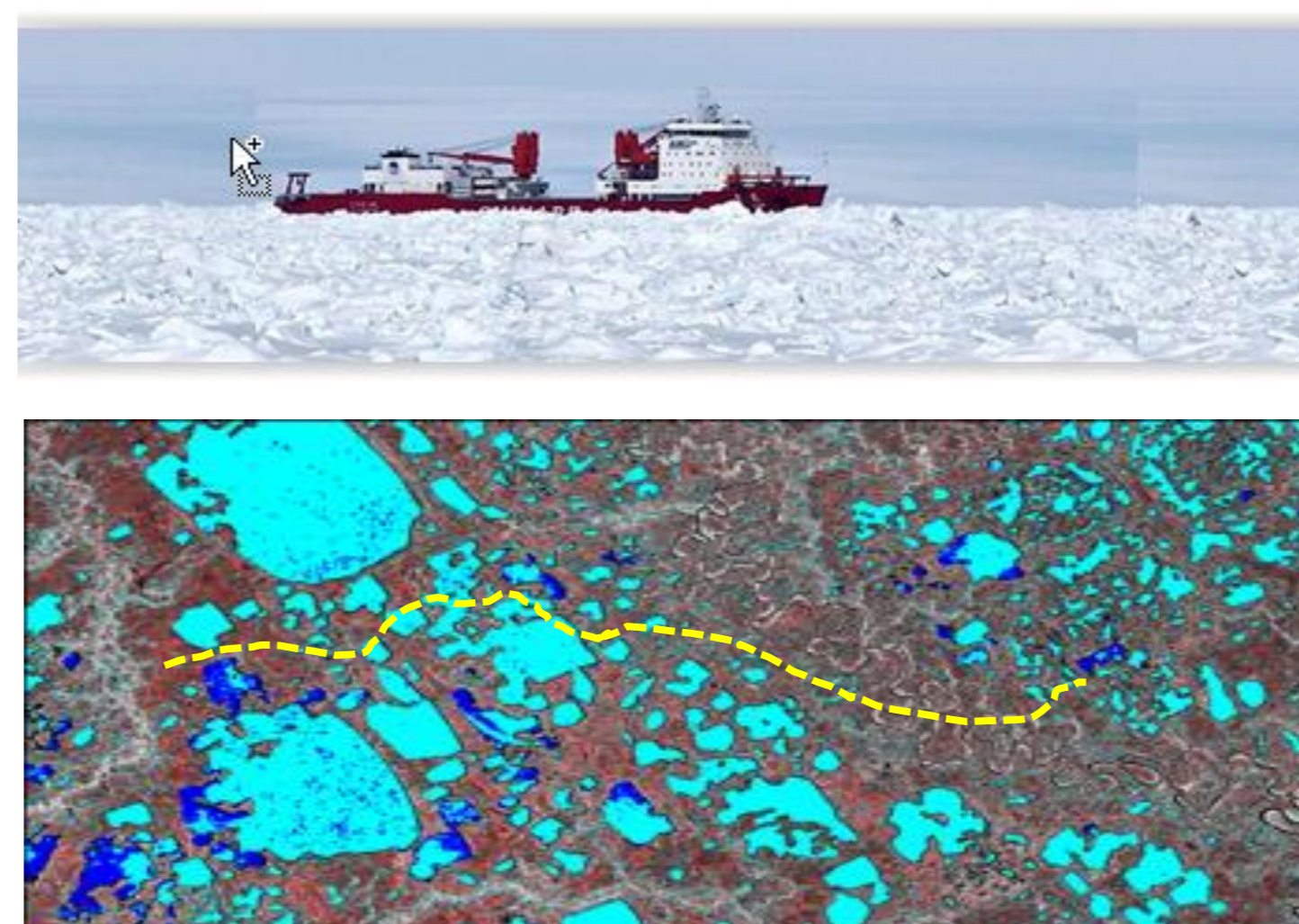
Fine resolution Kara sea submodels and ice thickness retrieval from multiple platform satellite data



The locations and speeds of all ships navigating in the Arctic obtained from satellite AIS data



Modelling of ridge formation and structure with advanced FEM/DEM numerical simulations and ice tank experiments

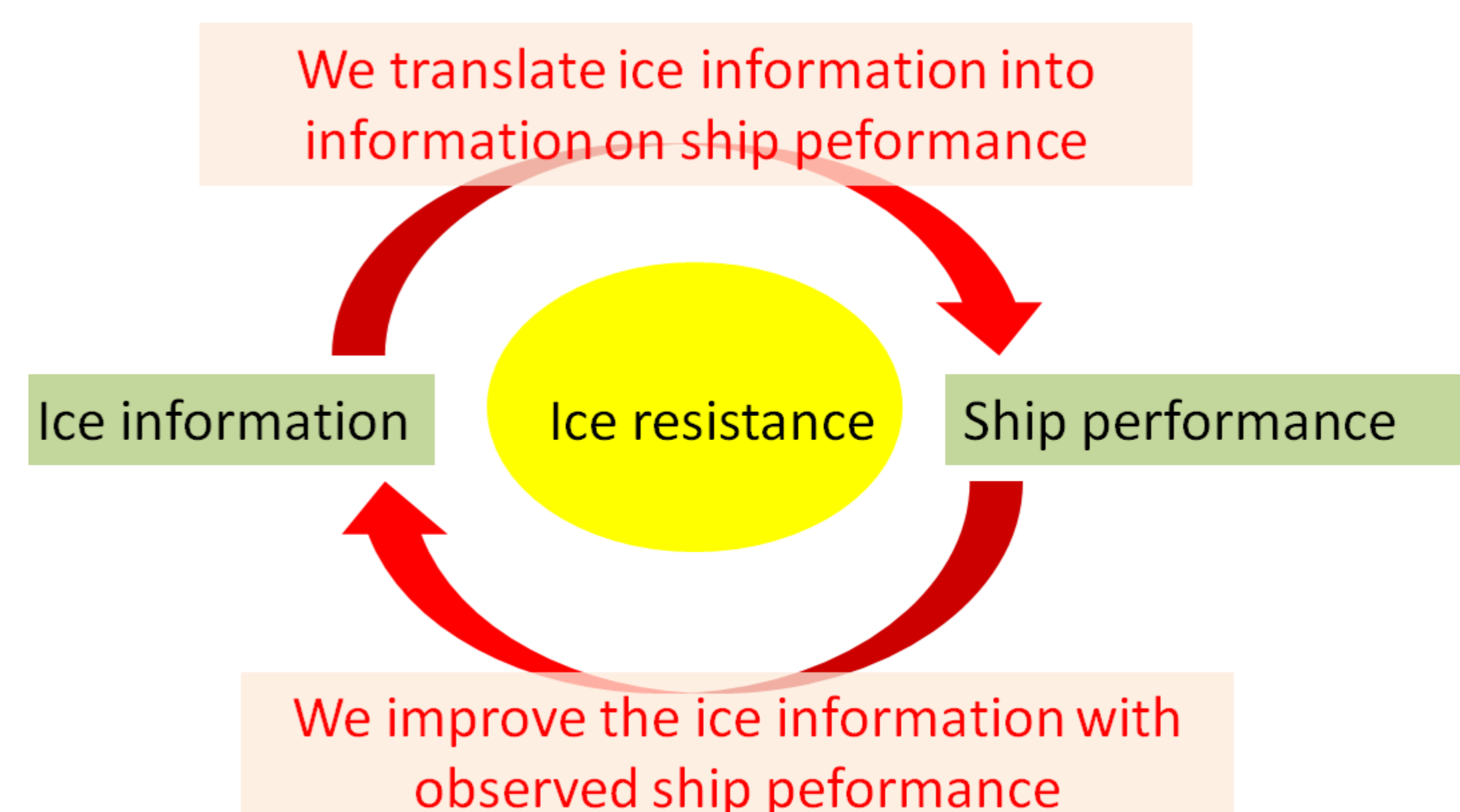


Modelling of ice resistance and ship ice transit, especially in ridged ice



Modelling of ship emissions in Arctic ice covered seas

The core of the project is feedback loop between ice information and ship performance. The satellite observed response of ships to the ice conditions is used to validate and improve the ice information and the ship ice resistance models.



### The Platform concept:

- 1) We provide the ice information also as application oriented products like ship type specific performance, ice resistance and emission maps
- 2) We implement and demonstrate application tools for route optimisation, operation planning, oil spill combatting, and environmental monitoring

### The impact:

1. Scientific advances in the modelling of ridged ice cover and ice transit
2. Services benefiting all Arctic actors
3. New possibilities for Finnish enterprises
4. Targeted Arctic services can be built on the Platform
5. Offers information system for Arctic environmental monitoring and international Arctic policy making