

# MITEN VOIT SELKÄMERI NYT?

25.3.2026 KLO 12-15.30  
POSELLI, RAUMA



Coastrider-tutkimusmenetelmä  
Matias Scheinin, Turku AMK



**WATER AND  
ENVIRONMENTAL  
— PROTECTION —**

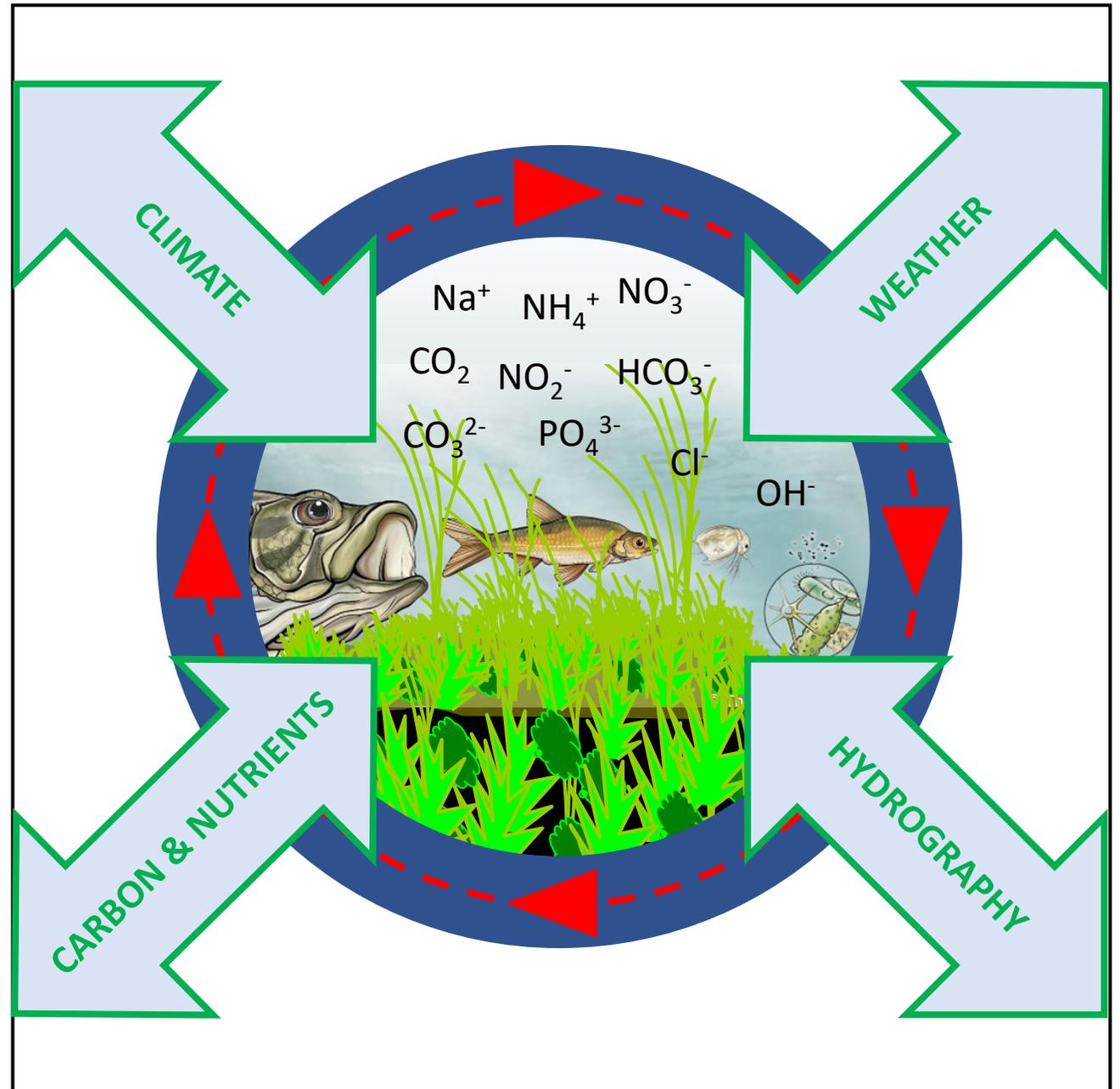


Matias Scheinin, FT  
Erityisasiantuntija, Coastrider-aluksen kuljettaja

# VEDENLAATU

## - Mitä ja miksi?

- Hydrodynamiikka
  - Valumat
  - Virtaukset
  - Sekoittuminen
- Hydrografia
  - Suolaisuus
  - Lämpötila
  - Pohjanmuodot
- Tilaindikaattorit
  - Rehevöityminen
  - Tummuminen
  - Ilmastonmuutos
- Kaasujenvaihto
  - Happi
  - Kasvihuonekaasut



# Water and Environmental Protection Research Group

Thematic project clusters during 2026: 26 active projects

Business activities

**Cluster 1, 5 projects**  
Stormwater management and climate change adaptation (NBS), Harmful substances in aquatic environments (incl. remediation), urban biodiversity

**Cluster 2, 3 projects**  
Climate resilient and smart public procurement processes, concentrating on harmful substances

**Cluster 3, 5 projects**  
Coastal restoration, rural water management and load reduction

**Cluster 4, 9 projects**  
Development of environmental monitoring and implementing new monitoring solutions in practice, environmental data analytics, statistical modeling, data and model integration, development of WOLL

**Cluster 5, 4 projects**  
Policy and regulation, development of education and learning materials  
local, regional, national and international co-operation networks and partnerships

**KOHDENTAMINEN  
SEURANTA**

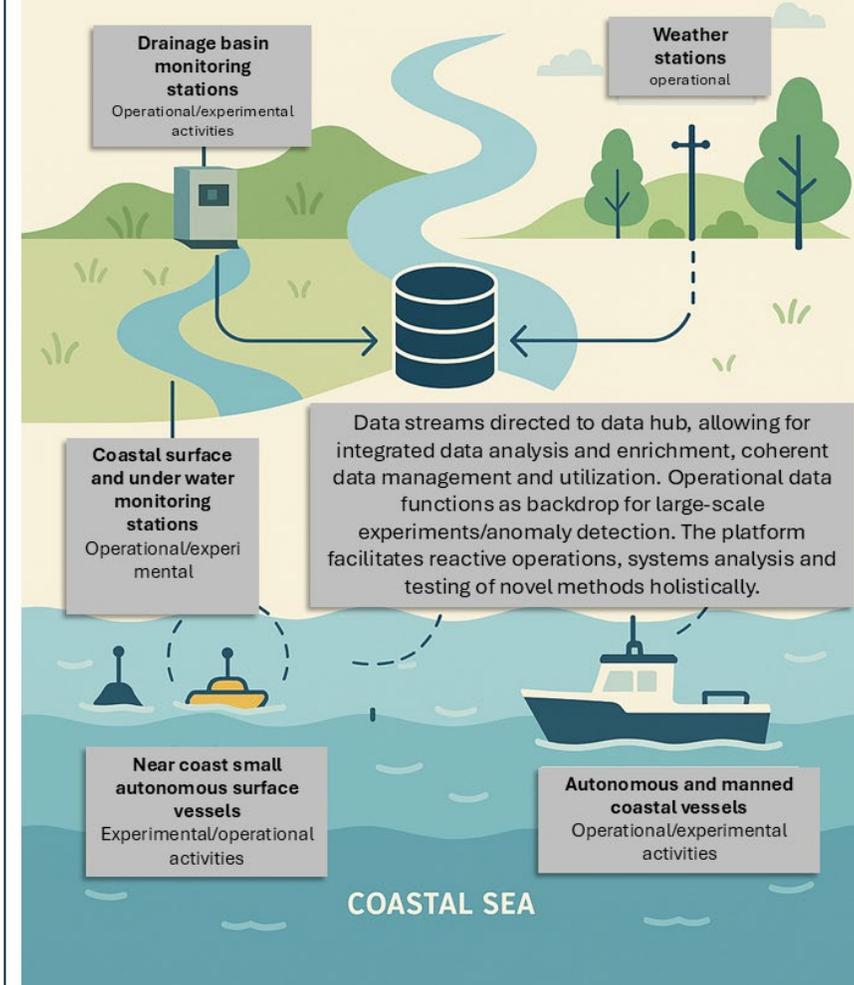
**TILA  
TOIMINTA**

# NEMESIS-infra (RCF)

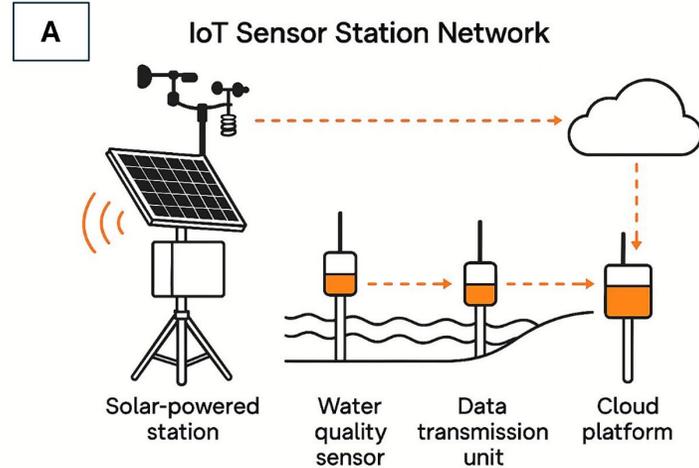
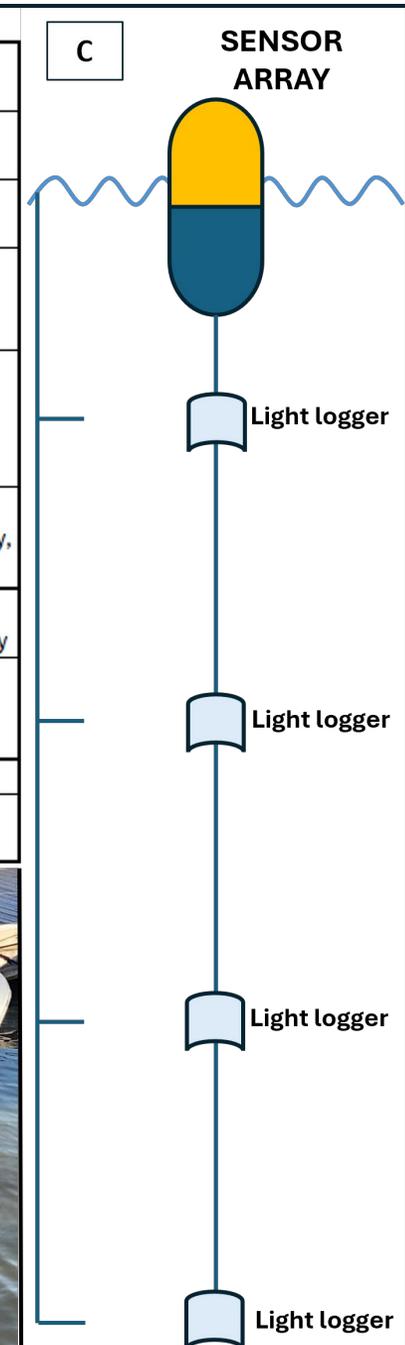
- Turku AMK, Åbo Akademi & Turun yliopisto.
- **Coastrider** ja **RTEON** “valmiita” komponentteja.
- Havainnointialusta:
  - Tilallis-ajallinen kattavuus (edustavuus).
  - Tilallis-ajallinen tarkkuus (resoluutio).
  - Muuttujavalikoiman monipuolisuus.
  - Reaaliaikainen ja keskitetty tietovirta (hub).
    - Reaktiivisuus.
    - Sopeutuvuus.

## NETWORKED ENVIRONMENTAL OBSERVATION PLATFORM

A RI designed to observe environmental change and anomalies from drainage basins to the coastal sea. The RI consists of operational and experimental modules that are interconnected by a data hub.



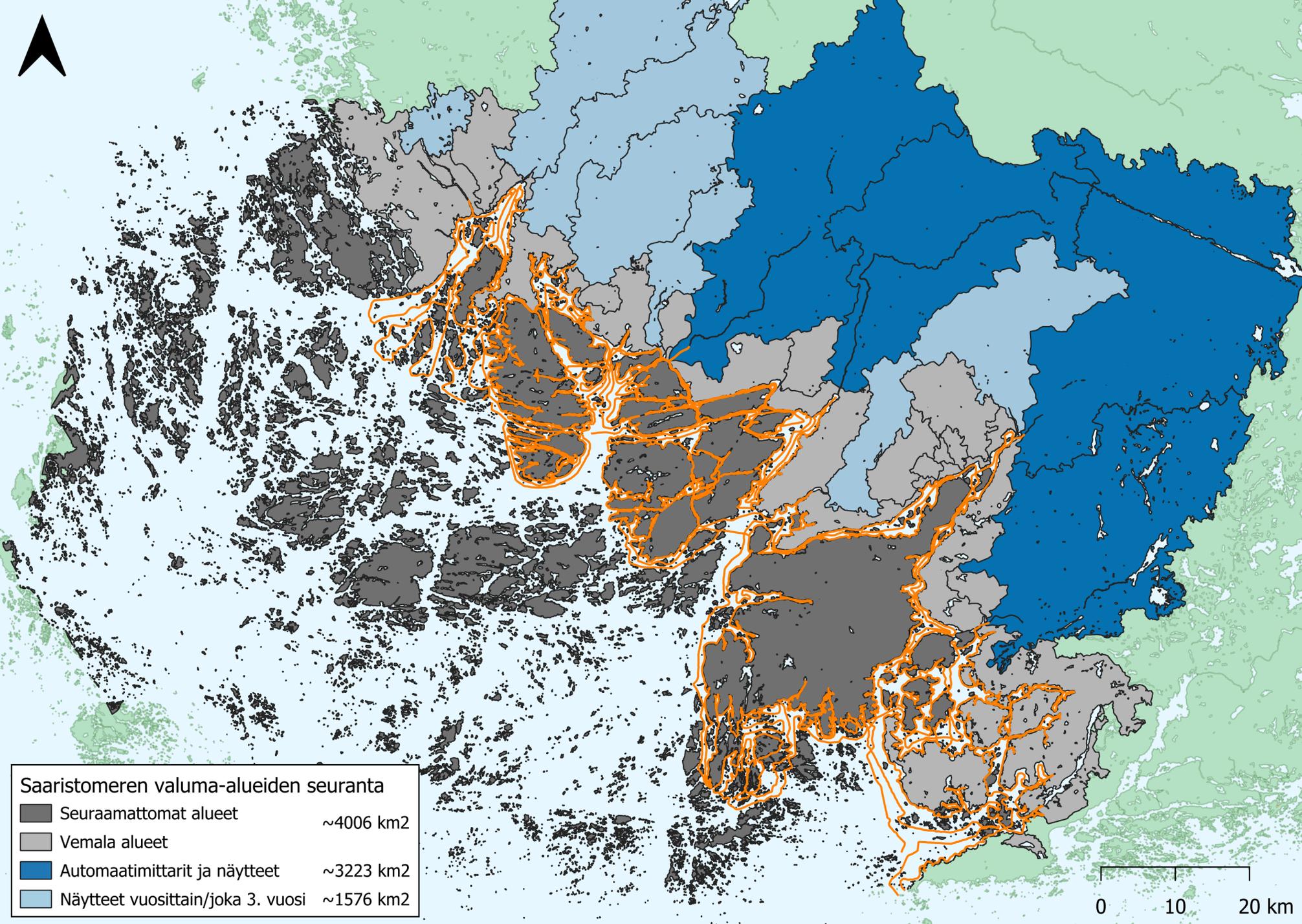
Mode	Measured variable	Sensor model	Measurement principle
Coastrider	Beam attenuation coefficient (360-720 nm)	TriOS, VIPER	Hyperspectral VIS photometry
	PAR at water surface (400-700)	Onset Computer Corp., Hobo PAR	Quantum photometry
	Chl- <i>a</i> fluorescence (ex/em 470/685 nm)	YSI, EXO2, Total Algae	Dual-channel fluorometry
	Phycocyanin concentration (ex/em 590/685 nm)		
	DOM fluorescence (ex/em 325/430 nm)	YSI, EXO2, fDOM	UV-induced fluorescence photometry
	DOM fluorescence (multiple ex/em pairs)	Turner, C6P	Multichannel fluorometry with optical back-scattering
	Turbidity at 860 nm	YSI, EXO2, Turbidity	Optical nephelometry
	Particle size and concentration (1-500 μm)	Sequoia, LISST-200X	Forward-scattering LASER diffraction
	Hyperspectral particle properties (430-700 nm)	Sequoia, Hyper-bb	Spectral back-scattering
	Temperature	YSI, EXO2, Temperature	Precision-thermistometry
	Conductivity	YSI, EXO2, Conductivity	Electromagnetic induction
	Acidity	YSI, EXO2, pH	Electrochemical potentiometry
	Redox conditions	YSI, EXO2, Oxygen	Luminescence quenching optode technology
	Water depth	Raymarine, i70s package in Axiom 2	Echo sounding with CHIRP sonar transducer, satellite-based trilateration, anemometry, gyroscopy, accelometry, electromagnetic paddlewheel photometry
Wave amplitude and frequency			
True wind speed and direction			
Sensor array	Diffuse attenuation coefficient (180-1200 nm)	Onset Computer Corp., Hobo Pendant	Quantum photometry
	Multispectral light fields (9 discrete channels)	In-Situ Marine Optics, MS9	Multispectral planar irradiance and radiance photometry
	Chl- <i>a</i> fluorescence (customized for DARKSEAS)	Spectromarine B.V., Spectromarine	Multispectral fluorescence and absorption photometry with CMOS imaging
	DOM fluorescence (customized for DARKSEAS)		
Turbidity (customized for DARKSEAS)	One		
RTEON (IoT)	Turbidity	Aqualabo Ponsel NTU sensor	Optical nephelometry
	Temperature	Aqua data Diver 3	Platinum-resistance temperature detection
	Conductivity	Aqua data Diver 3	Four-electrode contacting measurement



# KOHINASTA KUVAAN

- Saaristomeri on dynaaminen mosaiikki.
- Mitä havainnoilta edellytetään:
  - Tilallis-ajallinen kattavuus (edustavuus).
  - Tilallis-ajallinen tarkkuus (resoluutio).
  - Muuttujavalikoiman laajuus (konteksti).
  - Reaaliaikainen ja keskitetty tietovirta (hub).
    - Reaktiivisuus.
    - Sopeutuvuus.
- Vertauskuva:
  - Pikselien määrä.
  - Eri värisävyjen tulkinta (yhdistelmä).
  - Toistetut havainnot (opasiteetti).



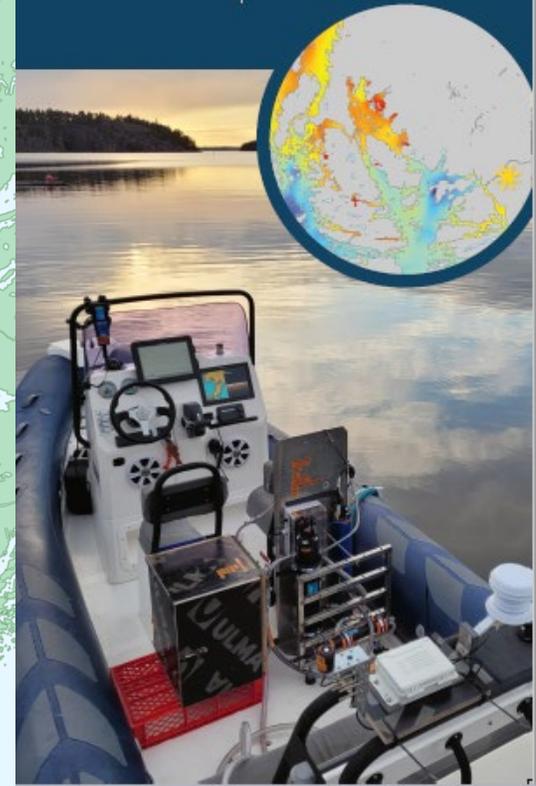


TURKU AMK 

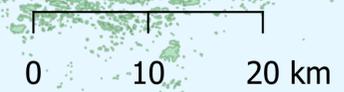
# Coastrider

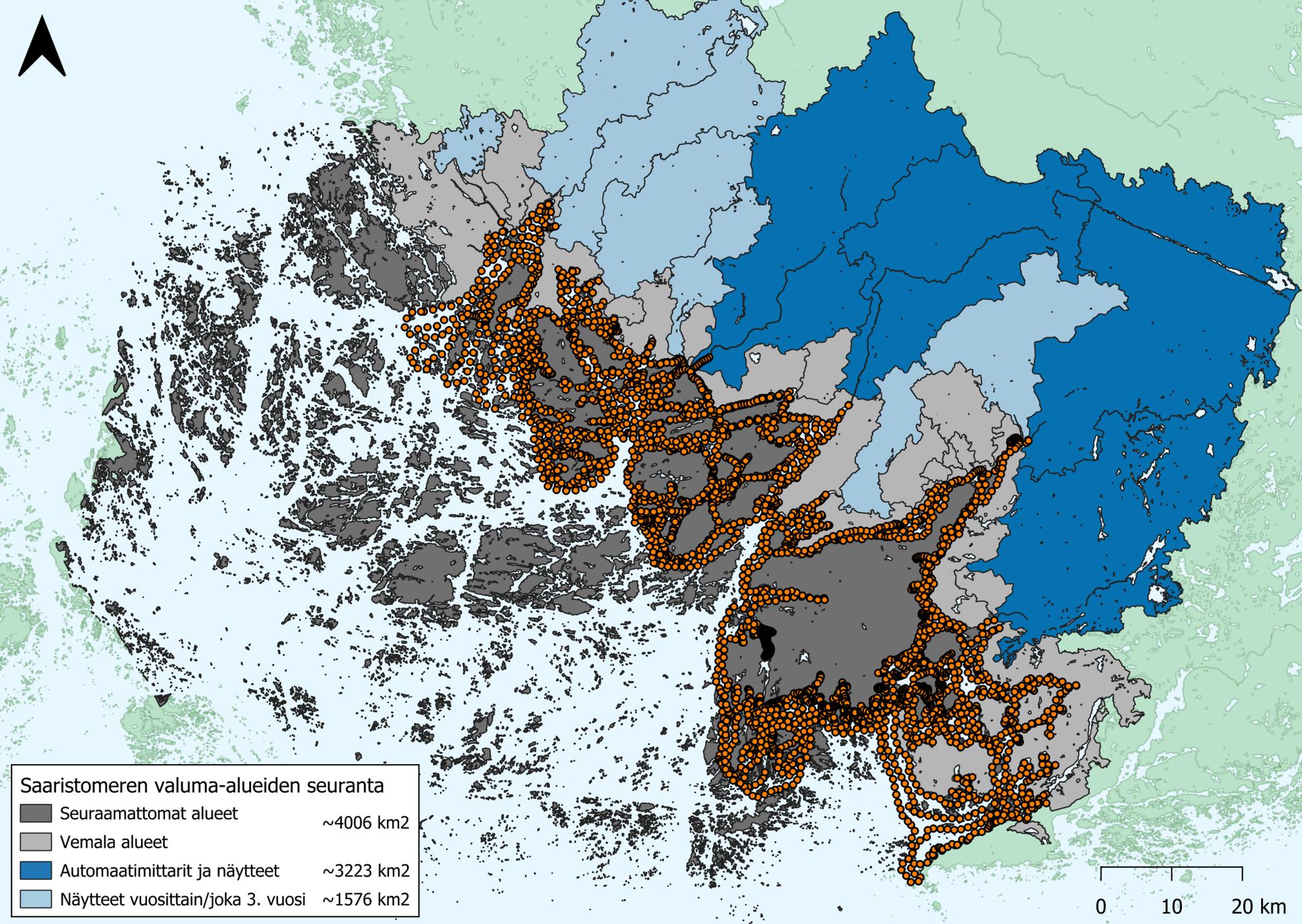
Täsmällistä tutkimustietoa vaikuttavaan vesienhoitoon.

[turkuamk.fi](http://turkuamk.fi)



	Seuraamattomat alueet	~4006 km <sup>2</sup>
	Vemala alueet	
	Automaattimittarit ja näytteet	~3223 km <sup>2</sup>
	Näytteet vuosittain/joka 3. vuosi	~1576 km <sup>2</sup>





### Saaristomeren valuma-alueiden seuranta

Seuraamattomat alueet	~4006 km <sup>2</sup>
Vemala alueet	
Automaattimittarit ja näytteet	~3223 km <sup>2</sup>
Näytteet vuosittain/joka 3. vuosi	~1576 km <sup>2</sup>

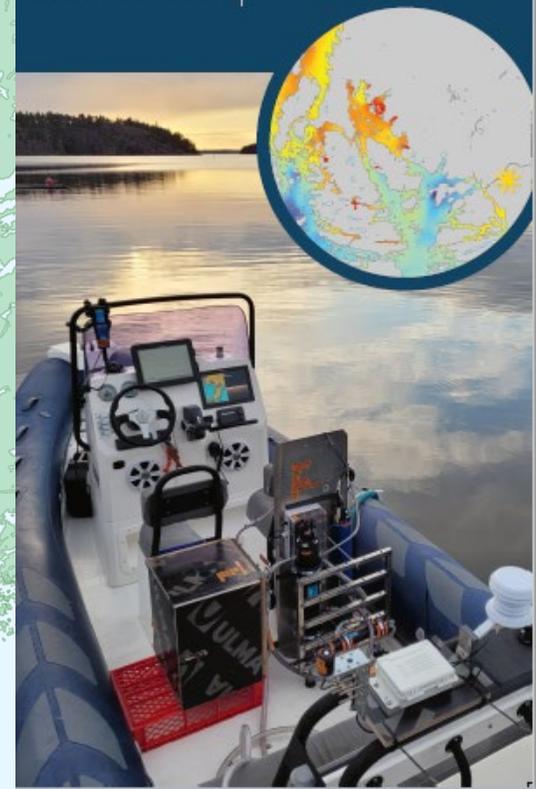
0 10 20 km

TURKU AMK 

# Coastrider

Täsmällistä tutkimustietoa  
vaikuttavaan vesienhoitoon.

[turkuamk.fi](http://turkuamk.fi)

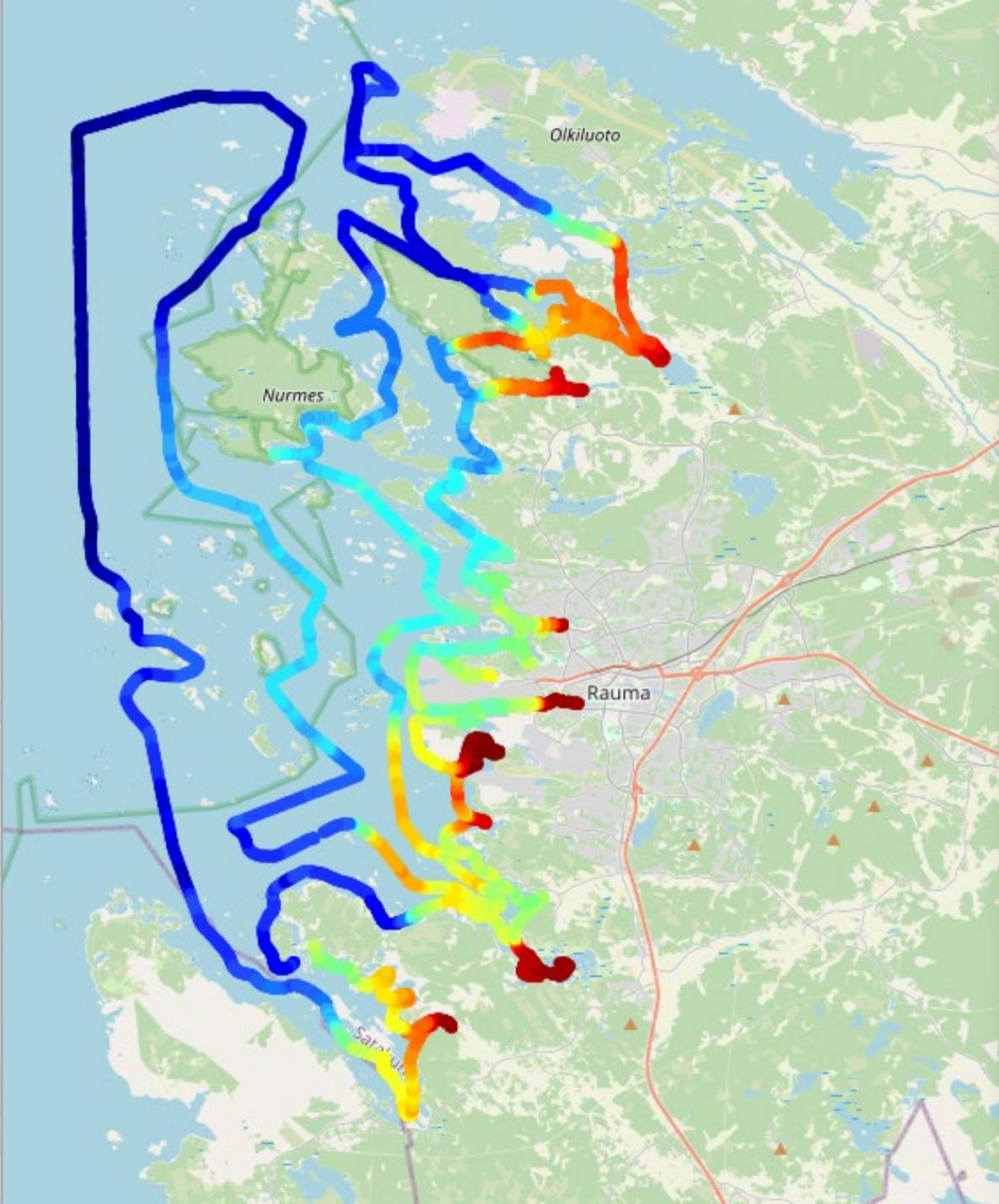


TURKU AMK 

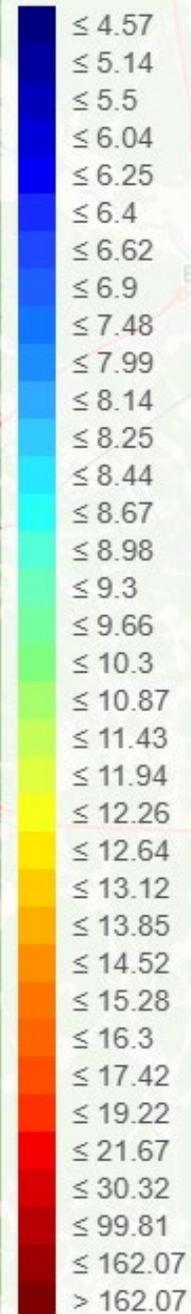
# Coastrider

Täsmällistä tutkimustietoa  
vaikuttavaan vesienhoitoon.

[turkuamk.fi](http://turkuamk.fi)



fDOM (QSU)  
21.8.2025

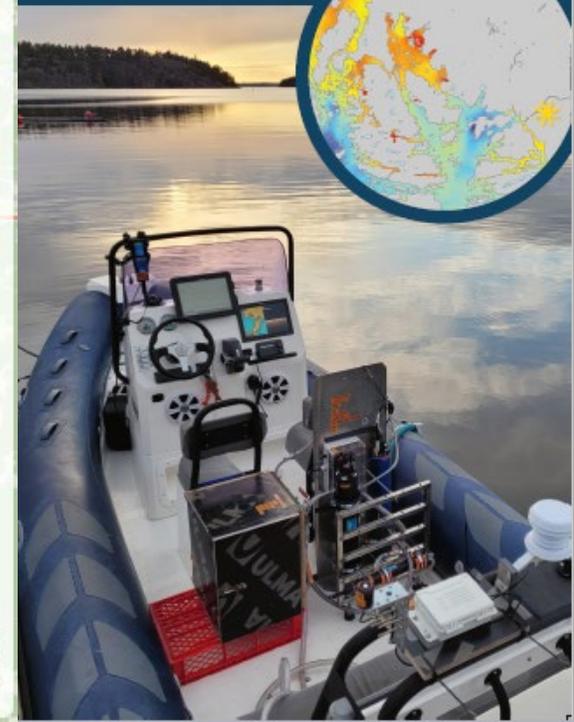


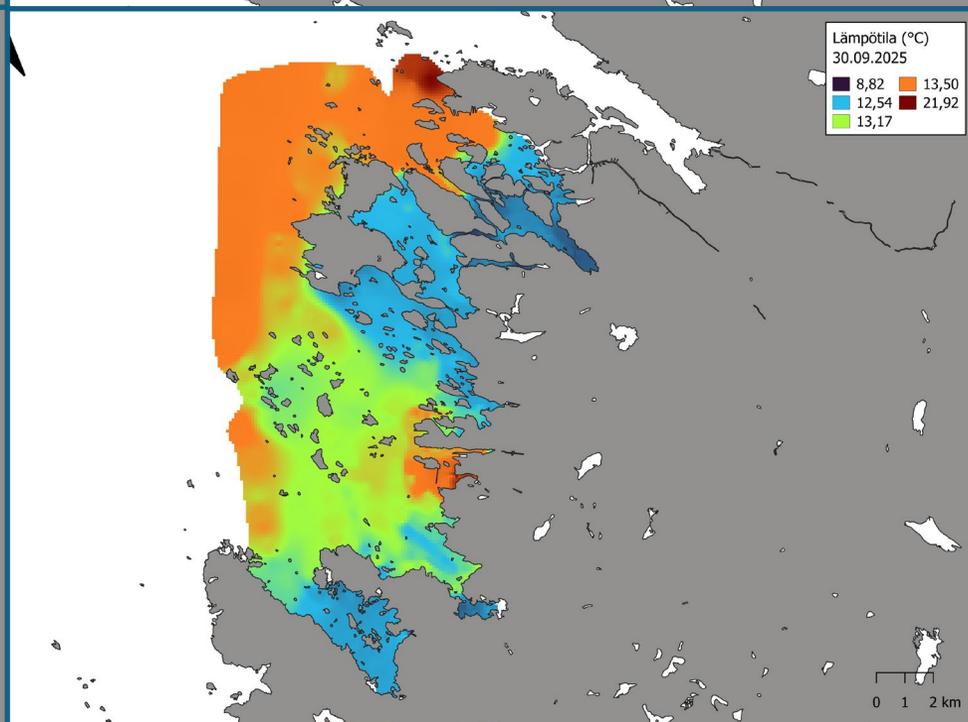
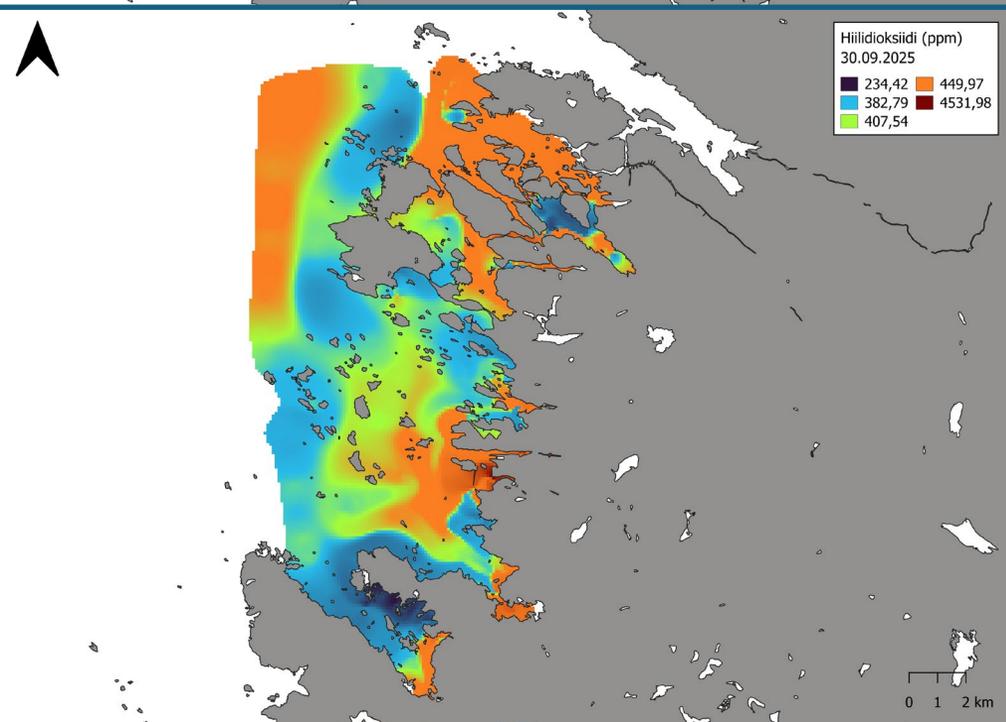
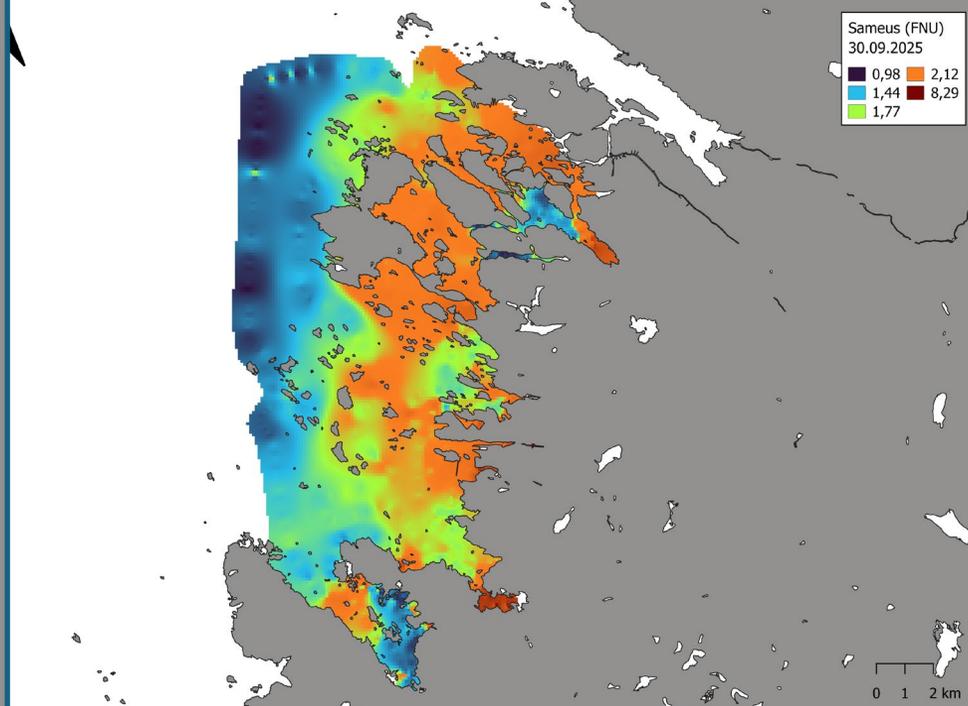
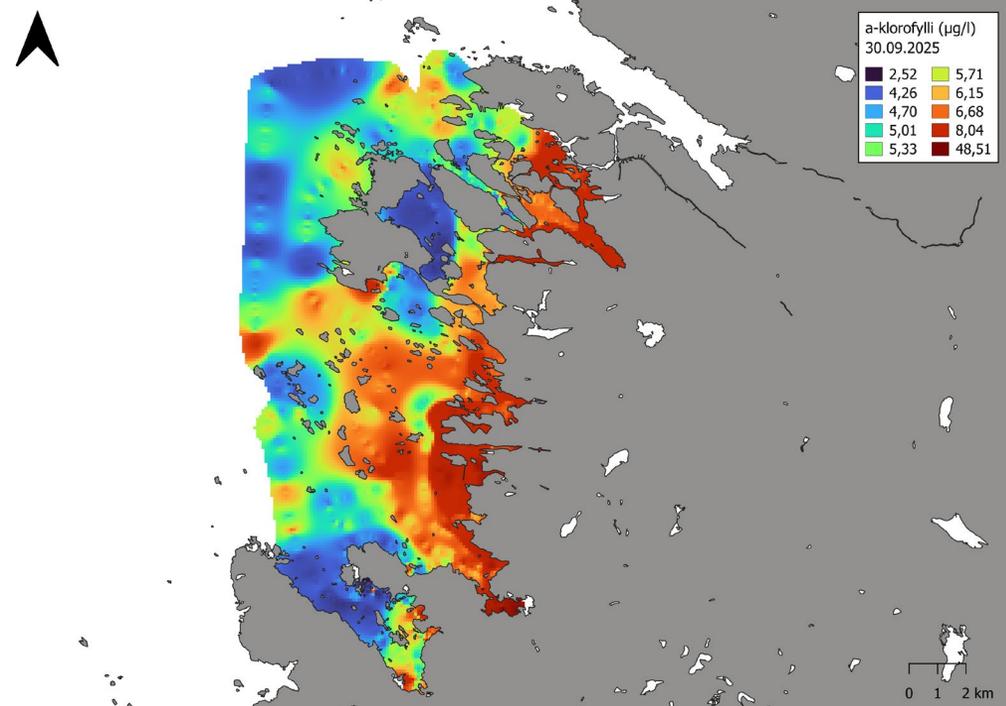
TURKU AMK 

# Coastrider

Täsmällistä tutkimustietoa  
vaikuttavaan vesienhoitoon.

[turkuamk.fi](http://turkuamk.fi)



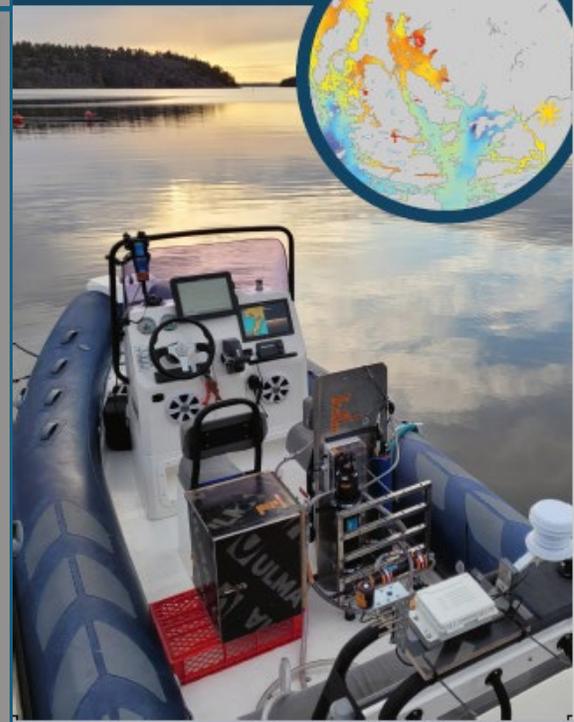


TURKU AMK 

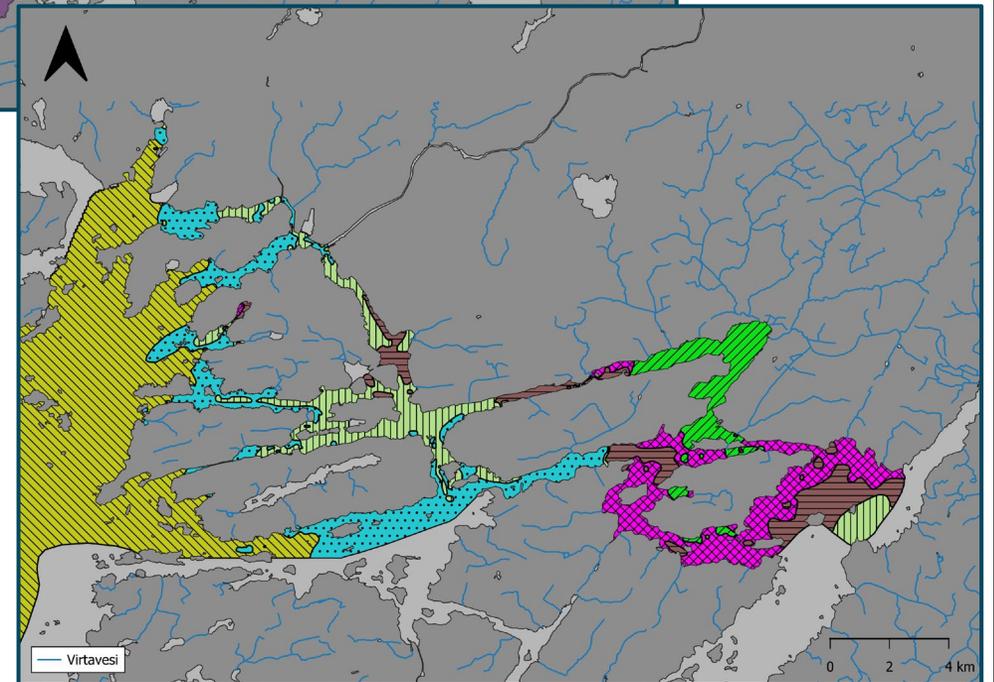
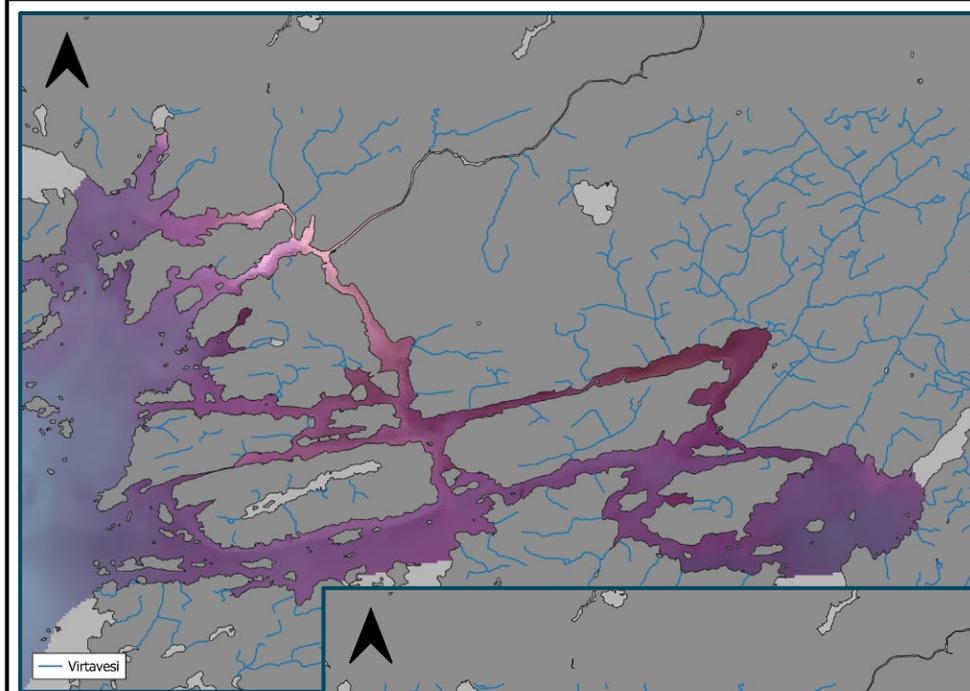
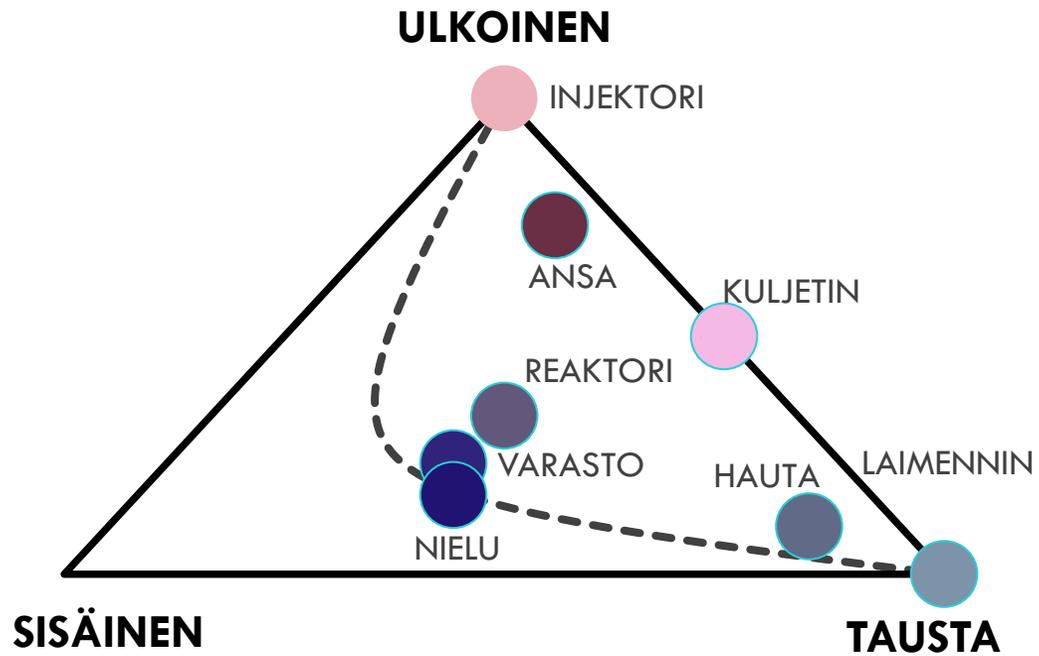
# Coastrider

Täsmällistä tutkimustietoa vaikuttavaan vesienhoitoon.

[turkuamk.fi](http://turkuamk.fi)

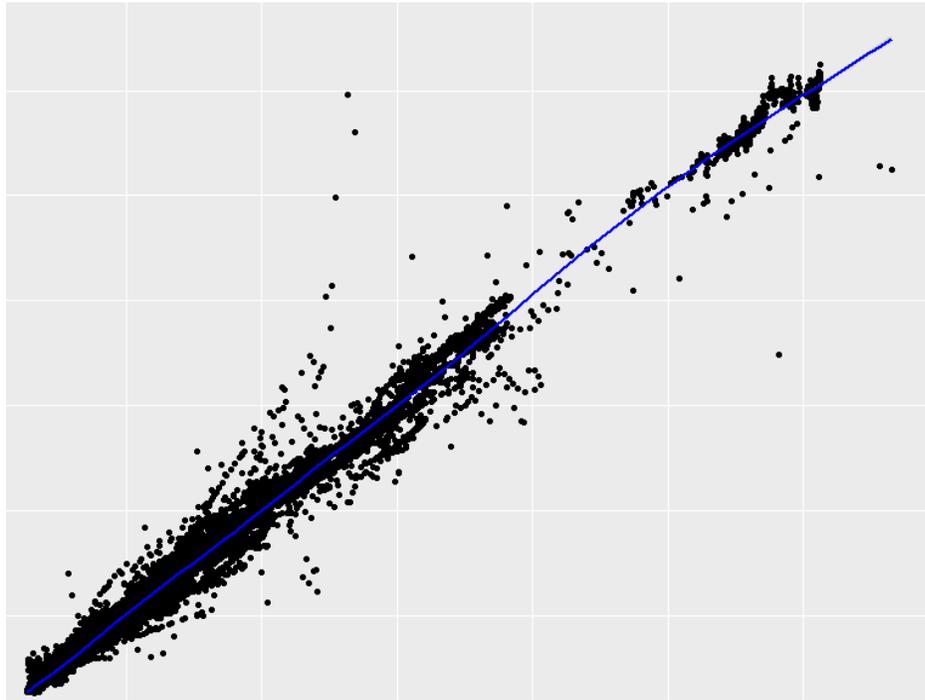


# RANNIKKOVESIEN TOIMINTA

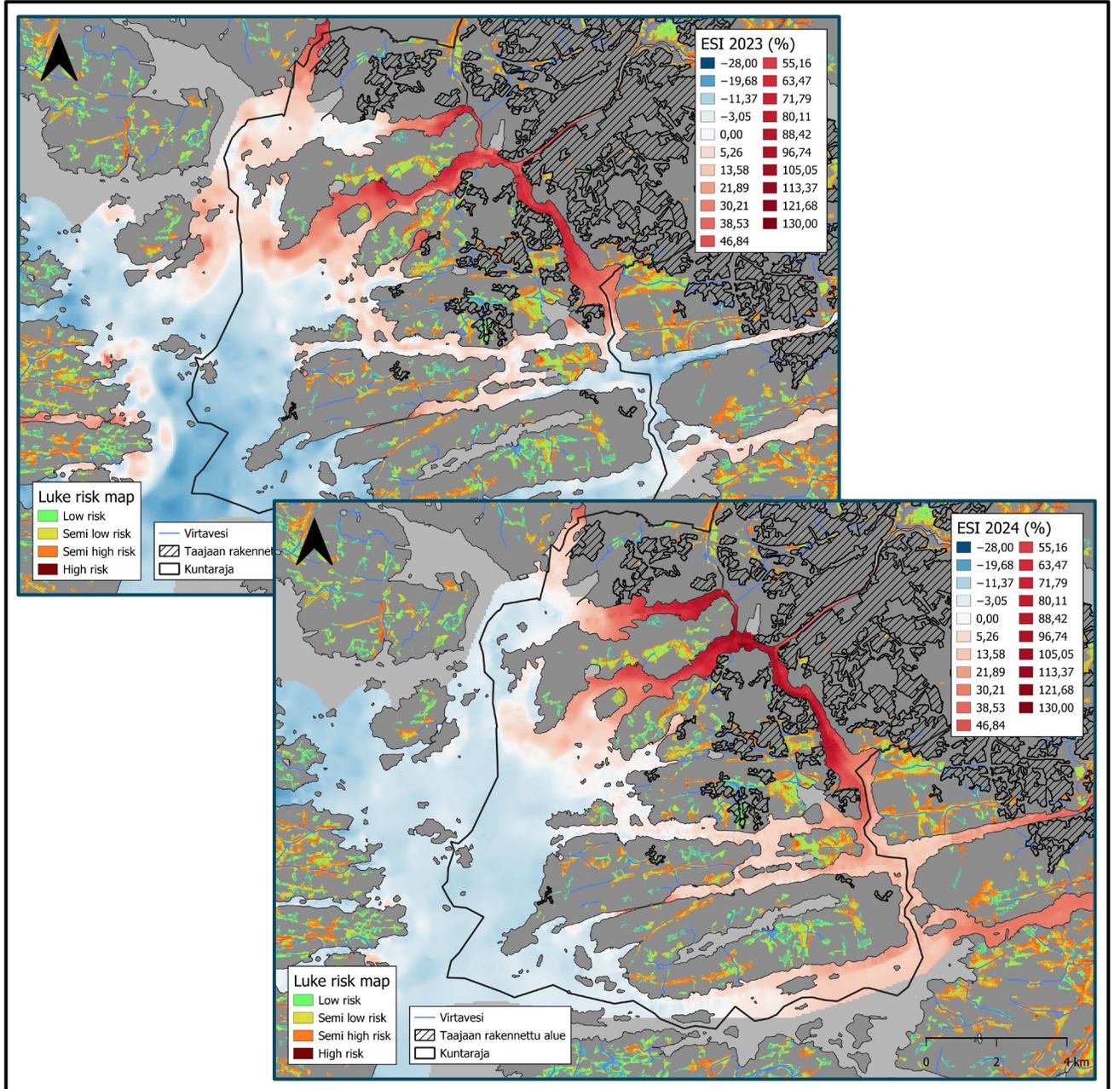


# RANNIKKOVESIEN TILA

Prediction based on hydrography  
and time of year (blue line)



Observations of status indicator values (black dots)





**WATER AND  
ENVIRONMENTAL  
— PROTECTION —**



**Matias Scheinin (FT), erityisasiantuntija**

00 358 50 47 62 391

[matias.scheinin@turkuamk.fi](mailto:matias.scheinin@turkuamk.fi)

<https://vesijaymparisto.turkuamk.fi/>