

AI-TT activities

# The AI-TT

- Founded in Spring 2025 - first meeting June 2025
- Originally chaired by Kristian Mogensen (ECMWF) and Santha Akella (NOAA)
- Now chaired by Rachel Furner (ECMWF) and Anass El Aouni (Mercator Ocean International)

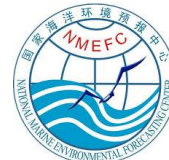


# Who are we?

- 25 members
- 17 institutions, 10 countries
- Mix of academic, research and operational organisations
- Community mailing list



Environment and  
Climate Change Canada  
Environnement et  
Changement climatique Canada



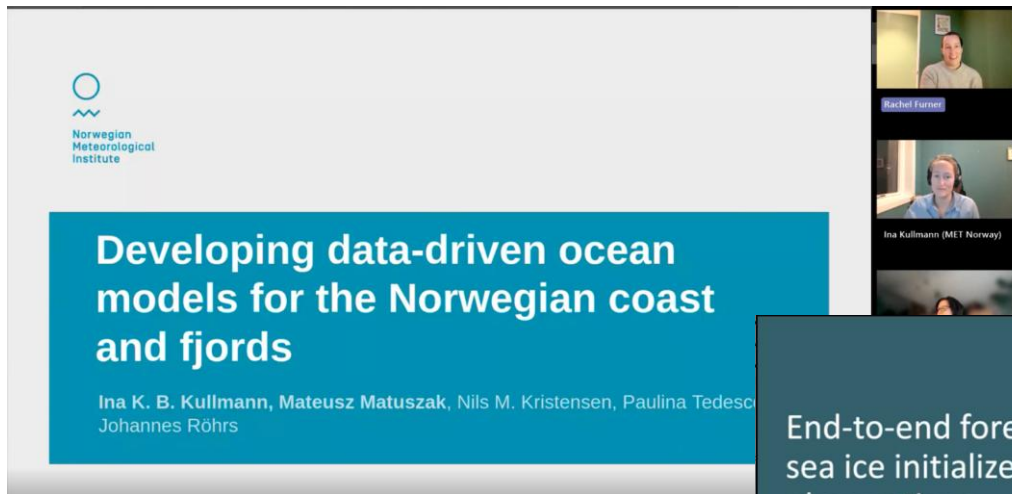
## Background and expertise:

- Strong foundation in **operational ocean modelling** using numerical/physics based models
- As well as members with ML backgrounds
- Growing experience in **machine learning applications**:
  - Forecasting, emulation, and model correction
  - Satellite data integration and inverse problems
- Broad expertise across **oceanography, HPC, and environmental modelling**
- General shift from **physics-based** → **hybrid AI-physics approaches**

## What participants are doing:

- Developing **AI-driven and hybrid ocean forecasting systems** (global and regional)
- Advancing **data assimilation, downscaling, and high-resolution modelling**
- Applications include **sea ice, marine heatwaves, surface currents, and fully coupled data-driven Earth system models**

# What have we done - Online seminar series



Norwegian Meteorological Institute

## Developing data-driven ocean models for the Norwegian coast and fjords

Ina K. B. Kullmann, Mateusz Matuszak, Nils M. Kristensen, Paulina Tedesco, Johannes Röhrs

- 2 seminars to date
- >50 attendees and growing
- Aim to run every 6-8 weeks



## End-to-end forecast of the Arctic sea ice initialized directly from observations

Julien Brajard, Léo Edel, Célia Roess, Cyril Palermé, Anton Korosov, Laurent Bertino

This work has been carried out as part of the Copernicus Marine Service **IceCastNet** project. Copernicus Marine Service is implemented by Mercator Ocean in the framework of a delegation agreement with the European Union.

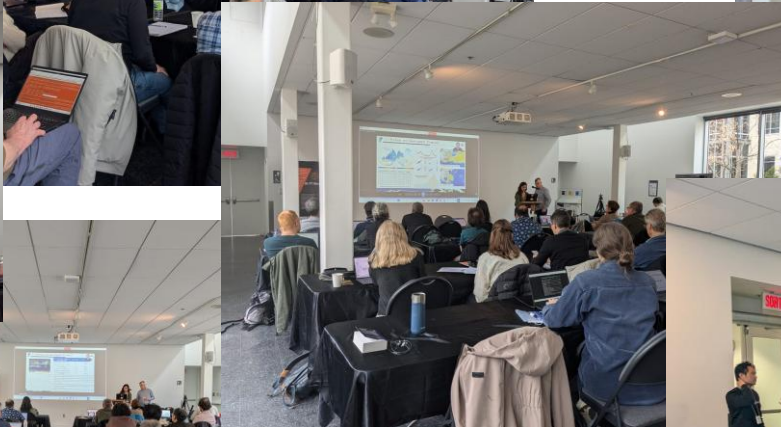
NERSC  
Norwegian Meteorological Institute

Meteorologisk institutt

Kirsten Wilmer Becke

0:56 / 49:21

# What have we done - first AI-TT workshop



## (Tentative) 5-year plans...

- Continue community building objectives - meetings, seminars, etc
  - Ensure engagement with ML communities, creating opportunities of interest
  - Enable uptake of ML by physical ocean modelling community

(15: New capabilities, 16: Outreach - learning: 17: Outreach – supporting new operational system utility)
- Encourage use and development of oceanbench as community tool for ML (and physical) ocean model assessment (Need to link to IV-TT).

(2: verification)
- Promote use of anemoi framework for ML models (and other frameworks where appropriate). Provide working ocean examples for ease of uptake

(4: Models, 13. Improving observation and prediction systems)
- Provide platforms to share model weights, datasets, training configurations, etc. Slack channel (or github) for sharing papers etc.

(4: Models, 9. Downstream, 13. Improving observation and prediction systems)