

Results from the OpenRisk II -project

EUSBSR PA Ship Operational Group | 7.10.2026



OpenRisk II

*Better Maritime Risk Management
for the Baltic Sea Region*



What?

Innovative, practical, and user-focused risk management tools designed to help prevent maritime accidents, reduce their impact, and enhance risk management across various modes of transport.

For whom?

The tools are intended for national maritime authorities, intergovernmental maritime organisations and other transport authorities and relevant stakeholders.

AI SyRisk Baltic

Risk assessment tool based on AIS data to monitor changes in accident risk levels across different sea areas

Key benefits

- Enhanced maritime situational awareness through interactive maps and risk visualization
- Improved decision-making for authorities and operators via long-term risk insights and trends
- Increased safety in ice navigation with dedicated assessment of ice-related hazards
- Stronger environmental protection by identifying and mitigating high-risk areas and activities

Target users

- Maritime authorities

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Baltic Sea Region



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Ice Navigation Module

Dedicated module for assessing risks related to ice conditions

Risk Level Indicator

Visualization of spatial risk levels based on traffic, incidents, and environmental factors

Traffic Density & Patterns

Visualization of vessel traffic density and movement patterns based on AIS data

Decision Support Layer

Actionable outputs supporting planning and implementation of risk mitigation measures

Scenario & Analytics

Exploration of temporal trends and future scenarios supported by analytical tools

EcoSensitivity Tool

A decision support tool for oil spill impact assessment and response

Key benefits

- Integrates real-time big data modelling and impact assessment
- Rapid data-driven insights
- Assesses cumulative impacts
- Provides actionable guidance to enhance decision-making and response efficiency

Target users

- Authorities
- Response teams
- Environmental agencies
- Researchers

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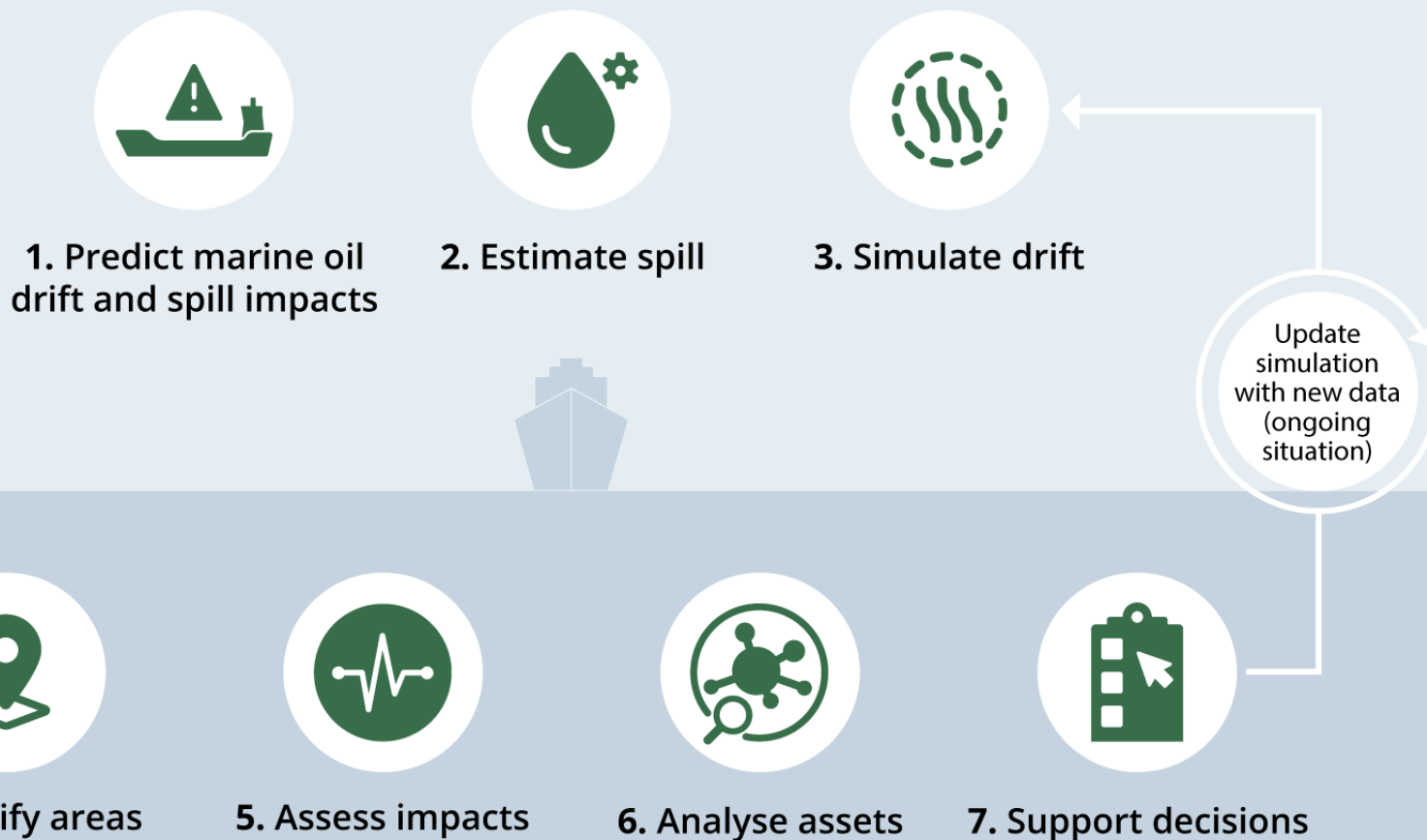


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SUSTAINABLE WATERS

OpenRisk II



R-Mare Matrix

A self-assessment tool for maritime administrations to evaluate their risk management performance

Key benefits

- An adaptable solution designed for the maritime sector
- Enhances long-term risk management maturity
- Establishes a baseline and identifies areas for improvement
- Promotes shared understanding and informed decision-making

Interreg
Baltic Sea Region

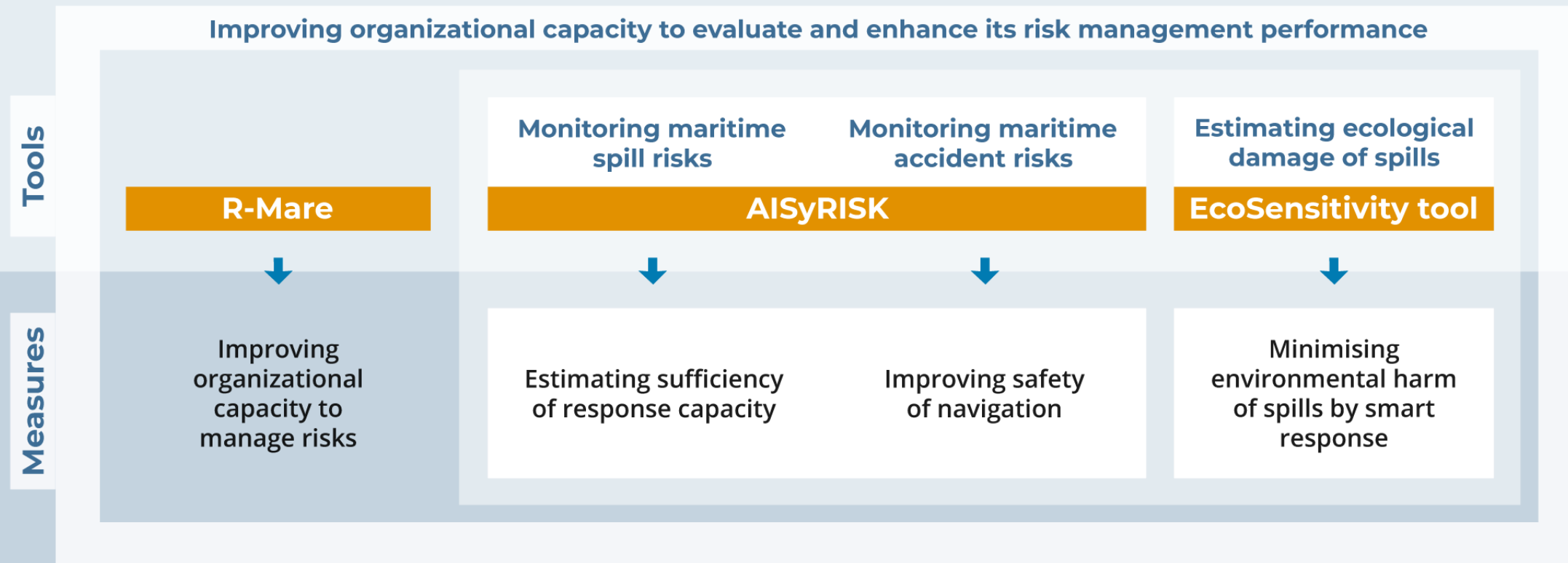


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 SUSTAINABLE WATERS
OpenRisk II



Three New Tools for Maritime Authorities to prevent and limit damage from accidents at sea



**Improved Safety and Sustainability
in the Baltic Sea Region**

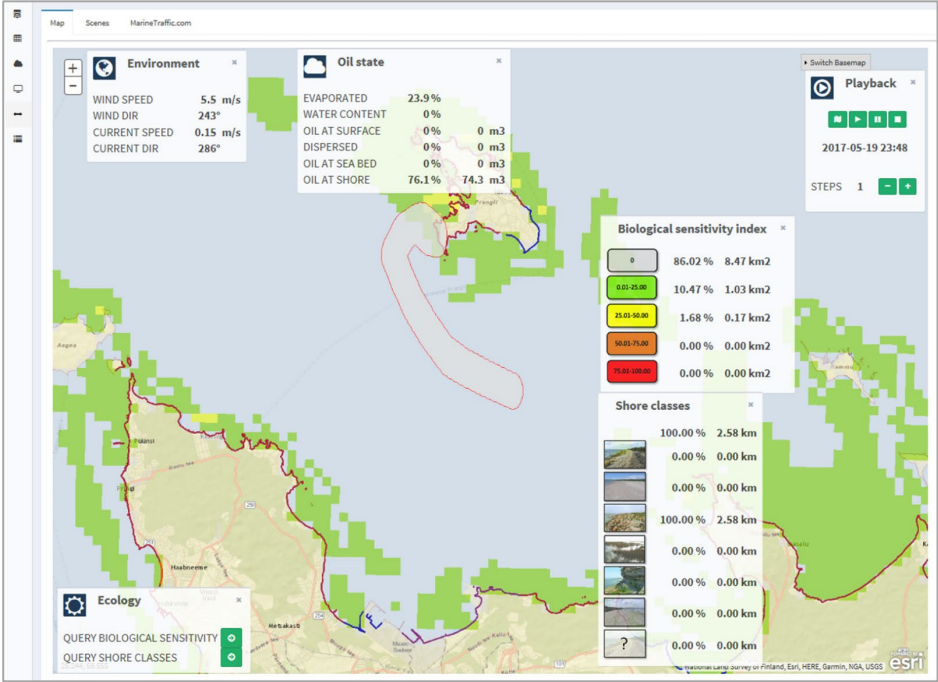
Interreg
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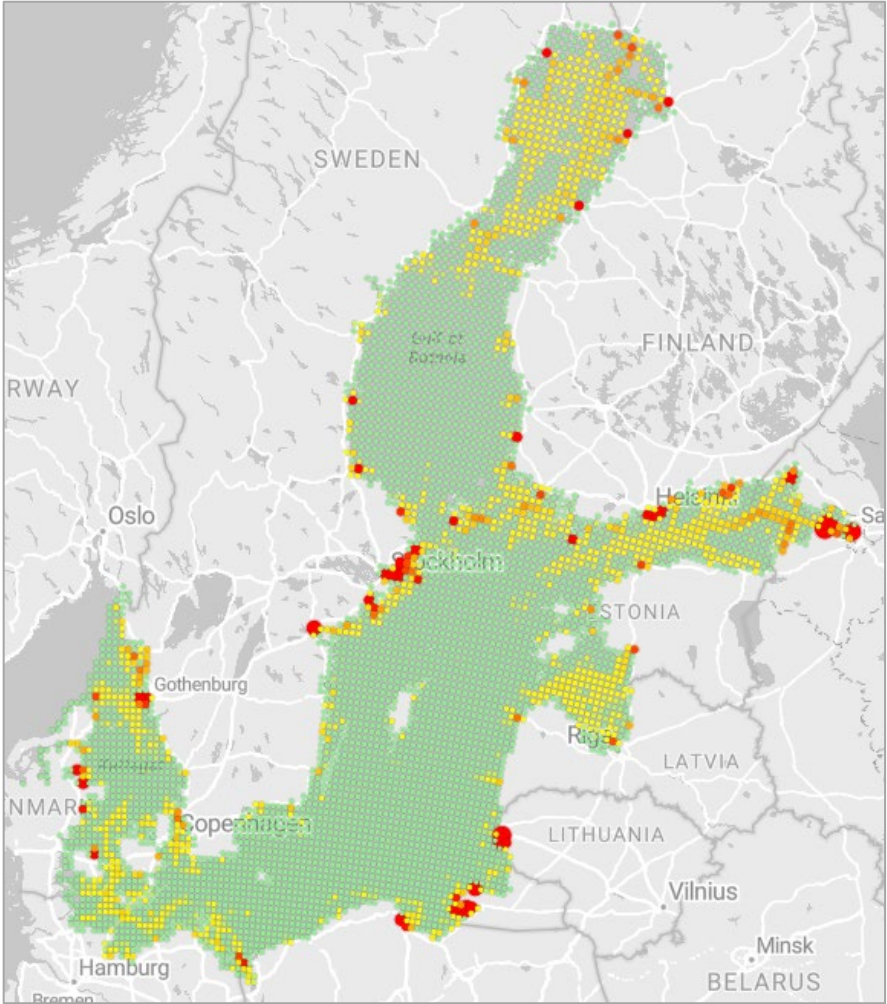
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OpenRisk II

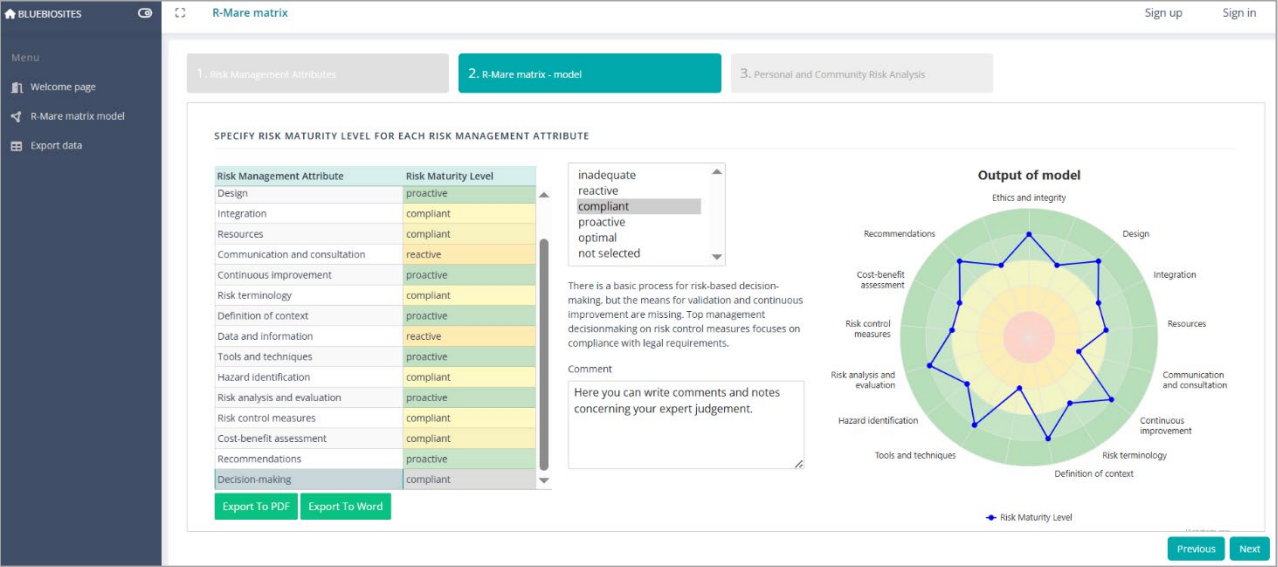
EcoSensitivity tool



AlSyRisk Baltic

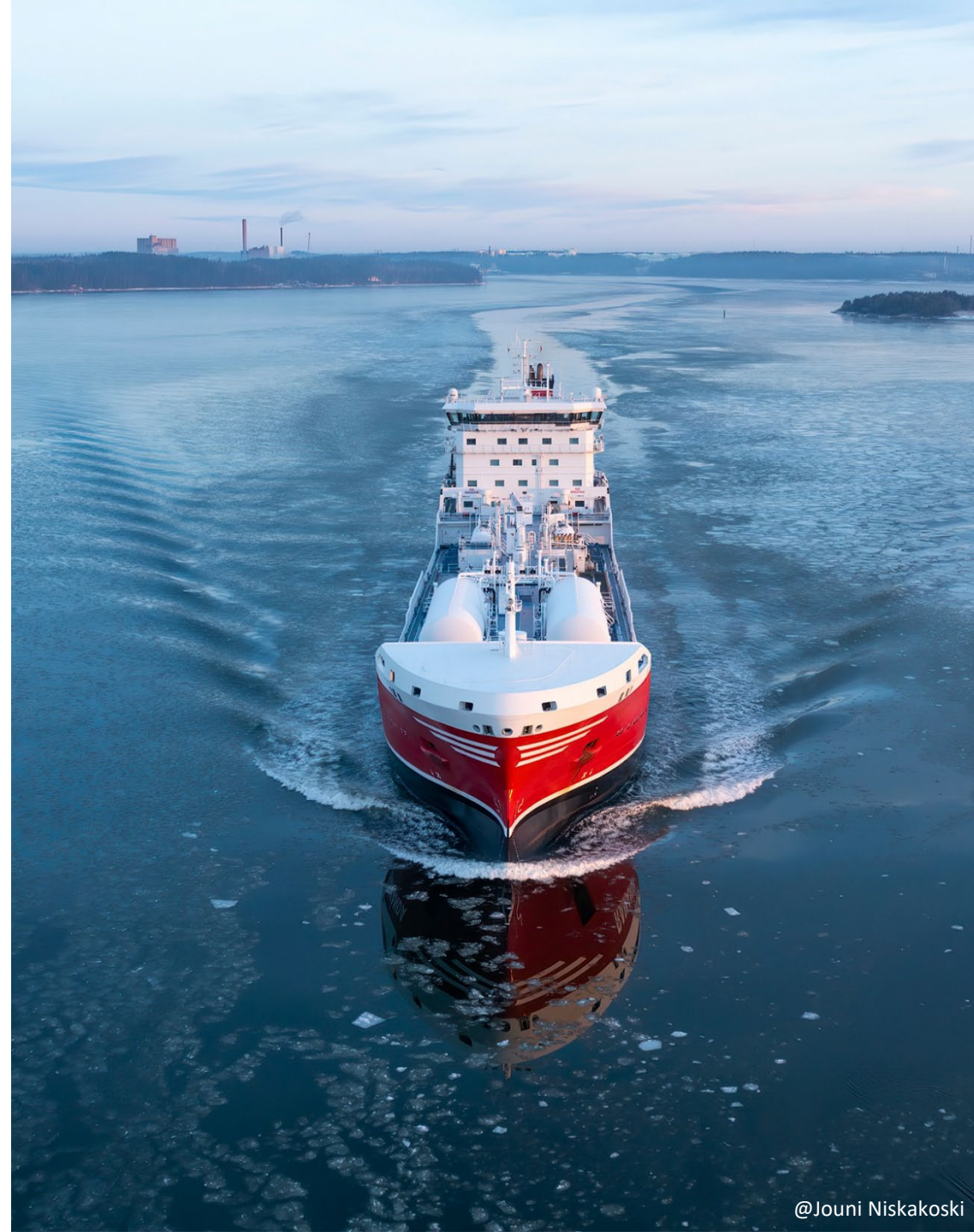


R-Mare Matrix



From six minutes to twenty seconds - regional AIS exchange in the Baltic Sea and the OpenRisk II project

[Read the blog post by Hermanni Backer Johnsen, Åbo Akademi University](#)



Scientifically proven methods

[Read more about the
scientific publications](#)

Publications

» All » User manuals » Scientific publications

Winter navigation risk indicator for the Baltic Sea

The scientific publication from [Życzkowski et al. \(2026\)](#) presents a machine-learning-based Winter Navigation Risk Indicator (WiNRI) for assessing hazardous situations in ice-covered waters of the Northern Baltic Sea. The study combines accident records, AIS data, vessel characteristics, and ice and weather information to support dynamic risk assessment under winter navigation conditions. The proposed approach contributes to situational awareness and safer winter navigation in the Baltic Sea.

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How applicable is POLARIS to the ice-covered Northern Baltic Sea?

The scientific publication from [Lu et al. \(2026\)](#) evaluates the applicability of the POLARIS framework for navigational risk assessment in the Northern Baltic Sea using ice data, hull damage records, and Icebreaker assistance logs. The study demonstrates that POLARIS tends to underestimate operational risks, particularly for higher ice-class vessels, and recommends region-specific calibration of Risk Index Values to improve safety assessment and voyage planning in sub-Arctic ice conditions.

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A method of operational modes identification for Baltic Sea winter navigation

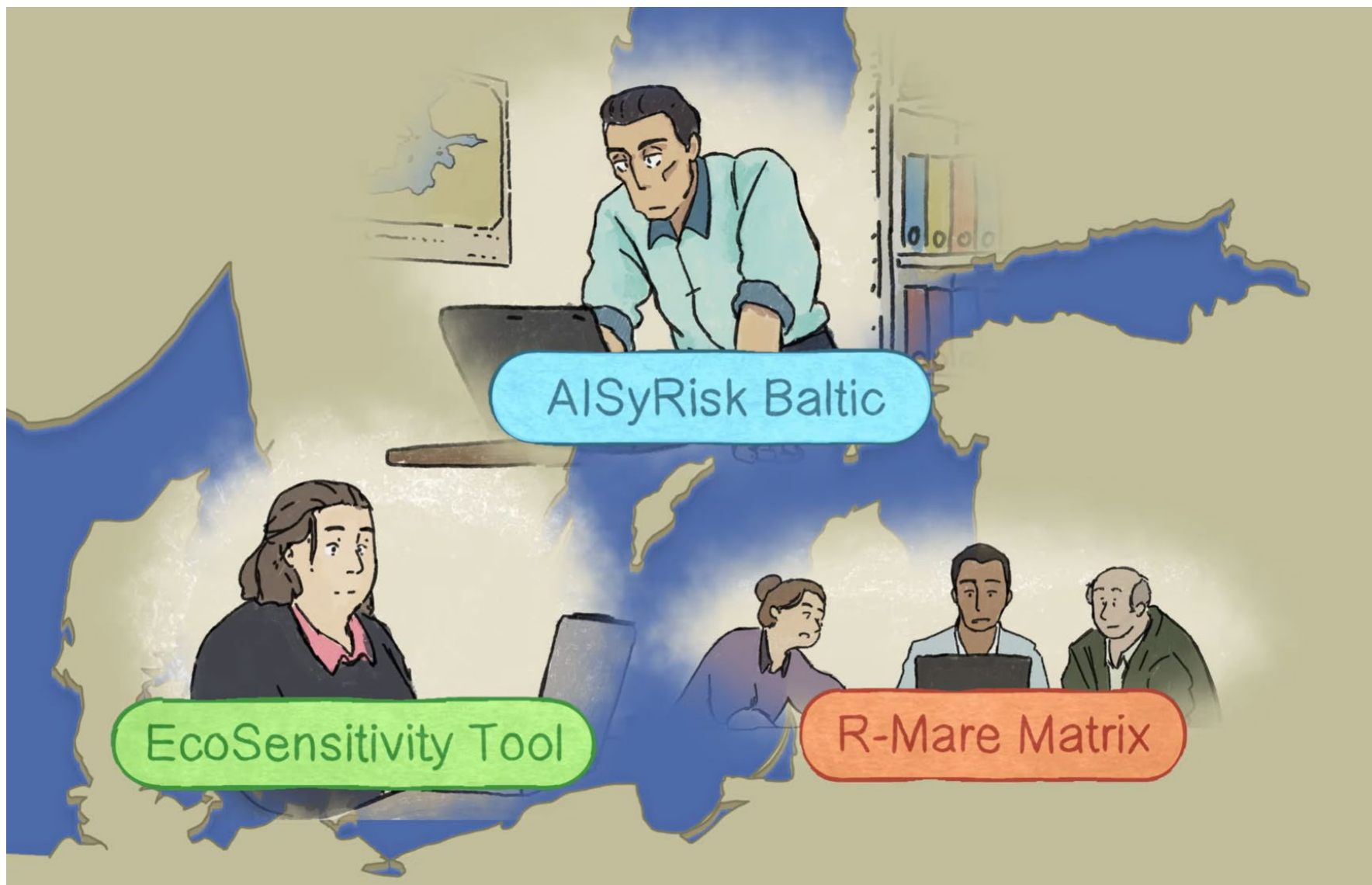
The scientific publication from [Wen, Lu, and Valdez Banda \(2026\)](#) presents a method for detecting and classifying icebreaker assistance operations in the Baltic Sea using AIS data and operational logs. The study focuses on escort, convoy, and cutting loose operations. The proposed approach supports improved operational assessment and risk analysis for winter navigation in ice-covered waters.

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Maritime operations in ice-covered waters: A 25-year data-driven study

The scientific publication from [Lu, Lin and Valdez Banda \(2026\)](#) presents a 25-year data-driven analysis of ice conditions and icebreaker-assisted shipping operations in the Baltic Sea under seasonal sea ice variability and challenging environmental conditions. It characterizes long-term patterns in assistance demand, fleet deployment, and navigational performance, providing an empirical foundation for understanding resilience and emergency preparedness in ice-affected maritime transport environments.

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**OpenRisk II -
Tools for shared
& dynamic
maritime traffic
risk picture of
the Baltic Sea
region**

**Watch the animation
of the project results**



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[Interreg-baltic.eu/project/openrisk-ii/](https://interreg-baltic.eu/project/openrisk-ii/)

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