Call 1: International online workshop on

Advances in coupled air-ice-ocean data assimilation into Earth system models

25-26 February 2025 (two half days)

The workshop will take place online on a link that will be provided later.

Organised by:

Swedish Meteorological and Hydrological Institute

Chalmers University of Technology

Practical information

Invited speakers will give presentations of the current state of the art regarding Advances in coupled air-ice-ocean data assimilation into Earth system models. Registered listeners can listen, ask questions and participate in the discussions. The workshop format is two-half days of presentations and discussions. A final workshop report with main workshop outcome and recommendations will be compiled and shared. Invited speakers are kindly asked to give room for 5 minutes for questions and discussion.

For questions regarding the workshop, please contact Lars Axell (Lars.Axell@smhi.se). A final agenda complete with presentation titles and a meeting link will be provided by the end of January 2025.

Workshop scoop

This workshop is focusing on advances in coupled air-ice-ocean data assimilation into Earth system models. It is organized in the context of the project CAISA (Consistent Air-Ice-Sea Data Assimilation of Satellite Observations), funded by the Swedish National Space Agency (SNSA). Involved project partners are the Swedish Meteorological and Hydrological Institute (SMHI) and Chalmers University of Technology. The aim of the CAISA project is to improve consistency in Numerical Weather Prediction (NWP) and Numerical Ice-Ocean Forecasts for the Baltic Sea region using satellite data. We focus on development of methods to directly assimilate raw satellite data from passive and active microwave sensors that are partly sensitive to surface characteristics. The project focus is weakly coupled air-ice-ocean systems, but future plans include introducing coupled data assimilation. In this workshop we will give an introduction to the present project results and plans. Then we will through invited workshop presenters in an open session review the current status of various aspects of coupled air-ice-ocean data assimilation. A workshop report will be compiled and publically shared. Workshop presenters are kindly asked to address one or more of the following identified key questions:

1. What general approaches are currently used to strongly or weakly couple various components of Earth system models?
2. How are the differences in time scales between the different components handled?
3. What kind of observations are suited for coupling the air-ice-ocean components?
4. What are the main current challenges and potentials when assimilating surface sensitive satellite radiances?
5. What data assimilation methods are best suited for coupled data assimilation?
6. How do we benefit from the rapidly evolving field of artificial intelligence and machine learning?
7. Is there a common benefit from exchanging tools? What tools are being used today, that can be shared, to facilitate coupled data assimilation?

Agenda

Day 1
Session 1. 13.00-17.00 CET (12.00-16.00 UTC)

- 13:00 ***Welcome and Reminder of workshop scope and questions*** (Lars A., 15 min)
- 13:15 ***CAISA project*** (Lars A. et al., 30 min)
- 13:45 ***Shaping the Future: Advancing Strongly Coupled Data Assimilation at Environment and Climate Change Canada*** (Sergey Skachko, Environment Canada, 30 min)
- 14:15 Short break
- 14:30 ***Invited presentation 2*** (Stephen G. Penny, NOAA, 30 min)
- 15:00 ***Invited presentation 3*** (Philip Browne, ECMWF, 30 min)
- 15:30 Short break (15 min)
- 15:45 ***Invited presentation 4*** (Stephanie Guedj, Met No., 30 min)
- 16:15 ***Activities, status, and plans going on at DWD towards coupled DA*** (Martin Sprengel, DWD, 30 min)
- 16:45 ***Overall discussion*** (15 min)

Day 2
Session 1. 13.00-17.00 CET (12.00-16.00 UTC)

- 13:00 ***Welcome again (Good morning / Good Evening)*** (Lars A., 10 min)
- 13:10 ***Invited presentation 6*** (Yosuke Fujii, JMA/MR, 30 min)
- 13:40 ***Invited presentation 7*** (Lotfi Aouf, Meteo France , 30 min)
- 14:10 Short break (15 min)
- 14:25 ***Invited presentation 8*** (Kristian Mogensen, ECMWF, 30 min)
- 14:55 **Invited presentation 9** (Vijay Tallapragada, NOAA, 30 min)
- 15:25 Short break (15 min)
- 15:40 ***Invited presentation 10*** (Daniel Lea, Met Office, 30 min)
- 16:10 Final discussion (50 min)