Agenda

All times PDT (UTC−07:00)

April 15, Tuesday: Early Career School (in-person only)

8:00 - 8:30 *Registration (NHS Hall) with Coffee, Tea and Light Breakfast provided*

8:30 - 9:15 **Welcome and Introduction**

9:15 – 10:15 **Lecture I: Small-scale ocean-sea ice interactions in the Arctic**

Speaker: Georgy Manucharyan (University of Washington): High-resolution sea ice modeling

10:15 – 10:45 *Coffee Break*

10:45 – 11:45 **Lecture II: Large-scale ocean-sea ice interactions in the Arctic**

Speaker: Paul Myers (University of Alberta): Modelling the Arctic Ocean - Where we have been and where we are going

11:45 – 12:45 **Lecture III: Changing biogeochemistry of the Arctic Ocean**

Speaker: Laurie Juranek (Oregon State University): Changing Biogeochemistry of the Arctic Ocean: an Observational Perspective

12:45 – 13.45 *Lunch (provided)*

13:45 – 14:45 **Lecture IV: Applying machine learning to Arctic climate modeling**

Speaker: Kyle Heyblom (Planette AI): Applying machine learning to Arctic climate modeling

14:45 – 15:45 **Lecture V: Geoengineering and the Arctic**

Speaker: Cecilia Bitz (University of Washington).

16:00 – 17:30 **Guided tour of the Center for Urban Horticulture**

17:30 – 19:00 Pizza at Merrill Commons

April 16, Wednesday: Workshop Day 1

7:45 – 8:00 Registration (NHS Hall) with *Coffee, Tea and Light Breakfast provided*

8:00 – 8:45 Welcome, logistics, and introduction

Chairs: Jiaxu, Jackie

8:00 – 8:10 Welcome and Logistics (Jiaxu)

8:10 – 8:20 Meeting Introduction (Jackie)

8:20 – 8:45 CAMAS Project overviews (2 min each)

- Arctic Ocean Mixing (Stephanie Waterman)
- Runoff MIP (Georgina Gibson)
- Arctic Cyclones (Nan-Hsun Chi)
- Freshwater pathways (Carlyn Schmidgall)
- Under-ice phytoplankton (Jackie Clement Kinney)
- Microplastics (Lingwei Li)
- Gateway transports (Wieslaw Maslowski)

8:45 – 10:15 Topic I: Drivers and impacts of ocean heat and freshwater transport into and out of the Arctic (12 + 3 min each, + 30 min discussion)

Chairs: Milena, Wieslaw

- Emma Boland (BAS, UK): Seasonally Variable Controls of Freshwater Export through Denmark Strait
- Sergey Molodtsov (LANL; EC): Oceanic heat content variability and its drivers in the Nordic Seas
- Yu-Chi Lee (UCR; EC): Impacts of Atlantic meridional overturning circulation weakening on Arctic amplification.
- Who Kim (NCAR): Sources of the Arctic Atlantic Water biases in CESM2

10.15 – 10.30 Coffee Break, light refreshments provided

10.30 – 12.00 Topic II: Ocean-ice-atmosphere interactions in a warming Arctic (12 + 3 min each, + 30 min discussion)

Chairs: Mike, Jiaxu

- Nan-Hsun Chi (UW; EC): Storm generated near-inertial internal waves in Eastern Chukchi Sea - A case study by observation and a hybrid coordinate ocean model
- Caili Liu (Ocean U. of China; EC): Arctic Storms Pronounce Ocean Heat Uptake Extremes in Annual Cycle Amid Sea Ice Loss
- Anna Strehl (U. Bergen; EC): A seasonal buoyancy budget for the Nordic Seas
- Stephanie Waterman (U. British Columbia): Pan-Arctic estimates of heat and buoyancy fluxes in the Atlantic Water layer accounting for the Arctic Ocean's multiple mixing regimes

12:00 Group Photo

12.10 – 13.00 Lunch (provided)

13.00 – 14.30 Topic III: Biophysical impacts of Arctic marine biogeochemistry (12 + 3 min each, + 30 min discussion)

Chairs: Jackie, Jiaxu

- Yuanxin Zhang (JAMSTEC, Japan; EC): Modeling Arctic Ocean Biogeochemical Responses to Environmental Change
- Fiona Davidson (U. Alberta; EC): Biogeochemical budgets for the Arctic Ocean and northern Atlantic Ocean: an analysis of the physical influences on oxygen patterns
- Kat Smith (LANL): Wave-Coupled Effects on Arctic Biogeochemistry
- Clare Gaffey (OSU; EC): Evidence of fresh phytoplankton growth and heating feedbacks during fall in the Pacific Arctic

14.30 – 14.45 Coffee Break

14.45 – 16.15 Breakout sessions (1.5 hr)

- Arctic Ocean Mixing (Stephanie Waterman): NHS Hall + remote
- Runoff MIP (Georgina Gibson): Isaacson Classroom + remote
- Arctic Cyclones (Nan-Hsun Chi): Isaacson Boardroom + remote

16.30 – 18.30 Poster session I & **hors d'oeuvres** *(Merril Commons and Courtyard)*

April 17, Thursday: Workshop Day 2

7:45 - 8:00 Arrive (NHS Hall) with Coffee, Tea and Light Breakfast provided

8.00 – 8.15 Introduction to Day 2

Chair: Mike

8.15 – 8.45 Topic: Connections between the Arctic marine environment and Ice sheets (20 min + 10 min discussion)

- Trevor Hillebrand (LANL): Towards a coupled, dynamic Greenland Ice Sheet component in the Energy Exascale Earth System Model (E3SM) (invited)

8.45 – 9.15 Topic: Connections between the Arctic marine environment and the terrestrial domain (20 min + 10 min discussion)

- Rainer Amon (TAMU): Carbon and freshwater fluxes from the vast Arctic watersheds and how they inform on our understanding of the Arctic Ocean (invited)

9.15 – 10.15 Flash talks for remote participants (5 + 1 min each)

Chair: Jackie

- Tom Ballinger (UAF): Air-sea interactions yielding rapid Beaufort Sea ice losses during the 2021 ONR THINICE Pilot Field Campaign.
- Per Pemberton (SMHI): Impact of mesoscale eddy parameterization on Arctic Atlantic Water circulation in the eddy-permitting grey zone
- Marta Faulkner (WHOI): Stressing out the Beaufort Gyre: using an idealized model to investigate the drivers of upper ocean circulation in the Arctic
- Laura Gillard (U. Alberta): From Origins to Fate: The Circulation and Transformation of Baffin Bay Polar Water
- Antoine Haddon (U. Victoria): Simulated increases of future Arctic dimethylsulfide emissions and production.
- Amadini Mendis Jayasinghe (LANL): Sensitivity Modeling of Biogeochemical Drivers Controlling Dissolved Organic Carbon in the Yukon River
- Andrew Hamilton (U. Alberta): A Pan-Arctic Ocean Profile Data Compilation

- Younjoo Lee (NPS): Assessment of Arctic Winter Sea Thickness in CMIP6 Climate Projections
- Yarisbel Garcia Quintana (U. Toronto): On the formation mechanisms of Nares Strait ice arches.
- Peter Finocchio (NRL): The Relationship Between High Wind Events and Ice Melt during the Arctic Melt Season: Insight from Autonomous Buoy Observations
- Juan Tolento (LANL): Sensitivity of Polar Climate to Improved Partitioning of Visible and Near-Infrared Solar Bands

10.15 – 10.30 Coffee Break

10.30 – 12.00 Topic: Sea Ice predictability (12 + 3 min each, + 30 min discussion)

Chair: Wilbert, Milena

- Kent Moore (U. Toronto; remote): Summer sea ice returns to the Western Arctic after a 25-year hiatus
- Jacob Cohen (UW): Sources of predictability in seasonal forecasts of September Arctic sea ice
- Jaynise Perez Valentine (UW; EC): Mechanisms of Autumn Sea Ice Advance in the Western Arctic
- Harry Stern (UW): Regime shift in Arctic Ocean sea-ice extent

12.00 – 13.00 Lunch (provided)

13.00 – 14.30 Breakout sessions (1.5 hr)

- Freshwater Pathways (Carlyn Schmidgall): NHS Hall + remote
- Under-ice phytoplankton (Jackie Clement Kinney): Isaacson Classroom + remote
- Microplastics in the Arctic (Lingwei Li): Isaacson Boardroom + remote

14.30 – 14.45 Coffee Break, light refreshments provided

14.45 – 16.15 Topic: Advances in Arctic Marine Modeling (12 + 3 min each, + 30 min discussion)

Chair: Milena, Wilbert

- Ruijian Gou (Ocean University of China; EC): The changed nature of the Arctic Ocean in high-resolution climate models
- Yiling Huo (PNNL; EC): E3SM-Arctic: A High-Resolution Coupled Model for Advancing Arctic Climate and System Interactions
- Jacob Dörr (U. Bergen; EC): Lagrangian decomposition of the Arctic overturning circulation
- Samuel Brenner (Caltech; EC); Floe-scale variability in upper ocean energy pathways

16.30 – 18.30 Poster session II & **hors d'oeuvres** *(Merril Commons and Courtyard)*

April 18, Friday: Workshop Day 3

7:45 - 8:00 *Arrive (NHS Hall)* with *Coffee, Tea and Light Breakfast provided*

8.00 – 8.15 Introduction to Day 3

Chairs: Jackie, Jiaxu

8:15 – 8:45 Topic: Advances in Arctic Marine Modeling (20 min + 10 min discussion)

Qiang Wang (AWI): Changes in Arctic Ocean dynamics revealed by kilometer-scale models (invited)

8:45 – 9:15 Topic: Advances in Arctic Marine Observations (20 min + 10 min discussion)

Lars Smedsrud (U. Bergen): An updated Nordic Seas Overview with some new observations on transports (invited)

9.15 – 10.15 Breakout sessions (1 hr)

- Gateway Transports (Wieslaw Maslowski): NHS Hall + remote
- Walk-up topic 1: Isaacson Classroom + remote
- Walk-up topic 2: Isaacson Boardroom + remote

10.15 – 10.30 Coffee Break

10.30 – 12.00 Wrap-up

Chairs: Jackie, Jiaxu

10.30 – 11.30 Working Groups Report Out

11.30 – 12.00 Next Steps and Conclusion

13:00 – 17:00 Afternoon Hike to Discovery Park (weather dependent)

Poster Session I (Wednesday)

1. Qiang Wang (AWI): Dominant inflation of the Arctic Ocean's Beaufort Gyre in a warming climate.
2. Rainer Amon (TAMU): What we learnt from tracing terrigenous organic matter in the Arctic region.
3. Paul Myers (U. Alberta): High Resolution NEMO Modelling of the Arctic and Sub-Polar North Atlantic
4. John Oklu (U. North Carolina Wilmington; EC): Tracking of Fresh Water Pathways from the Mackenzie River into the Arctic Ocean
5. Sawyer Brand (LANL; EC): Examining Impacts of Sea Level Pressure on Ocean Heat Transport into the Nordic Seas
6. Carlyn Schmidgall (UW; EC): Unraveling the controls on Arctic Ocean salinity stratification through E3SM-Arctic tracer release experiments
7. Wilbert Weijer (LANL): What CMIP6 models tell us about the impact of AMOC variability on the Arctic
8. Jiaxu Zhang (UW): Monitoring phytoplankton community composition in the Pacific Arctic using multiple optical platforms
9. Reed Fitzpatrick (UC Riverside; EC): The Role of Atlantic Meridional Overturning Circulation Stability in Shaping Arctic Amplification
10. Mike Steele (UW): National Weather Service Alaska Sea Ice Program: Gridded ice concentration maps for the Alaskan Arctic
11. Romina Piunno (U. Toronto; EC): Deep Water formation in the Irminger and Labrador Seas: Impacts on Ocean Ventilation and Carbon Fluxes
12. An Nguyen (UT Austin): Mixing in the Arctic Ocean
13. Aidan Parfett (U. British Columbia; EC): The sensitivity of modelled Beaufort Gyre structure to different mixing prescriptions
14. Katerina Benevides (U. British Columbia; EC): Mixing in the Beaufort Gyre: Investigating the Role of Thermohaline Staircases and Shear-Driven Turbulence in Vertical Heat and Salt Transport in a Changing Arctic
15. Spenser Ross (U. Toronto; EC): The influence of Taylor Columns on ocean dynamics and sea ice in the Chukchi Sea
16. Pål Erik Isachsen (U. Oslo): On the role of wind and eddy-driving of large-scale ocean gyres within the Arctic.

Poster Session II (Thursday)

17. Benjamin Barton (NOC, UK; EC): An Ice-Ocean Model Study of the Mid-2000s Regime Change in the Barents Sea
18. Lilli Hirth (MIT/WHOI; EC): Air-Ice-Ocean Interactions Under an Arctic Cyclone: Observations from two Ice-Tethered Profilers
19. Clement Bertin (JPL; EC): The impact of Mackenzie River colored dissolved organic matter (CDOM) on coastal Arctic Ocean Carbon Cycling
20. Dong-Geon Lee (Pohang University of Science and Technology (POSTECH), South Korea; EC): Hysteresis of phytoplankton communities over Subpolar North Atlantic to CO2 forcing
21. Patrick Farnole (U. Victoria; EC): Exploring the mechanisms driving the interannual variability of Arctic cod recruitment around the Amundsen Gulf using agent-based modeling
22. Lingwei Li (CU Boulder): Distributions of Microplastics in the Arctic Sea ice and Ocean using CESM2
23. Inge Deschepper (U. Alberta; EC): Assessing the performance of a sympagic included biogeochemical model coupled to a regional oceanographic model for the subArctic system, the Hudson Bay Complex
24. Georgina Gibson (LANL): A new configuration of E3SM to understand bio-geo-chemical dynamics in high latitude marine ecosystem and metrics for regional model validation
25. Tahya Weiss-Gibbons (U. Alberta; EC): Future Changes in Arctic River Runoff and its Impact on the Ocean
26. Sylvia Cole (WHOI): Kinetic Energy in the Beaufort Gyre: Vertical structure partitioned and horizontal scale
27. Xuan Shan (WHOI; EC): Beaufort Gyre Liquid Freshwater Content Change under Greenhouse Warming from an Eddy-resolving Climate Simulation
28. Jackie Clement Kinney (NPS): On the sensitivity of the Pacific Arctic sea ice and ocean to the flow through Bering Strait
29. Mukulika Pahari (U. Alberta; EC): Mechanisms Behind Irminger Water Bifurcation into the Northern Labrador Sea and Baffin Bay
30. Vladimir Alexeev (UAF): Developing a parameterization for coastal erosion based on offshore and nearshore ocean typologies: North Slope of Alaska
31. Tyler De Jong (U. British Columbia; EC): Connecting Sea Ice Dynamics to Extreme Wave Events in the Beaufort Sea - UBC EOSC 510 Class Term Project
32. Camille Hankel (UW): Arctic sea ice meltwater as a forcing and feedback on the Atlantic Meridional Overturning Circulation