

## Navigation and oil spill prevention in winter conditions Russian co-operation

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# Partners

Implementation period: 2012 – 2014

Participant organization name	Country
Kotka Maritime Research Association (coordinator)	Finland
Aalto University, School of Engineering	Finland
SYKE	Finland
CNIIMF	Russia
Baltic Salvage and Towage Company	Russia
Agency of ecological consulting and nature protection design	Russia
St. Petersburg state Marine Technical University	Russia



# Main objectives

- Holistic risk analysis of winter navigation in Gulf of Finland
- Updating of Finnish-Russian contingency plan for combating pollution in eastern Gulf of Finland

# Risk management of winter navigation in Gulf of Finland

- Risk analysis of oil spill in winter conditions
  - Hazard identification
  - Study of the winter navigation system
  - Winter navigation risk model
- Study of navigation in winter conditions
  - Conditions in which vessels get stuck
  - Operations of icebreakers (convoys, towing,...)
  - Model for ship performance in ice

# Winter navigation

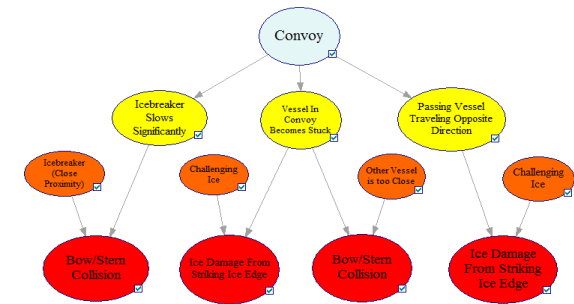


Towing

Beset in ice

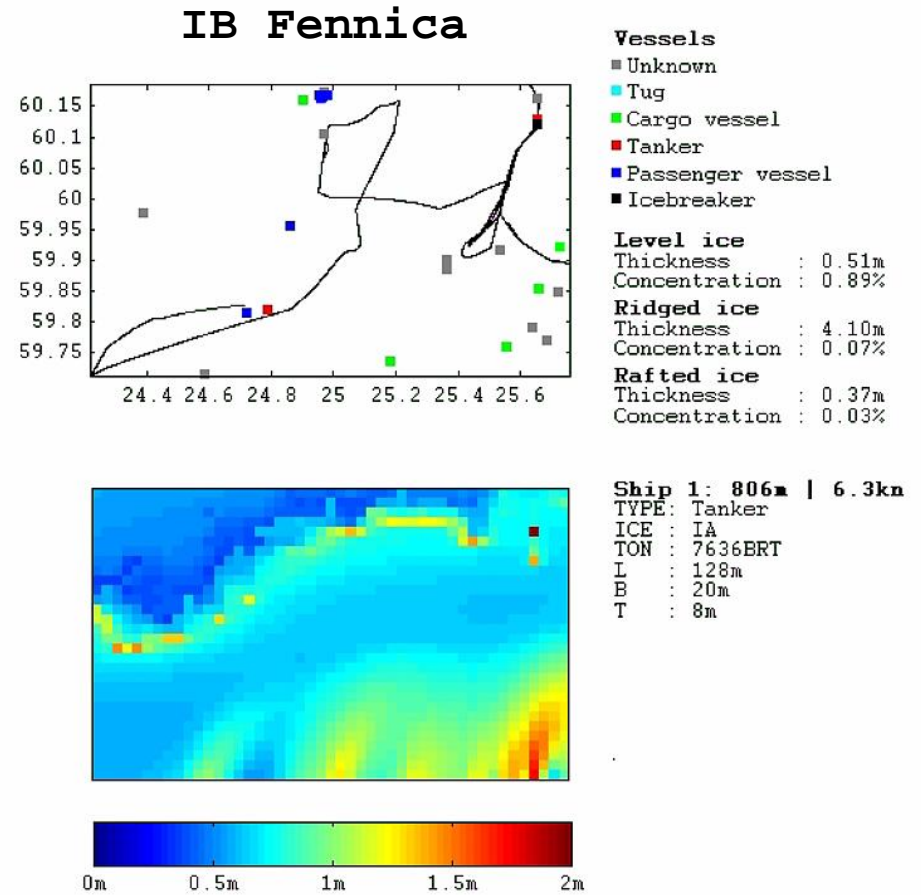
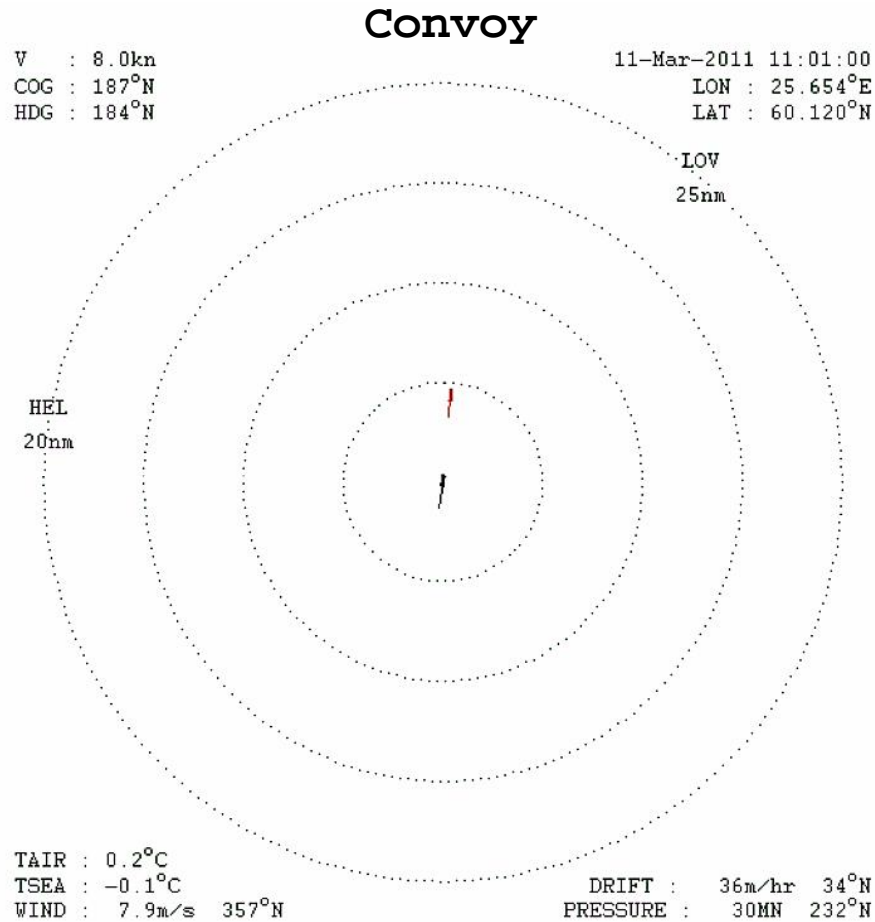


# Risk model framework

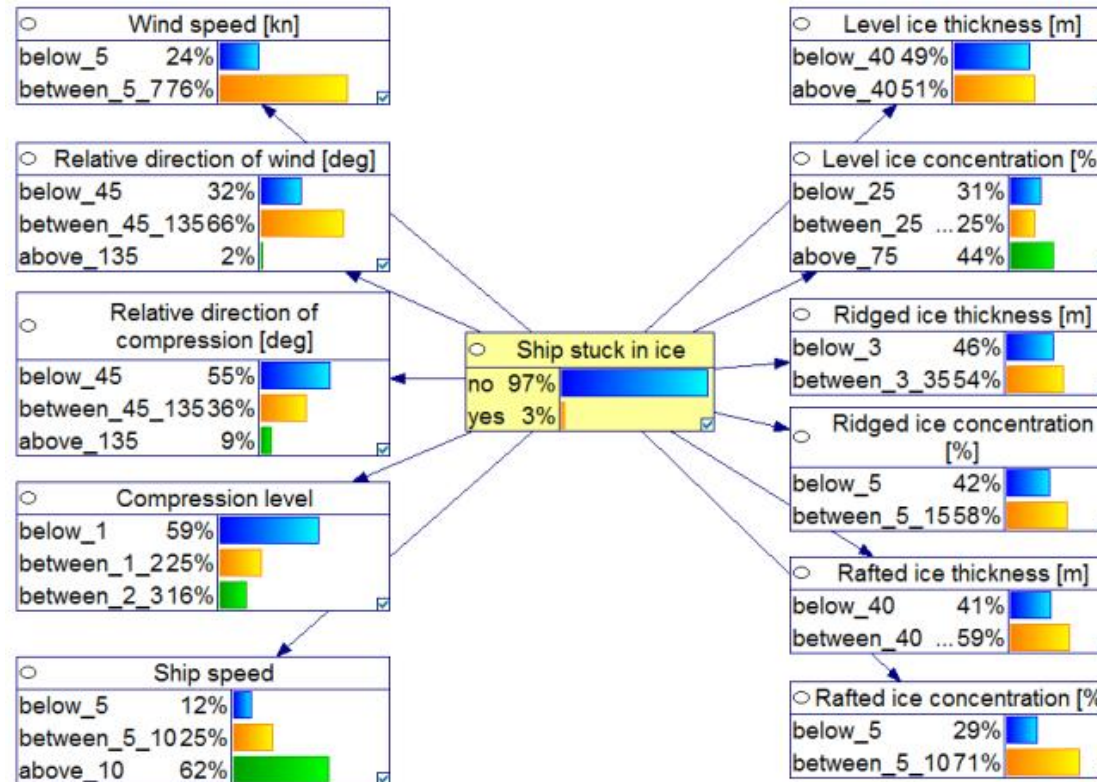


- Hazard identification
  - Ship collision, grounding, compressive ice, ...
- Probabilistic submodel for each hazard
- Detect situations in which hazards can occur
  - Integration of various databases
  - AIS (ship data), HELMI (ice data), vessel information
- Study of relevant parameters for probabilistic model
- Integration to spatial risk map

# Example: IB operations



# Probabilistic model for ship stuck in ice



Preliminary  
model  
(limited data)

Conditional model based on situational variables



# Update of Finnish-Russian contingency plan for combating pollution of the eastern GoF

- Joint implementation plan for cross-border operations for large scale oil spill and emergency
- Updating nature sensitivity mapping for the winter period
- Updated assessment of use of dispersants in oil accident with Net Benefit Analysis

# Thank you for your attention

