

***2nd FAMOS workshop***

***AGENDA***

***Tuesday, October 22, 2013***

**FAMOS School for young scientists**

***Redfield auditorium on Water Street in Woods Hole***

**8:15 8:30 Coffee**

**8:30 9:00 Mike Steele: Introduction (welcome, FAMOS workshop school major goals and tasks, school agenda)**

 **09:00 10:00 Amala Mahadevan (Woods Hole Oceanographic Institution, USA): “Submesoscale processes, biophysical interactions, and the Arctic”**

**10:00 10:30 Coffee break**

**10:30 11:30 Michael Karcher (Alfred Wegener Institute, Germany): “Atlantic Water circulation in the Arctic Ocean”**

**11:30 12:30 Ron Kwok (Jet Propulsion Laboratory, USA): “Arctic sea ice deformation, thickness, and large-scale mass balance”**

**12:30 14:00 Lunch**

**14:00 15:00 Outreach discussion**

**15:00 16:00 John Marshall (MIT, USA): “Building and removing stratification in the Arctic Ocean”**



**16:00 17:00 Marika Holland (NCAR, USA): “Using coupled climate models to investigate the predictability of sea ice”**

**18:15 Ferry from Woods Hole to Vineyard Haven, arrival 19:00**

**21:30 Departure from Vineyard Haven back to Woods Hole, arrival 12:15 pm**

***Wednesday, October 23, 2013***

***Redfield auditorium on Water Street in Woods Hole***

**8:15 8:30 Coffee**

**8:30     9:00    Andrey Proshutinsky:** *Introduction (welcome and workshop major goals and tasks)*

**SESSION 1:    Sea ice highlights session (Conveners: Don Perovich and Andrey Proshutinsky)**

**09:00 – 09:15 Don Perovich** (CRREL, USA): *“2012 and 2013 sea ice conditions and results of 2012 sea ice outlook”*

**09:15 – 09:30 Rick** **Allard** et al. (NRL, USA): *“An Assessment of the Navy's Sea Ice Outlook Predictions for 2013”*

**09:30-09:45 Daniel L. Feltham et al.**  (University of Reading, UK):“The changing Arctic sea ice cover: challenges to understanding and models”

**09:45– 10:00 Sinead L. Farrell et al. (**University of Maryland, USA): *“An update on Arctic sea ice thickness conditions from airborne and satellite altimetry* ***“***



**10:00 – 10:15 Coffee break**

**SESSION 2:    Sea ice modeling and observations (Conveners: Torge Martin and Andrew Roberts)**

**10:15 – 10:30 Andrew Roberts** (Naval Postgraduate School, Monterey, California, USA): “*Sea Ice Dynamics Scaling in the Regional Arctic System Model”*

**10:30 – 10:45 Torge Martin** et al. (University of Washington, USA): *“Trends in momentum transfer into the Arctic Ocean and the role of optimum ice concentration”*

**10:45 – 11:00 Bruno Tremblay** (McGill University, Canada): *“Lagrangian sea ice tracking technique for seasonal prediction of sea ice conditions”*

**11:00 – 11:15 Frederic Dupont et al. (**CMC, Environment Canada): *“Environment Canada 1/12th ice-ocean Arctic-Atlantic model: improving the ice”*

**11:15 – 12:30 Discussion: How to validate and improve sea ice models and observing capabilities? What coordinated experiments are needed? (Moderators: Torge Martin, Andrew Roberts and Don Perovich)**

**12:30 – 13:15 Lunch (provided)**

**13:15 – 14:40 One-slide poster summary presentations (1 minute per presentation: please provide your slide for these presentations by October 18th, 2013)**

**14:40 – 15:00 Moving to SWOPE center for POSTER Session)**

**SESSION 3: Poster session (SWOPE center, see map)**

**15:00 – 17:15 Poster session (SWOPE center)**

**17:30 – 19:30 Reception, Redfield auditorium Hall**



***Thursday, October 24, 2013***

***Redfield auditorium on Water Street in Woods Hole***

**8:15 8:30 Coffee**

**SESSION 4: Arctic Ocean dynamics and properties from observations and model results (Conveners: Yevgeny Aksenov and Michael Karcher)**

**08:30– 08:45 Summary of “Arctic Ocean dynamics and properties from observations and model results” poster session**

**08:45– 09:00 Golubeva Elena** **et al.** (Institute of Computational Mathematics and Mathematical Geophysics, Novosibirsk, Russia): *“*Variability of the Atlantic Water properties in the Arctic Ocean: 1948-2012 model results*”*

**09:00 – 09:15** **David A. Hebert et al.** (NRL, USA **):**  “Assessing the U.S. Navy Coupled Ice-Ocean Model vs. Recent Arctic Observations

**09:15 – 09:30 Yanni Ding (Maryland University**, USA): “Arctic Ocean circulation in the CMIP5 models”

**09:30 – 09:45 Chen Chen et al.** (UMASS, Dartmouth, USA): “The 35-year high-resolution AO-FVCOM model experiment”

**09:45 – 10:00 Coffee break**

**10:00 – 11:45 Discussion: Major challenges for simulations and understanding of the Arctic Ocean dynamics and hydrography changes. Coordinated experiments with eddy-resolving models. (Moderators: Yevgeny Aksenov and Michael Karcher)**



**SESSION 5: ECOSYSTEM and BIOGEOCHEMICAL MODELING (Conveners: Katya Popova and Nadja Steiner)**

**11:45 – 12:00 Summary of ecosystem and biochemical modeling poster session**

**12:00 – 12:15 Patricia Matrai** (Bigelow Laboratory for Ocean Sciences, USA): “A brief introduction to the PPARR 5 adventure: A Net Primary Production Algorithm Round Robin focused on the Arctic Ocean”

**12:15– 13:00 Lunch (provided)**

**13:00 – 13:15 Jean-Éric Tremblay (**University of Laval, Canada): “What have we learned on the seasonality of nutrient dynamics and the vertical distribution of primary production in the stratified Beaufort Sea?”

**13:15 – 13:30 Katya Popova** (Marine Systems Modelling, National Oceanography Centre,U. Southampton, UK): “Modeling Beauty contest: Arctic ecosystems in seven models competing for the next UK Earth System Model biogeochemistry”

**13:30 – 15:00 Discussion “Major challenges for biogeochemical modeling and observations: what is needed to improve both observing systems and models including coordinated experiments. Coordinated experiments. “(Moderators: Katya Popova and Nadja Steiner)**

**15:00-15:15 Coffee break**

**SESSION 6: CLIMATE STATES, FRESHWATER and HEAT CONTENT (Conveners: Mike Steele and Mary-Louise Timmermans)**

**15:15 – 15:30 Summary of climate states, freshwater and heat content poster session**

**15:30 – 15:45 An T Nguyen et al.**  (MIT, USA): “Progress and Assessment of the Arctic & sub-polar North Atlantic state estimate”



**15:45 – 16:00 Wieslaw Maslowski** (NPS, USA): “Modeling Seasonal to Decadal Climate Variability using the Regional Arctic System Model”

**16:00 – 16:15 Benjamin Rabe** (Alfred Wegener Institute, Germany): “Arctic freshwater changes and regional implications”

**16:15 – 16:30 Thomas Haine (**The Johns Hopkins University, USA): “New synthesis of Arctic freshwater budget and fluxes”

**16:30 – 16:45 Claudia Cenedese (WHOI, USA): “**Laboratory experiments investigating the influence of subglacial discharge on submarine melting of Greenland’s Glaciers”

**16:45 – 17:00 Jiayan Yang and Andrey Proshutinsky** (WHOI, USA): “Dynamics of the Beaufort Gyre: A Balance between Ekman Pumping and Eddy Flux”

**17:00 – 18:00 Discussion: Major uncertainties in understanding of drivers of oceanic climate states and changes in freshwater and heat content. Coordinated experiments (Moderators: M-L Timmermans and Mike Steele)**

**18:05 Bus to hotels**

**18:45 Workshop dinner at local restaurant**



***Friday, October 25, 2013***

***Redfield auditorium on Water Street in Woods Hole***

**8:15 8:30 Coffee**

**SESSION 7: 2013-2014 FAMOS Coordinated Experiments: (**Conveners: Andrey Proshutinsky and Sheldon Bacon**)**

**08:30 – 08:40 Popova Ekaterina** (NOC Southampton, UK): “Some ideas for FAMOS coordinated ecosystem studies *Role of advection in Arctic Ocean ecosystem dynamics"*

**08:40 – 08:50 Sheldon Bacon (**NOC, Southampton, UK): “Arctic Ice and Ocean Heat and Freshwater Fluxes:  A FAMOS Model Intercomparison Project”

**08:50 – 09:00 Aksenov Yevgeny (**NOC Southampton, UK): “Coordinated water circulation experiments”

**09:10 – 09:20 John Toole (Coordinated mixing experiments)**

**09:20 – 09-30 Dmitri Dukhovskoy (Florida State University): “Coordinated Greenland freshwater flux experiment”**

**09:30 – 09-40 Torge Martin and Andrew Roberts: “Coordinated sea iceexperiments”**

**09:40 – 10:45 Coordinated experiments working group session**

**10:45 – 11:20 Plenary session with reports**

**11:20 – 11:30 Final remarks and workshop adjourn**



**SESSION 3: POSTERS (will be displayed from 15:00 to 17:15 in SWOPE Center on Wednesday, October 23, 2013)**

**A. Sea ice**

1. **Edward Blanchard-Wrigglesworth** (UW, USA): “Predictability of sea ice conditions”
2. **Peter Davis** (University of Oxford, UK): “Spin Up of the Beaufort Gyre and the Effects of Arctic Sea Ice Cover”
3. **Dmitry Dukhovskoy et al.** (Florida State University, USA): *“Sea ice model evaluation: A topological approach****”***
4. **Daniela Flocco et al.** (University of Reading, UK): “The impact of refreezing of melt ponds on Arctic sea ice thinning**”**
5. **Philipp Griewank** (Max-Planck-Institute for Meteorology, Hamburg, Germany): “Impact of parameterizing sea-ice salinity”
6. **Giulia Castellani** et al. (Alfred Wegener Institute, Germany): *“Implementation of sea-ice roughness dependent drag coefficients in a coupled sea-ice-ocean model and assessment of the effects in the sea-ice drift in the Arctic.”*
7. **Jary Haapalaet al.** (Finnish Meteorological Institute, Finland): “Small scale ice dynamics revealed by the coastal ice radar”
8. **Yukie Hata** (McGill University, Canada): “In-Situ Internal Sea-Ice Stress Data from Canadian Arctic Archipelago and Modeling Anisotoropic Behavior of Sea Ice”
9. **Christophe Herbaut et al.** (LOCEAN, CNRS/ Université Pierre et Maris Curie, Paris, France): “Variability of the Barents Sea winter sea ice in 1979-2011”
10. **Polona Itkin** (Alfred Wegener Institute, Bremerhaven, Germany): “Sea ice running Atlantic water?”
11. **Ann Keen et al. (**Ridley Met Office, Hadley Centre, UK): *“Drivers of Arctic sea ice decline in the HadGEM1 coupled model”*
12. **Alexander Komarov** et al. (University of Manitoba, Canada): *“Detection of Wind Speed and Sea Ice Motion in the Marginal Ice Zone from RADARSAT-2 Images”*
13. **Mi Ok Kwon** (the Korea Maritime and Ocean University, Korea): “Numerical simulation on oceanic state and sea ice distribution of the Arctic Ocean”
14. **De Silva, Liyanarachchi Waruna Arampath** (The University of Tokyo, Japan): “Numerical investigation of sea ice prediction to support ice navigation in the Northern Sea route”
15. **Einar Olason** (Max-Planck Institute of Meteorology, Germany): “Dynamical modeling of Kara Sea land-fast ice”
16. **Jamie Rae** ((Met Office Hadley Centre, United Kingdom,): “A sensitivity study of the sea ice simulation in the global coupled climate model, HadGEM3”
17. **Ruth, Julia M**. et al. (University of Maryland, USA): "Assessment of Arctic sea ice freeboard from photon-counting laser altimetry: Pre-launch activities for NASA’s ICESat-2 Mission"
18. **Michel Tsamados** (University of Reading, UK): “Impact of variable drag coefficients on Arctic sea ice and Ocean spin-up and down”
19. **WITHDRAWN: Wilbert Weijer et al.** (Los Alamos National Laboratories): "The Arctic ocean/sea ice system in a high-resolution coupled climate model”.
20. **James Williams** (McGill University, Canada): “Using Algebraic Multigrid to Precondition the Viscous Plastic Sea Ice Momentum Equations”
21. **Jinping Zhao** (Ocean University of China, China): “Non-numerical forecasting of sea ice concentration induced by lateral melting”



**B. Arctic Ocean dynamics and properties from observations and model results**

1. **Evgeny Aksenov** (Southampton Oceanographic Center, UK): “Preconditioning of the Arctic outflow west of Greenland: Ocean Circulation in the Lincoln Sea”
2. **Tachanat Bhatrasataponkul** (Florida State University, USA): “Pathways and transformation of Greenland's excessive freshwater in the Nordic Sea"
3. **Beth Curry** (University of Washington, Applied Physics Laboratory, USA): “Davis Strait observations”
4. **Seth Danielson** (IMS UAF, USA): “Circulation variability on the Bering-Chukchi shelves in response to local and remote wind forcing”
5. **Dustin Carroll** (University of Oregon, USA): “Oceanic response to buoyancy, wind and tidal forcing in a Greenlandic glacial fjord”
6. **Vera Fofonova** (AWI, Germany): *"*The simulation of circulation in the Laptev Sea shelf zone using FVCOM*"*
7. **Renske Gelderloos** (University of Oxford, UK): “Modeling the Canadian Archipelago”
8. **Simon Higginson et al.** (Bedford Institute of Oceanography, Canada): “Validation of the CONCEPTS 1/12 degree Arctic-Atlantic ice-ocean model: Water masses and transports”
9. **Pål Erik Isachsen** (Norwegian Meteorological Institute, Norway): “Ocean eddy fluxes in the Arctic and their parametrization in climate Models”
10. **Jennifer Jackson** (ASL Environmental Sciences, Canada): “The formation, transport, and fate of Beaufort Shelf Winter Water in the Canadian Beaufort Sea from 2009-2011”



1. **Markus Janout** (AWI, Germany): “Semidiurnal tides on the Laptev Sea shelf with implications for shear and mixing”
2. **Hyunjung Lee** (Korea Polar Research Institute, Korea): “Annual variability in water column structure regarding heat content and freshwater content in the Pacific sector of Arctic Ocean, last 3 years”
3. **Ho Jin Lee** (the Korea Maritime and Ocean University, Korea): “Tidal mixing effect on the Arctic Sea circulation and sea ice distribution using OGCM”
4. **Zhenxia Long and William Perrie** (Bedford Institute of Oceanography, Canada): “Impacts of climate change on sub-surface water temperature”
5. **Maria Luneva** (NOC, UK): “Effect of mixing and ageostrophic circulations induced by tides on the multi-decadal scale on the changes in ice, temperature and salinity fields”
6. **Charlotte Marcinko** (NOC, Southhampton, UK): “Characterizing horizontal variability in the Arctic Ocean”
7. **Aleksi Nummelin** (Geophysical Institute, University of Bergen, Norway): “Role of the changing river runoff in the Arctic ocean stratification”
8. **Cecilia Peralta-Ferriz** (Univ. of WA, USA**):** “Evolution of mixed layer depth in the Arctic from historic CTD data”
9. **Mike Spall** (WHOI, USA): “A simple model for the halocline and Atlantic Water circulation in the Arctic”
10. **Arild Sundfjord et al**. (Norwegian Polar Institute, Tromsø, Norway): “Upper-ocean vertical fluxes in the Atlantic Water inflow region North of Svalbard”



1. **Mary-Louise Timmermans** (Yale University, USA): “Pacific Summer Water in the Central Canada Basin”

21a **Andrew Willmott and Maria Luneva** (NOC, UK): **“**Simple models for wind and boundary forced Arctic Ocean circulation”

**C. CLIMATE STATES, FRESHWATER and HEAT CONTENT**

1. **Yanni Ding et al.** (University of Maryland, USA): “Seasonal Arctic heat budgets in CMIP5 models”
2. **Ayan Chaudhuri** (AER, USA): **:** “Impact of atmospheric forcing uncertainties on Arctic state estimates” by Ayan Chaudhuri (AER, USA)”
3. **John Guthrie** (Polar Science Center, Applied Physics Laboratory, University of Washington, USA): “Recent Microstructure Observations from the Eurasian Basin”
4. **Amber M. Holdsworth** (University of Alberta, Canada): “The Labrador Sea as a "Vital Organ" in the Earth System”
5. **Richard Krishfield et al.** (WHOI, USA):“Deterioration of perennial sea ice in the Beaufort Gyre from 2003 to 2012 and its impact on the oceanic freshwater cycle”
6. **Camille Lique** (Oxford University, UK) “Vertical mixing & heat flux study”
7. **Steffen Malskær Olsen** (Polar Oceanography, Danish Meteorological Institute, Denmark): “Variability of the Arctic Ocean freshwater reservoir in a coupled climate model”
8. **Per Pemberton** (Stockholm University, Sweden): “Tracing sources and sinks of freshwater in a regional Arctic Ocean model”



1. **Will Perrie and Zhenxia Long** (Bedford Institute of Oceanography, Canada): “Impacts of climate change on fresh water content and sea surface height in the Beaufort Sea”
2. **Gennady Platov** (Institute of Computational Mathematics and Mathematical Geophysics, Novosibirsk, Russia): “On the freshwater content modeling in the Arctic basin: a sensitivity study”
3. **Andrey Proshutinsky** (WHOI, USA): “Atmospheric forcing uncertainties to drive simulation of freshwater content variability”
4. **Hyodae Seo** (WHOI, USA): “Dynamics of the near-surface wind response to Arctic sea ice”
5. **William Williams** (Institute of Ocean Sciences, Canada): “The changes observed between 2012 and 2013 in the Beaufort Gyre and their causes”
6. **Jonathan Whitefield** (University of Alaska Fairbanks, USA): "A new high-resolution forcing of Arctic river discharge"

**D. ECOSYSTEM and BIOGEOCHEMICAL MODELING**

1. **Filippa Fransner** (Stockholm University, Sweden): “Tracing terrestrial dissolved organic carbon in the Baltic Sea - a 3D model study”
2. **WITHDRAWN: Ho Kyung Ha** (Korea Polar Research Institute, Incheon, Korea): “Measurement of suspended particulate matter beneath Arctic sea ice during the summer season of rapid melting”
3. **Rubao Ji et al.** (WHOI, USA): “Phenology of Sea Ice and Primary Production in the Arctic Ocean”



1. **Meibing Jin** (IARC, USA): "Ocean mixing under sea ice with multi-column ocean grid in CESM and its impact on ecosystem dynamics”
2. **Valentina Malakhova and Elena Golubeva** (by (Institute of Computational Mathematics and Mathematical Geophysics, Novosibirsk, Russia): “Modeling of subsea permafrost related methane emissions in the East Siberian Arctic Shelf”
3. **Molly A. Palmer** (ExxonMobil Research and Engineering, USA): **:** “A new 1-D biogeochemical model of the Chukchi Sea, Arctic Ocean: modeling the impacts of sea ice retreat, thinning, and melt pond proliferation on the summer phytoplankton bloom”
4. **Josie Robinson** (National Oceanography Centre, U. Southampton, UK): “Is the melting of Arctic sea-ice blurring the biological boundaries between ocean basins?”
5. **WITHDRAWN: Natalia Shakhov et al.** (IARC, UAF, USA): “Lateral transport of methane in the Pacific sector of the Arctic Ocean as referred from water circulation pattern"
6. **Nadja Steiner** (Institute of Ocean Sciences, Fisheries and Oceans Canada, Canada):” Model intercomparisons within the SCOR WG BEPSII (Biogeochemical Exchange Processes at Sea-Ice Interfaces) - Overview and early results”
7. **Jean-Éric Tremblay (**University of Laval, Canada): **:** “Nutrients and biological productivity in the Arctic Ocean: an overview of major issues”