

Schedule of Oral Presentations

The presentations are listed by Session except for the invited speakers. Note that presenters name is in bold-face type and underlined.

June 12 - Opening Day Plenary Session

Room: Tromsøsalen

Session Chairs: Ken Drinkwater (Norway), Franz Mueter (USA), Sei-Ichi Saitoh (Japan)

08:30 **OSM Co-convenors (Ken Drinkwater, Franz Mueter, Sei-Ichi Saitoh)**

Welcome and opening remarks

09:00 **Mette Skern-Mauritzen, Erik Olsen, and Geir Huse (Invited - Opening)**

Rapidly changing high latitude ecosystems - necessity of and opportunities by implementing holistic, science-based management

09:30 **Richard Merrick (Invited – S8)**

Mechanisms for science to shape US Marine Conservation Policy

10:00 **Anne Christine Brusendorff (Invited -S8)**

International collaboration and Arctic science: Finding ways to work together

10:30 *Coffee/Tea Break*

11:00 **Jacqueline Grebmeier (Invited – S4)**

The Pacific Arctic region: a window into shifting benthic populations in response to ecosystem change

11:30 **Jessica N. Cross, Jeremy T. Mathis, Robert S. Pickart, and Nicholas R. Bates (Invited - S7)**

Formation and transport of corrosive water in the Pacific Arctic region

12:00 **Peter Thor (Invited - S7)**

Biological effects of Arctic ocean acidification

12:30 Lunch (at the Hotel Restaurant covered by registration fee)

S8 - Science, Policy and Management

Monday 12 June

Room: Tromøsal 3

Session Chairs: Alan Haynie (USA), Alf Håkon Hoel (Norway)

Keynote Speakers:

Dr. Richard Merrick (USA), presents in plenary am 12 June

Dr. Anne Christine Brusendorff (ICES), presents in plenary am 12 June

Dr. Jason Link (USA), presents in plenary am 13 June

How can our science most effectively influence policy and management decisions? What do policy makers and managers require from scientists? How can we improve communications between scientists, resource users, and managers? This session will integrate experiences from social and natural scientists, economists, resource users and managers. Talks will focus on specific examples and examine the successes and challenges of different science-to-policy experiences.

13:50 **Tuula Hollmen and Katherine Christie**

A decision analytic approach to climate change adaptation: Case study from Wainwright, Alaska for strengthening subsistence systems in the Arctic

14:10 **Alan Haynie**

The many facets of bycatch management in Alaska fisheries

14:30 **Brooks A. Kaiser, Linda M. Fernandez, Melina Kourantidou, and Niels Vestergaard**

Invasive crabs in the Barents Sea

14:50 **Alf Håkon Hoel**

Science - politics interplay in Arctic fisheries

15:10 **Tuuli Parviainen, Päivi Haapasaari, Annukka Lehikoinen, and Sakari Kuikka**

Proactive risk governance framework for maritime activities in the Arctic seas

15:30 Coffee/Tea Break

16:00 **Sezgin Tunca, Lone Grønabæk, and Marko Lindroos**

Cooperative vs Non-Cooperative Benefits in the Black Sea Anchovy Fishery

16:20 **Niels Vestergaard**

Bio-economic analysis for Arctic Marine Resource Management Policy

16:40 **Sakari Kuikka, Maisa Nevalainen, Jussi Mäkinen, Inari Helle, and Jarno Vanhatalo**

Learning chains in Arctic oil risk analysis

17:00 Discussion

17:20 End of Session

S4 - Shifting habitats, persistent hot spots, and the distribution of benthos, plankton, fish, seabirds and marine mammals - observations, models, mechanisms and effects (Session 1)

Monday 12 June

Room: Tromsøsal 1

Session Chairs: Ken Drinkwater (Norway), Sei-Ichi Saitoh (Japan)

Keynote Speakers: Dr. Jacqueline Grebmeier (USA), presents in plenary am 12 June

This session focuses on studies involving observations and/or models to explore mechanisms linking organisms to biophysical habitats and how their distributions will shift or persist in a changing climate. Which biophysical habitats will shift and which will persist in a changing climate? What are the effects on upper trophic level species? Are we seeing a borealization of the Arctic? What are the limits, if any, to this borealization? How will shifting fish populations affect the broader ecosystem, fisheries, management, and fishing communities? Are institutions prepared for shifting fish populations?

13:30 **Sue E. Moore, Phyllis J. Stabeno, Jacqueline M. Grebmeier and Stephen R. Okkonen**

The Arctic Marine Pulses Model: linking annual oceanographic processes to contiguous ecological domains in the Pacific Arctic

13:50 **Jennifer M. Questel, Ole N.S. Aarbakke, Leocadio Blanco-Bercial, Fredrika Norrbin, Claudia Halsband, Russell R. Hopcroft, and Ann Bucklin**

Shifting biogeography of Calanus' cousins? Insights from a Pan-Arctic study on the connectivity and demographic history of Pseudocalanus spp. populations

14:10 **Flemming Dahlke, Martin Butzin, Jasmine Nahrgang, Atle Motensen, Velmurugu Puvanendran and Hans-Otto Pörtner, and Daniela Storch**

Fish embryo physiology and climate change: Estimating habitat suitability for key Arctic fish under contrasting IPCC emission scenarios

14:30 **Randi Ingvaldsen, Yngve Børsheim, Harald Gjørseter, E. Hallfredsson, Tore Haug, Liz L. Jørgensen, Tor Knutsen, and S. Menze**

The Hinlopen area – a regional hotspot north of Svalbard?

14:50 **Maxime Geoffroy, Malin Daase¹, Jørgen Berge, Martin Graeve, Marine Cusa¹, Néstor Santana Hernández, and Stig Falk-Petersen**

Seasonal variations and ecological importance of mesopelagic sound scattering layers in the high Arctic

- 15:10 **Irene D. Alabia, Jorge Garcia Molinos, Sei-Ichi Saitoh, Toru Hirawake, and Franz J. Mueter**
Habitat distribution patterns of demersal fish in the Eastern Bering and Chukchi Seas: comparing multivariate climatic and bioclimatic velocities
- 15:30 Coffee/Tea Break
- 16:00 **Olafur S Astthorsson and Jón Sólmundsson**
Contrasting trends in abundance and distribution of warm and cold water demersal fish on the Icelandic shelf during a recent regime shift
- 16:20 **Matthew R. Baker and Anne B. Hollowed**
Visualization of species distribution patterns in warm and cold phases to understand the effects of climate forcing in the transition between subarctic and arctic systems (Bering and Chukchi seas)
- 16:40 **Johanna Fall, Lorenzo Ciannelli, and Edda Johannesen**
Environmental factors affecting the spatial distribution and overlap of cod and capelin in the Barents Sea
- 17:00 **Jennifer M. Marsh and Franz J. Mueter**
Environmental and biological influences on the southern distribution of Polar cod (Boreogadus saida)
- 17:20 **Cathleen Vestfals, Franz Mueter, Colleen Petrik, Benjamin Laurel, Janet Duffy-Anderson, Seth Danielson, Katherine Hedstrom, Alex De Robertis, and Enrique Curchitser**
Exploring the dispersal and connectivity of Arctic cod and saffron cod early life stages in the Pacific Arctic using a biophysical transport model
- 17:40 End of Session

S7 - Ocean Acidification

Monday 12 June

Room: Tromsøsal 2

Session Chairs: Kumiko Azetsu-Scott (Canada), Melissa Chierici (Norway)

Keynote Speakers:

Dr. Jessica Cross (USA), presents in plenary am 12 June

Dr. Peter Thor, presents in plenary am 12 June

Agneta Fransson (Norway), presents in parallel session pm 12 June

The formation and transport of corrosive waters in the Arctic—does it matter? Ocean acidification is thought to increase most in the cold regions of the ocean including the Sub-Arctic and Arctic. What do the observations tell us? What are the impacts of OA on Sub-Arctic and Arctic species and what effect will this have on their ecosystems?

13:30 **Agneta Fransson**

Sea-ice carbonate chemistry and influence of biogeochemical processes and glacial water in Arctic fjords

13:50 **Elizabeth Jones, Adam Ulfsbo, Michiel Rutgers van der Loeff, Hein de Baar, and Leif Anderson**

Arctic Ocean CO₂-carbonate chemistry: dynamics in the marginal ice zone and deep water acidification

14:10 **Darren Pilcher, Samantha Siedlecki, Albert Hermann, Kenneth Coyle, Jeremy Mathis, and Wiley Evans**

Simulated impact of glacial runoff on CO₂ uptake and aragonite saturation state in the Coastal Gulf of Alaska

14:30 **Kumiko Azetsu-Scott, Stephen Punshon, and Lorenza Raimondi**

Long-term trend of pH and CaCO₃ saturation state in the deep convection region; the Labrador Sea

14:50 **Dag Slagstad and Ingrid Ellingsen**

Formation, distribution and transport of corrosive (low pH) waters in the Arctic. A model study

15:10 **Morten D. Skogen, Solfrid S. Hjøllo and Jerry Tjiputra**

Projected changes in ocean acidification in the Arctic: effects of ongoing regional modelling

15:30 Coffee/Tea Break

16:00 **Jeffrey Runge, David Fields, Cameron Thompson, Caroline Durif, Steven Shema, Reidun Bjelland, Anne Berit Skiftesvik, and Howard Browman**

Interaction between temperature and pH on growth and respiration of the planktonic copepod, Calanus finmarchicus

16:20 **Siri E. Ofstad, Kasia Zamelczyk, Tine L. Rasmussen, Melissa Chierici, Angeta Fransson**

Ocean acidification in the Fram Strait-Barents Sea region – effects on modern planktic foraminifera

16:40 **Laurie Hofmann, Kathryn Schoenrock, and Dirk de Beer**

Arctic coralline algae maintain elevated surface pH and carbonate ion concentrations

17:00 **Jason M. Hall-Spencer and S. Agostini**

Natural gradients in carbonate chemistry tell us what to expect

17:20 **Brooks A. Kaiser and Lars Ravn-Jonsen**

When and how to worry about Ocean Acidification: Greenland shrimp case

17:40 Discussion

18:00 End of Session

June 13 – Plenary Session

Session Chairs: Ben Fitzhugh (USA), George Hunt (USA), Olafur Astthorsson (Iceland) and Ken Drinkwater (Norway)

08:30 **Poul Holm (Invited – S1)**

The North Atlantic fish revolution, 1500-1700

09:00 **Stein Kaartvedt (Invited – S9)**

Light, climate change and Arctic pelagic ecosystems

09:30 **Rubao Ji (Invited – S5)**

Calanus on the edge: biogeographic responses to climate change

10:00 **Jason Link (Invited - S8)**

Practical Fisheries Management in the midst of Climate Change

10:30 Coffee/Tea Break

S1 - Paleo-Ecology

Tuesday, 13 June

Room: Tromsøsal 3

Session Chairs: Ben Fitzhugh (USA); Lester Lembke-Jene (Germany)

Keynote Speakers:

Dr. Poul Holm (Ireland), presents in plenary am 13 June

Dr. James Woollett (Canada), presents in plenary am 15 June

This session spans paleoclimatic—paleoceanographic-paleoecological-archaeological/human history dimensions of subarctic and arctic marine ecosystems. Presentations are on collaborative, integrative and synthetic work that explores systemic linkages between climate change, ecological change and human/societal change. This includes changes associated with the end of the last glaciation, as well as how humans have altered marine ecosystem from the earliest times up to recent centuries.

- 11:00 **Dmitry V. Divine, A. Miettinen, K. Husum, and N. Koc**
Hydrographic changes in the subpolar North Atlantic at the Medieval Climate Anomaly (MCA) to Little Ice Age (LIA) transition inferred from fossil diatoms
- 11:20 **Diana Krawczyk, Matthias Moros, Jeremy Lloyd, Jacob Høyer, Arto Miettinen, Andrzej Witkowski, and Antoon Kuijpers**
Sea ice and sea surface temperature changes off West Greenland over the past 11.000 years using the first regional diatom dataset
- 11:40 **Guðbjörg Ásta Ólafsdóttir, William P Patterson, Gróa Pétursdóttir, Hlynur Bárðarson, Snæbjörn Pálsson, and Ragnar Edvardsson**
Growth and trophic level of Northeast Atlantic cod in the last millenium
- 12:00 **Casey Clark, Anne de Vernal, Lara Horstmann, and Nicole Misarti**
Reconstructing 2,000 years of walrus foraging in a changing Arctic climate
- 12:20 **Charlotte Damm, Marianne Skandfer, Peter Jordan, Erlend Kirkeng Jørgensen, and Kenneth Webb Vollan**
Prehistoric demographic fluctuation in Arctic Norway: correlations to climate change and cultural processes
- 12:40 Lunch (at the Hotel Restaurant covered by registration fee)

- 13:30 **Kana Nagashima**
Multi-decadal to millennial scale climate changes during the Holocene
- 13:50 **Lester Lembke-Jene, Ralf Tiedemann, Lars Max, Dirk Nuernberg, Xun Gong, Jianjun Zou, Limin Hu, Gesine Mollenhauer, and Gerrit Lohmann**
Holocene upper ocean temperature development in the sub-polar North Pacific: spatial patterns, heterogeneities vs. common trends
- 14:10 **Nicole Misarti, Lester Lembke-Jene, Bruce Finney, Jason Addison, Naomi Harada, Mark Shapely, Ben Fitzhugh, and William Brown**
Exploring the relationship between proxy-data of ocean productivity and sockeye salmon in southwestern Alaska from the Mid to Late Holocene
- 14:30 **Phoebe Chan, J. Halfar, W. Adey, S. Hetzinger, T. Zack, G.W.K. Moore, U.G. Wortmann, B. Williams, and A. Hou**
Multicentennial record of Labrador Sea primary productivity and sea-ice variability archived in coralline algal Ba/Ca
- 14:50 **Ben Fitzhugh, William Brown, Nicole Misarti, Katsunori Takase, and Andrew Tremayne**
Integrating human paleodemography and ecology around the North Pacific Rim
- 15:10 Discussion
- 15:30 End of Session

S9 - General Open Session

Tuesday, 13 June

Room: Tromsøsal 2

Session Chairs: George Hunt (USA), Padmini Dalpadado (Norway), Yutaka Watanuki (Japan),

Keynote Speaker: Dr. Stein Kaartvedt (Norway) presents in plenary early am 13 June

This session includes contributed papers whose subject material cover topics of interest in the Subarctic and Arctic that do not fit within the topics of the other sessions.

- 11:00 **Haakon Hop, Philipp Assmy, Slawek Kwasniewski, Marta Gluchowska, Jozef Wiktor, and Anette Wold**
Exploring ecosystem dynamics from the annual pelagic survey in Kongsfjorden in summer
- 11:20 **Emmelie Åström, Arunima Sen, Michael L. Carroll, William G. Ambrose Jr., and JoLynn Carroll**
Methane release at underwater mounds in the Barents Sea and its impact on Arctic macro-benthic faunal communities
- 11:40 **Natalia Llopis Monferrer and Benjamin Planque**
Why do some redfish grow big and others don't?
- 12:00 **Georg Skaret, Johanna Fall, Per Fauchald, Øyvind Fiksen, Harald Gjøsæter, Edda Johannesen, Geir Odd Johansen, and Espen Johnsen**
In situ study of the functional response of cod to capelin using broadband acoustics and trawl sampling
- 12:20 **Geir Ottersen and Stein Sandven**
INTAROS - Integrated Arctic Observation System - a new EU Horizon 2020 Research and Innovation project
- 12:40 Lunch (at the Hotel Restaurant covered by registration fee)
- 13:30 **Brenda L. Norcross and Brenda A. Holladay**
Characteristics of pelagic and demersal fish communities of the US Beaufort Sea

- 13:50 **Fran Mowbray, Padmini Dalpadado, Harald Gjøsæter, Pierre Pepin, Bjarte Bogstad, Andrey Dolgov, and Irina Prokopchuk**
Overlap in the distribution and diet of capelin (Mallotus villosus) and Polar cod (Boreogadus saida), as related to environmental conditions in the boreal ecosystems of the Newfoundland Shelf and Barents Sea
- 14:10 **Minkyung Bang, Sukyung Kang, Suam Kim, and Chan Joo Jang**
Changes in biological characteristics of walleye pollock associated with biomass fluctuation in the East Sea during the late 20th century
- 14:30 **Hwa Hyun Lee and Suam Kim**
Changes in specific gravity of larval Gadoid fish during their development
- 14:50 **Yutaka Watanuki and Jean-Baptiste Thiebot**
Are myctophid fish important food for seabirds?
- 15:10 **George L. Hunt, Jr., Martin Renner, Lisa Eisner, Kathy Kuletz, Sigrid Salo, Patrick Ressler, Jarrod A. Santora, and Carol Ladd**
Cross-shelf distributions and abundances of seabirds reflect prey distributions and abundances related to the timing of sea-ice retreat in the southeastern Bering Sea
- 15:30 End of Session

S5 - Subarctic and Arctic Marine Ecosystems under Climate Change

Tuesday, 13 June

Room: Tromsøsal 1

Session Chairs: Olafur Astthorsson (Iceland) and Rubao Ji (USA)

Keynote Speaker: Dr. Rubao Ji (USA) presents in plenary am 13 June

This session will focus on what will happen under future climate change in terms of the atmospheric climate, oceanography, ecology, fish, fisheries and human institutions in the Subarctic and Arctic regions. What is the uncertainty in these projections? What will help to improve the projections? Are past observations a key to the future?

11:00 **Phil Wallhead, Richard Bellerby, Anna Silyakova, Dag Slagstad, and Alexander Polukhin**

Bottom water acidification and warming on the Eurasian Arctic Shelves: Dynamical downscaling projections

11:20 **Koji Sugie, Amane Fujiwara, Sohiko Kameyama, Shigeto Nishino, Naomi Harada**
Effects of temperature, CO₂, and salinity on the dynamics of phytoplankton communities in the western Arctic Ocean

11:40 **Marit Reigstad, Lena Seuthe, Ingrid Ellingsen, Maria Lund Paulsen, Carlos Duarte, Elisabeth Halvorsen, Peter Lavrentjev, Kalle Olli, Patricia Matrai, Achim Randelhoff, Marina Sanz-Martin, Dag Slagstad, Camilla Svensen, Jean-Eric Tremblay, Maria Vernet, and Josef Wiktor**
Bloom stage characteristics and impact on future productivity in an Atlantic-influenced Arctic marine ecosystem

12:00 **Philipp Assmy, Mar Fernández-Méndez, Lasse Mork Olsen, Hanna M. Kauko, Pedro Duarte, Anette Wold, Haakon Hop, Christopher J. Mundy, Amelie Meyer, Achim Randelhoff, Alexey K. Pavlov, Anja Rösel, Polona Itkin, Harald Steen and Mats A. Granskog**
Algal blooms under the new Arctic ice regime

12:20 **Laura Castro de la Guardia, Mariona Claret, Xianmin Hu, Paul G. Myers, Eric Galbraith**
Modelling the response of phytoplankton to storms in the Arctic and Subarctic Oceans

12:40 Lunch (at the Hotel Restaurant covered by registration fee)

- 13:30 **Eiji Watanabe**
Decadal variations in ice algal productivity simulated by a pan-Arctic ice-ocean ecosystem model
- 13:50 **Ingrid Ellingsen and Dag Slagstad**
Primary production for Nordic and Arctic Seas: future projections and model uncertainties
- 14:10 **Morten D. Skogen, Solfrid S. Hjøllo, and Phil Wallhead**
Projections of primary and secondary production in the Barents Sea in a future climate
- 14:30 **Kristina Øie Kvile**
Using past Calanus data to understand future climate responses
- 14:50 **Raul Primicerio, Michaela Aschan, Magnus Aune, Marie-Anne Blanchet, Padmini Dalpadado, Andrey Dolgov, Elena Eriksen, Maria Fossheim, Andre Frainer, Lis Lindal Jørgensen, Susanne Kortsch, Ulf Lindstrøm, Mette Skern-Mauritzen, Paul Renaud, and Øystein Varpe**
Climate change impact on Barents Sea ecosystem functioning and vulnerability
- 15:10 Coffee/Tea Break
- 15:30 **Susanne Kortsch, Raul Primicerio, F. Beuchel, Bodil Bluhm, Jørgen Berge, C. Ballantine, A. Keck, and B. Gulliksen**
Functional changes in arctic rocky-bottom benthos following a climate-driven regime shift
- 15:50 **Øystein Varpe, Tom J. Langbehn, Malin Daase, and Trond Kristiansen**
Sea ice extent and fish distributions: a fish-eye view on the new Arctic lightscape
- 16:10 **Andrey Dolgov**
Arctic fish communities or fish communities in the Arctic?
- 16:30 **Ann Eileen Lennert and Anders Anker Bjørk**
Qaqortanik Qilalugarniarneq - the hunt of the white whale. Bridging knowledge of the Greenland warming event 1920-1930 and its environmental impacts on a West Greenlandic fjord
- 16:50 Discussion
- 17:10 End of Session

S4 - Shifting habitats, persistent hot spots, and the distribution of benthos, plankton, fish, seabirds and marine mammals - observations, models, mechanisms and effects (Session 2)

Tuesday, 13 June

- 15:30 **Kim Præbel and Shripathi Bhat**
One species two life histories: Does the genomic signatures of adaptation in beach vs offshore spawning capelin reveal evolvability towards a changing Arctic environment?
- 15:50 **Leonie Färber, Joël Durant, Yngvild Vindenes, and Øystein Langangen**
Benefit of long distance migration for Barents Sea cod
- 16:10 **Jordan T. Watson, Alan C. Haynie, and Franz J. Mueter**
Heterogeneity in vessel resiliency to climate variability in the Bering Sea pollock fishery
- 16:30 **James R. Lovvorn, Jacqueline M. Grebmeier, and Lee W. Cooper**
Projecting shifts in feeding hot spots: modeling linkages from advection of phytodetritus through benthic food webs to mobile top predators
- 16:50 **Hisatomo Waga, Toru Hirawake, and Jacqueline M. Grebmeier**
Species invasion and diversity in benthic macrofaunal communities in the Pacific Arctic
- 17:10 **Elizabeth Siddon, Kirstin Holsman, Alex Andrews, Ed Farley, Ron Heintz, and Jim Ianelli**
Spatial overlap explains recruitment variability in the eastern Bering Sea): Empirical observations of Walleye pollock and foraging landscapes
- 17:30 **Ken Drinkwater and Trond Kristiansen**
The ecosystem response to the late 20th Century cold period in the North Atlantic
- 17:50 End of Session

**S4 - Shifting habitats, persistent hot spots, and the distribution of benthos, plankton, fish, seabirds and marine mammals - observations, models, mechanisms and effects
(Session 3)**

Tuesday, 13 June

- 16:10 **Johanna Myrseth Aarflot, Hein Rune Skjoldal, Padmini Dalpadado, and Mette Skern-Mauritzen**
Contribution of Calanus spp. to the mesozooplankton biomass in the Barents Sea
- 16:30 **Franz J. Mueter, Michael F. Sigler, Bodil A. Bluhm, Morgan S. Busby, Edward D. Cokelet, Seth L. Danielson, Alex De Robertis, Lisa B. Eisner, Edward V. Farley, Katrin Iken, Kathy J. Kuletz, Robert R. Lauth, Elizabeth A. Logerwell, and Alexei I. Pinchuk**
Summer zoogeography of the northern Bering and Chukchi seas
- 16:50 **Rebecca E. Holt, Joël M. Durant, Geir Ottersen, and Bjarte Bogstad**
Cod diet and food web dynamics: What can we learn from the past?
- 17:10 **Kjersti Opstad Strand, Svein Sundby, Jon Albretsen, and Frode Vikebø**
May Northeast Arctic cod offspring end up at Greenland shelves?
- 17:30 **Øystein Langangen, Leonie Färber, Leif Chr. Stige, Florian K. Diekert, Michael Matschiner, Julia M. I. Barth, Bastiaan Star, Nils Chr. Stenseth, Sissel Jentoft and Joël M. Durant**
Ticket to spawn: combining economic and genetic data to evaluate the role of climate and harvesting on temporal shifts in spawning location
- 17:50 End of Session

June 14 – Plenary Session

Session Chairs: Naomi Harada (Japan), Melissa Chierici (Norway), Samuel Rastrick (Norway)

08:30 **Ichiro Yasuda, Jun Nishioka and Takahiro Tanaka (Invited – S2)**

Vertical mixing in the subarctic North Pacific and impact on biogeochemistry and climate

09:00 **Miriam Doyle, Ken Coyle, Suzanne Strom, Al Hermann, Carol Ladd, and Ann Matarese (Invited – S3)**

Early life history phenology among Gulf of Alaska fish species: strategies, synchronies, and sensitivities

09:30 **Raymond John Bannister (Invited – S6)**

The responses of sessile deep-water filter feeders to single and multiple anthropogenic stressors

10:00 Coffee/Tea Break

S2 - Advection and mixing and their ecosystem impacts

Wednesday, 14 June

Room: Tromsøsal 1

Session Chairs: Naomi Harada (Japan), Jinyoung Jung (Korea), and Paul Myers (Canada)

Keynote Speaker:

Prof. Ichiro Yasuda (Japan) presents in plenary am 14 June

Dr. Ryan Rykaczewsk (USA) presents on am 15 June

Advection and mixing strongly influence marine ecosystems through their hydrography and nutrients to marine mammals and seabirds. They play important roles in terms of the distribution and concentrations of freshwater, sea ice, nutrients, primary production, zooplankton and some fish species. The effects on prey species in turn affect other fish species, marine mammals and seabirds, thereby influencing physical and ecological boundaries.

10:30 **Osamu Seki, Naomi Harada, Koza Takahashi, Hiroji Ohnishi, and Makio Honda**

Long term change in phytoplankton ecosystem in response to decadal scale climate oscillations at central subarctic Pacific and Bering Sea

10:50 **Toru Hirawake, Issei Nakagawa, and Jun Nishioka**

Distribution of the Anadyr Water near the Gulf of Anadyr and the Bering Strait

11:10 **Jinyoung Jung, Sun-Yong Ha, Jun-Oh Min, Min-Sub Kim, Eun Jin Yang, Kyung-Hoon Shin, and Sung-Ho Kang**

Dynamics of dissolved and particulate organic carbon in the Chukchi Sea

11:30 **Takuhei Shiozaki, Amane Fujiwara, Minoru Ijichi, Naomi Harada, Shigeto Nishino, Shinro Nishi, Toshi Nagata, and Koji Hamasaki**

Cluster III nifH-harboring microbes dominated diazotroph communities in the Chukchi Sea (western Arctic Ocean)

11:50 **Hyoung Sul La, Eunho Kim, WuJu Son, Eun Jin Yang, Kyoung-Ho Cho, Jinyoung Jung and Sung-Ho Kang**

Spatial patterns in zooplankton community response to various habitats in the western Arctic Ocean during summer

12:10 Lunch (at the Hotel Restaurant covered by registration fee)

- 13:30 **Paul Wassmann, Dag Slagstad, and Ingrid Ellingsen**
Advection domains in the Arctic Ocean
- 13:50 **Vidar S. Lien, Øystein Skagseth, Pawel Schlichtholz, Frode B. Vikebø, Hein Rune Skjoldal, and Elena Eriksen**
Wind-driven variability of advection and sea-ice cover in the Barents Sea and some ecosystem impacts
- 14:10 **Sünnje L. Basedow, Arild Sundfjord, Elisabeth Halvorsen, Wilken-Jon von Appen, Slawomir Kwasniewski, and Marit Reigstad**
Seasonal variation in advection of zooplankton into the Arctic Ocean through Fram Strait
- 14:30 **Steingrímur Jónsson, Héðinn Valdimarsson, and Andreas Macrander**
Variations in advection and mixing of water to the north Icelandic shelf and impacts on the ecosystem
- 14:50 **Marta Gluchowska, Wojciech Walkusz, Emilia Trudnowska, Anna Olszewska, Mateusz Ormanczyk, Anette Wold, Haakon Hop, and Slawomir Kwasniewski**
Functional traits of zooplankton in Arctic fjords: spatial/temporal patterns and role of Atlantic water advection
- 15:10 **Hjálmar Hátún, Inga Kristiansen, Eilif Gaard and Jan A. Jacobsen and Sigrún Jónasdóttir**
*Influence of the East Icelandic Current on population dynamics of *Calanus finmarchicus* and *Calanus hyperboreus* in the south-western Norwegian Sea*
- 15:30 Coffee/Tea Break
- 15:50 **Giovanni Romagnoni, Kristina Øie Kvile, Knut-Frode Dagestad, Øystein Langangen, and Trond Kristiansen**
Sensitivity of North Sea cod larvae transport to ocean model resolution and inclusion of vertical behaviour
- 16:10 **Øystein Skagseth, Aril Slotte, Erling Kåre Stenevik and Richard Nash**
*Variability of the Norwegian Coastal Current and recruitment of Norwegian Spring Spawning Herring (*Clupea harengus* L.)*
- 16:30 **Peter Winsor, Eddy Carmack, and William Williams**
The contiguous Riverine Coastal Domain
- 16:50 **Jean-Éric Tremblay, Pierre Coupel, Igor Yashayev and Phil Yeats**
The nutrient balance of waters bridging the North Pacific and Western North Atlantic

17:10 **Jinping Zhao and Ken Drinkwater**

Latent heat dominated air-sea coupling in the Nordic Seas associated with the Arctic Oscillation

17:30 Discussion

17:50 End of Session

S3 - Timing/phenology and match-mismatch: are they critical issues?

Wednesday, 14 June

Room: Tromsøsal 2

Session Chairs: Franz Mueter (USA), Jean-Eric Tremblay (Canada)

Keynote Speaker:

Dr. Miriam Doyle (USA), presents in plenary early am 14 June

The match or mismatch between the timing of primary production, the emergence of zooplankton, hatching of fish larvae, and feeding migrations of upper trophic level predators has been invoked as a critical factor in determining successful feeding and the success or failure of year classes. What is the observational evidence for the importance of timing in Sub-Arctic and Arctic ecosystems? What are the mechanisms that lead to a match or mismatch between consumers and producers or between predators and their prey?

- 10:30 **César Fuentes-Yaco, Pierre Pepin, Marc Ringuette, Fran Mowbray, Alejandro Buren, Carla Caverhill, Emmanuel Devred and Yongsheng Wu**
Influence of environmental variability on Calanus finmarchicus abundance in a Subarctic ecosystem: a remotely-sensed approach
- 10:50 **Joël M. Durant and Øystein Langangen**
Barents Sea cod larvae survival and match-mismatch
- 11:10 **Mathieu Ardyna, Marcel Babin, Michel Gosselin, and Jean-Éric Tremblay**
Phytoplankton phenology in a changing Arctic Ocean
- 11:30 **Christian Marchese, Camille Albouy, Jean-Éric Tremblay, Dany Dumont, Fabrizio D'Ortenzio, Steve Vissault, and Simon Bélanger**
Changes in phytoplankton bloom phenology over the North Water (NOW) polynya: a response to changing environmental conditions
- 11:50 **Sofia A Ferreira and Neil Banas**
Linking phenology and productivity to Calanus copepods across the Northeast Pacific through satellite ocean colour
- 12:10 Lunch (at the Hotel Restaurant covered by registration fee)

- 13:30 **Kanchana Bandara, Øystein Varpe, and Ketil Eiane**
High-resolution modeling of the vertical migrations of Arctic Calanus spp.
- 13:50 **Jeffrey Runge, Nicholas Record, Rubao Ji, Zhixuan Feng, and Cameron Thompson**
Interplay between zooplankton life history, advection and timing of the winter-spring bloom as a mechanism controlling spring-summer production at the edge of the subarctic North Atlantic biome
- 14:10 **Benjamin Laurel, Louise Copeman, and Brittany Koenker**
Temperature sensitivity of Arctic and Sub-Arctic gadids to match-mismatch scenarios
- 14:30 **Marine Cusa, Jørgen Berge, and Øystein Varpe**
Redefining the classical dietary niche concept may help identify temporal feeding specialization – a case study on polar cod (Boreogadus saida)
- 14:50 Discussion
- 15:10 End of Session

S6 - Multiple Stressors

Wednesday, 14 June

Room: Tromsøsal 3

Co-Chairs: Samuel Rastrick (Norway) and Mariano Koen-Alonso (Canada)

Keynote Speakers:

Dr. Howard Browman (Norway) presents in plenary early am 14 June

Dr. Raymond Bannister (Norway) presents in parallel session late am 14 June

Arctic and Sub-Arctic ecosystems are being affected by a multitude of stressors, including climate change, ocean acidification, invasive species, fishing, oil and gas exploration and extraction, mineral extractions, transportation, etc. In this session, presentations examine the combined effects of two or more stressors.

10:30 **Mariano Koen-Alonso, Elena Eriksen, Pierre Pepin, Ulf Lindstrom, Garry Stenson, Paul Renaud, Fran Mowbray, Raul Primicerio, Alida Bundy, Torstein Pedersen, Jamie Tam, and Nina Mikkelsen**

Comparative analysis of the structure and trends in marine communities of the Newfoundland-Labrador Shelves and Barents Sea ecosystems

10:50 **Lis Lindal Jørgensen, Raul Primicerio, Maria Fossheim, T. Thangstad, Randi Ingvaldsen, and N. Anisimova**

Effects of multiple stressors on the benthic ecosystem in the Barents Sea

11:10 **Marjorie L. Brooks, Jessica L. Hallman Behnke, Eric M. Anderson, and James R. Lovvorn**

Silent multiple stressors: Sublethal signals from the body condition of declining surf and white-winged scoter populations

11:30 **Torstein Pedersen, N. Mikkelsen, U. Lindstrøm, Paul E. Renaud, H. Blanchet, Georg Skaret, Ingrid H. Ellingsen, Lis Lindal Jørgensen, M-A. Blanchet, L. Morissette and C. Hvingel**

Combined effects of changes in fishery exploitation, primary production and snow crab invasion on the Barents Sea ecosystem

11:50 **Clara J. M. Hoppe, Klara Wolf, Nina Schuback, Philippe D. Tortell, Björn Rost**

Climate change resistance – multiple stressors do not alter Arctic primary production

12:10 Lunch (at the Hotel Restaurant covered by registration fee)

- 13:30 **Samuel P.S. Rastrick, Jiang Zengjie, Helen E Graham, Victoria Collier, Cathinka Krogness, Nia Whiteley, Tore Strohmeier, and Øivind Strand**
Can food limitation increase resilience to elevated pCO₂ and temperature?
- 13:50 **Elvar H. Hallfredsson and Raul Primicerio**
Deep-sea fish communities at the eastern slope of the Norwegian Sea – environmental gradients and vulnerability to multiple stressors
- 14:10 **Leif Chr. Stige, Øystein Langangen, Natalia A. Yaragina, Nils Chr. Stenseth, and Geir Ottersen**
Effect of a fish stock's demographic structure on offspring exposure to possible oil spills
- 14:30 Discussion
- 14:50 End of Session

S4 - Shifting habitats, persistent hot spots, and the distribution of benthos, plankton, fish, seabirds and marine mammals - observations, models, mechanisms and effects (Session 4)

Wednesday, 14 June

15:30 **Andrey Dolgov**

Habitat conditions of fish species as factors of their distribution shift in Arctic parts of the Barents and Kara Seas

15:50 **Carin J. Ashjian, Stephen R. Okkonen, Robert G. Campbell, and Philip Alatalo**

Formation and persistence of a bowhead whale feeding hotspot (krill trap) near Utqiagvik/Barrow Alaska

16:10 **Ann Eileen Lennert and Geatan Richard**

At the cutting edge of the future: unravelling depredation, behaviour and movement of killer whales in the act of flexible management regimes in Arctic Greenland

16:30 **Tore Haug and Garry Stenson**

A comparison of key marine mammals in the Northeast and Northwest Atlantic

16:50 **Bungo Nishizawa, Naoya Kanna, Yoshihiko Ohashi, Daiki Sakakibara, Izumi Asaji, Yoshiyuki Abe, Atsushi Yamaguchi, Shin Sugiyama, and Yutaka Watanuki**

Contrasting communities of seabirds in subglacial meltwater plume and oceanic water in Bowdoin Fjord, northwestern Greenland

17:10 End of Session

June 15 - Plenary

- 09:00 **James Woollett, Najat Bhiry, Yann Foury, and Natasha Roy (Invited – S1)**
Regional and local scale shifts of Labrador's coastal sea ice platform: ramifications for seal distribution and Inuit winter hunting strategies over the last 500 years
- 09:30 **Ryan R. Rykaczewski, Jasmin G. John, Charles A. Stock, and John P. Dunne (Invited – S2)**
Variability in the transport and latitude of the North Pacific Current: consequences for northeastern Pacific ecosystems
- 10:00 Coffee/Tea Break
- 10:30 Workshop Summaries (15 minutes per workshop)
- 11:30 Student Awards
- 12:00 Lunch (at the Hotel Restaurant covered by registration fee)
- 14:00 Music by Oded Ben-Horin and his band “Science Fair”
(Back by popular demand after their performance at the 2nd International ESSAS OSM in Seattle in 2011)
- 14:30 Wrap-Up Talk
Franz Mueter
Moving in, out, and across Arctic and Subarctic Marine Ecosystems: Where do we go from here?
- 15:00 Closing
- 15:15 End of the Meeting