Aalto University
School of Engineering

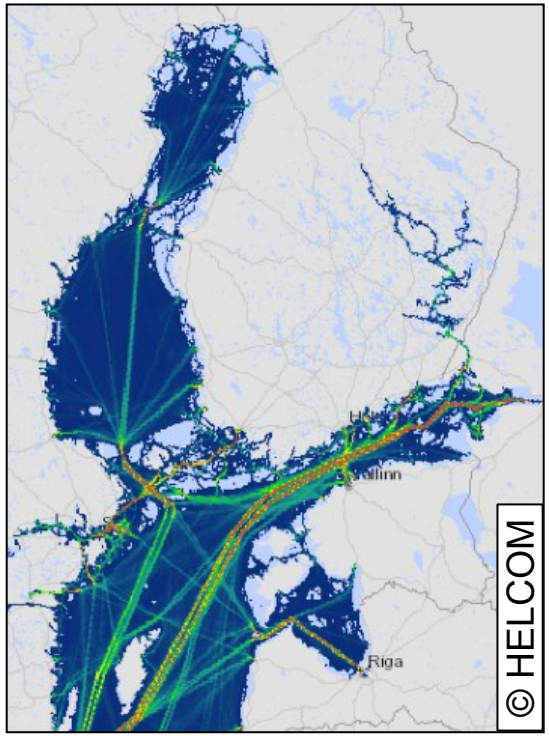
Strategic and operational risk management for wintertime maritime transportation system "STORMWINDS"

Floris Goerlandt

Aalto University, Finland

The future of maritime safety and security and clean shipping in the Baltic Sea Region
Brussels, 30.05.2017

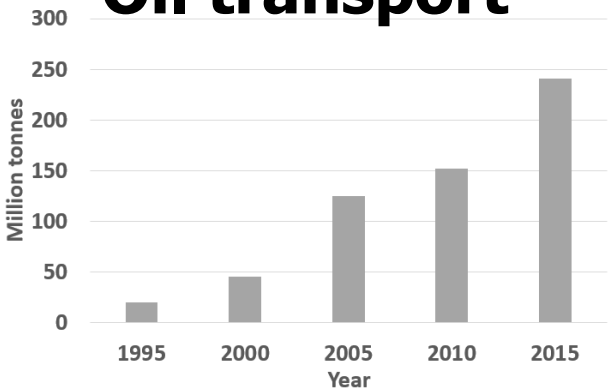
Wintertime maritime transportation in the Northern Baltic Sea

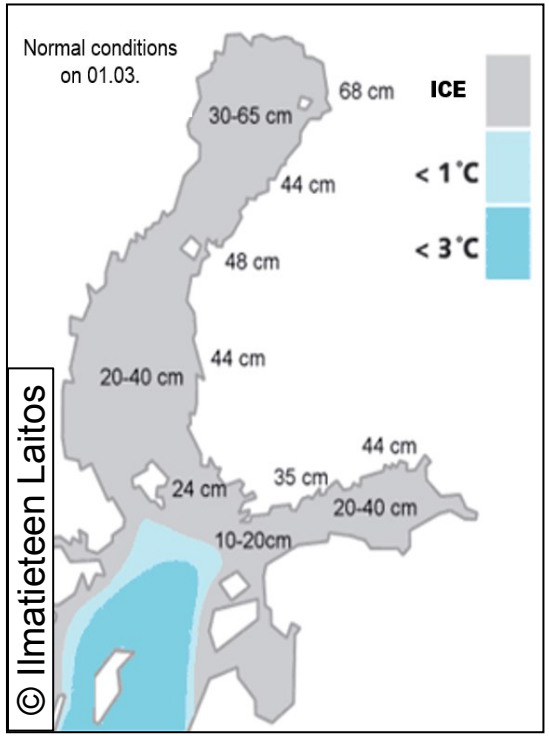


Maritime traffic

Sea ice

Oil transport





Wintertime maritime transportation risks in the Northern Baltic Sea

Wintertime operations

Oil spill in ice

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BONUS
SCIENCE FOR A BETTER FUTURE OF THE BALTIC SEA REGION

The STORMWINDS contribution to implementing EU maritime policy

EUSBSR
EU STRATEGY FOR THE BALTIC SEA REGION

- Reducing environmental impact of shipping: accidental discharge of oil
- Reinforcing preparedness and response capacity

Policy	Operational
Risk analysis and response preparedness for oil spills in ice	Decision support tools for oil spill combating in ice

Policy support: strategic risk management

Oil spill risks?

Required response preparedness level?

Response fleet effectiveness, location & equipment?

Scientific research

- Accident analysis
- Traffic system analysis
- Consequence models
- …

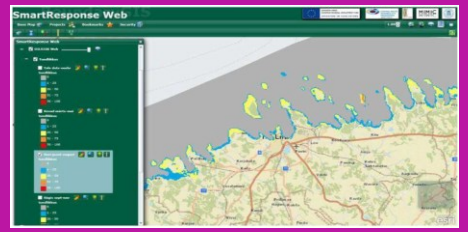
Stakeholder participation

Risk management model and answers

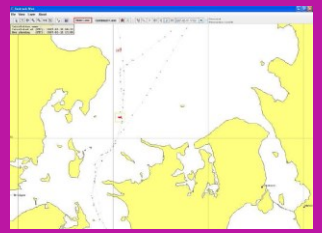
Policy and industry needs and recommendations

Operational support: decision support tools

Existing tools



SmartResponse Web



SeaTrack Web

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Scientific research

- Oil dispersion in ice
- Sea ice dynamics models and tests
- Oil ouflow models
- …

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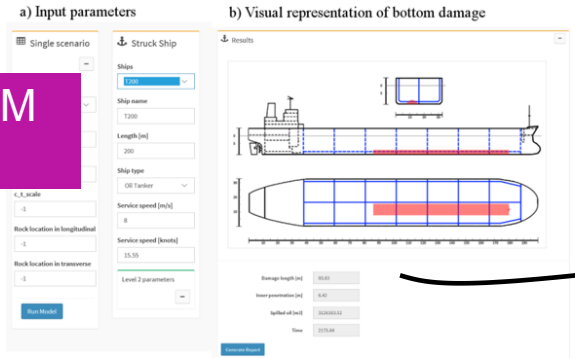
Improved situational awareness tools during oil spill operations in ice conditions

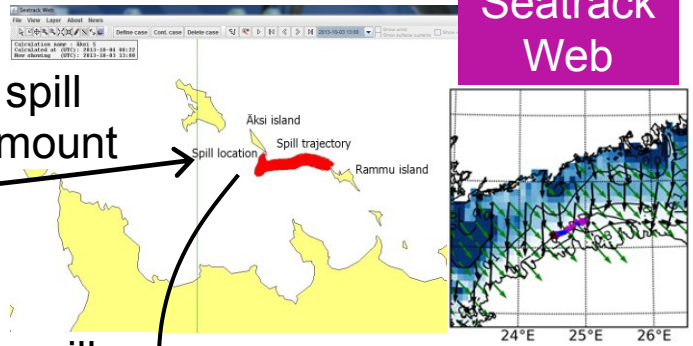
Example: decision support tools

ADSAM Tool

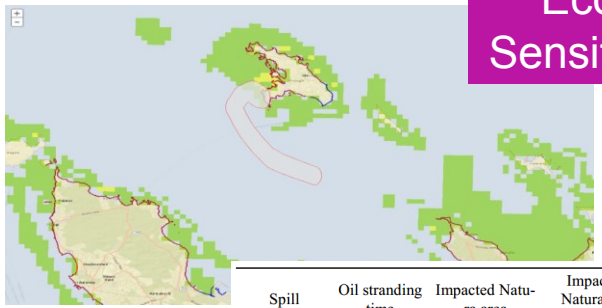


spill amount

Seatrack Web

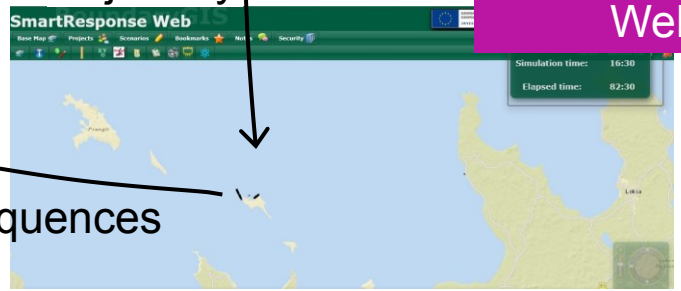


Ecosystem Sensitivity Index



spill trajectory

SmartResponse Web



consequences

Spill	Oil stranding time	Impacted Natura area	Impacted Natura and Bird area
m^3	(hours)	(km^2)	(km^2)
2125	45	0.97	0.49
3642	22.5	0.49	0
4249	25	0.56	0

Ensuring relevance for the maritime sector

- Explicit links to maritime policy
- Cooperation with key stakeholders as project partner

- Cooperation with key regional stakeholders, in particular HELCOM Response
- Finding synergies with similar efforts: OpenRISK project

HELCOM

OpenRisk
Methods for Maritime Risk Assessment on Accidental Spills
Co-financed by the EU – Civil Protection Financial Instrument

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