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Arctic Sea Ice Prediction Stakeholders Workshop

Event: The Arctic Frontiers Conference, Tromsø, Norway

Date: January 22, 2018

Time: 15:00 - 19:00

Venue: Radisson Blu Hotel (Room - Sydspissen)

Background

Increasing uncertainty about future sea ice conditions presents a distinct challenge to industry, policymakers, and planners responsible for economic, safety, and risk mitigation decisions. The ability to accurately forecast the extent and duration of Arctic sea ice on different timescales provides significant implications for the operation of wide ranging Arctic maritime activities.

Current Status

The Arctic sea ice prediction community has advanced rapidly in the past decade with many new sea ice forecast products and services that are targeted for different user groups. However, it is still unclear how well end users are able to utilize these products and services into their planning. There is a need for better engagement with a broad range of Arctic stakeholders and a need to tailor new products and services to end user-specific requirements.

Workshop Goals

This workshop will bring together sea ice stakeholders and forecasters to:

- 1) Assess the value of forecasts by the user community.
- 2) Determine if and how ice forecasts are currently being used in decision making.
- 3) Communicate the relevant metrics needed by various stakeholders.
- 4) Identify where improvements in sea ice forecasts would help stakeholders make decisions.
- 5) Communicate the limits and opportunities of current forecasting systems.

Outcome

A stakeholder-targeted guidance document or roadmap, where sea ice forecasters can draw on the expertise of users (e.g. policy makers, planners, community leaders) to better understand how different stakeholder groups factor sea ice forecast information into their decision-making processes. The outcomes will result in an article intended for publication in a journal such as *Eos* (Earth & Space Science News)



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Workshop Agenda

15:00 - 17:00 Overview (2 hours):

15:00 - 15:05 Julienne Stroeve (UCL) - Introduction to workshop (objectives and agenda)

15:05 - 15:10 Uma Bhatt (Univ. Alaska): Sea Ice Prediction Network (SIPN) and motivation for the workshop

15:10 - 15:45 Insight to Capabilities of Sea-ice Forecasting Products

Ed Blockley (UK Met Office): Presentation on current capabilities of short-term forecasts

Rick Allard (Naval Research Laboratory): Short-term and seasonal forecasts

Wieslaw Maslowski (Naval Postgraduate research lab): Seasonal forecasts

Ingrid H. Onarheim (U Bergen/Bjerknes Centre): Seasonal to decadal forecasts

15:45 - 16:00 Coffee Break

16:00 - 16:50 User and Stakeholder Needs from an Operations and Management Perspective

16:00 - 16:30 *Sea-ice Needs and Practices for the Operational Activities and Industries*

Kelvin Murray (EYOS): User Needs from the Polar Tourism Industry

Tor-Arne Vaskinn (Fiskbåt): User Needs from the Fishing Industry

Lasse Rabenstein (Drift & Noise): Research and cruise industry needs

16:30 - 16:50 *Sea-ice Needs for Short and Long-term Planning and Business Development*

Kenneth Johannessen Eik (Metocean & Arctic design, Statoil)

Morten Mejlænder-Larsen (Arctic Operation, DNV GL)

Grab a coffee and find your group!!

17:00 - 17:45 Identify Stakeholder needs Part. I (45 min)

Session 1 - Breakout Group Exercise:

- Divide into predefined breakout groups (see list of breakout groups at the end of this document) of “operators” and “managers” moderated by the selected participants from the science community.
 1. Round of introduction
 2. Use the following questions to provide feedback on your user needs (cards will be provided which can be pinned to a board)
 3. Cluster answers (bring similar needs together)
 4. Prioritise needs with feedback from the group (voting with sticky points)

Topics for breakout groups:

Type of forecast: short-term, seasonal, longer-term

1. What time of year are you most active in sea ice? In what area(s)

Sea ice metrics needed, and at what temporal and spatial resolution

1. What sea ice products are being used?

What sea ice products are needed for route pre-planning?

What is needed for en route planning?

2. What is the minimum and maximum spatial resolution needed for your planning and activities?

3. How useful are probability maps for portraying results from ensemble forecasts?



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How forecasts are being used

1. How do you use operational sea ice products (e.g. ice charts, automated sea ice products, etc...)?
2. How do you use sea ice predictions?
3. How are short-term and seasonal forecasts used for ice management planning?
4. How are short-term and seasonal forecasts used for tactical navigation?
5. How reliable would a forecast have to be in order to be useful or make an impact in your planning? And at what spatial precision (e.g. how many nautical miles can there be a sea ice displacement in the forecast?)
6. Are there any in-house techniques that you use to make informed decisions?

17:45 - 18:00 Coffee break

18:00 - 19:00 Identify Stakeholder needs Part. II (60 min)

Session 2 - Round-up discussions and determine way forward:

- Rapporteurs from breakout groups present the results: what are the needs and how can these be addressed?
- Plenary: what is the way forward? - Keld Qvistgaard/Penelope Wagner
 - Develop strategy on continued engagement
 - Establish possible cooperation opportunities

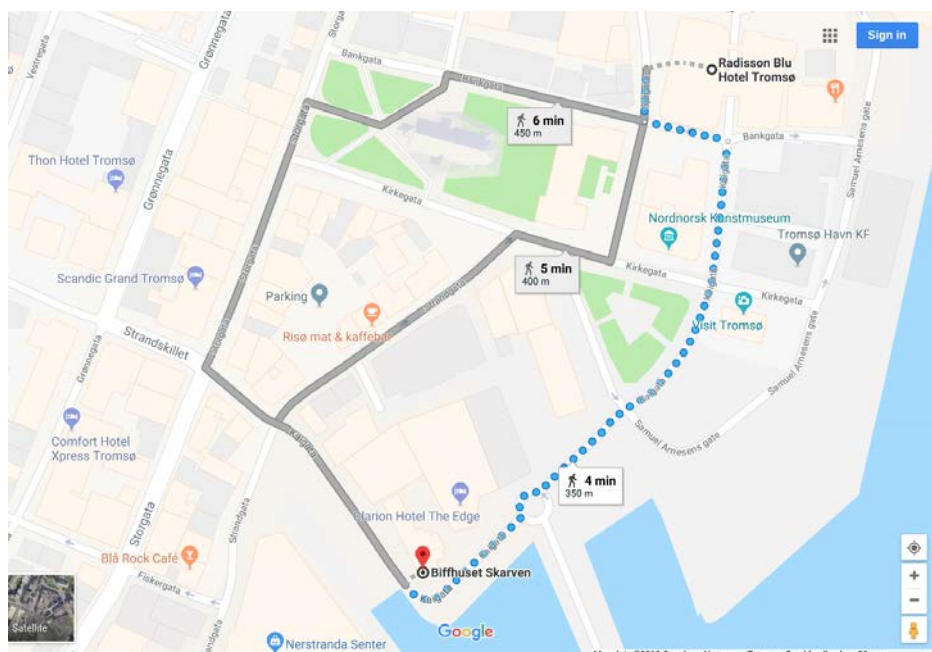
Wrap up – Penelope Wagner

19:00 - Social Event

The social event is sponsored by the Norwegian Meteorological Institute and ARCUS. Drink tickets and light snacks will be provided.

Location: Skarven, Strandtorget 1, 9008 Tromsø

4 min. walk from the Radisson Blu





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List of Breakout Groups

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Room	Sydspissen	Sydspissen	Sydspissen	Smørtoget	Smørtoget	Smørtoget
Moderator	Penelope Wagner	Lars Henrik Smedsrud	Keld Qvistgaard	Julienne Stroeve	Laurent Bertino	Sveinung Løset
Rapporteur	Malte Müller	Morven Muilwijk	Nicole Biebow	Nick Hughes	Lasse Rabenstein	Rick Allard (TBC)
Note taker	Gwen Hamon	Lawrence Hislop	Kristina Baer	Betsy Turner-Bogren	Sarah Potter	Jon Børre Ørbæk
	Ed Blockley	Signe Aaboe	Frode Dinessen	Rune Graversen	Keguang Wang	Tor-Arne Vaskinn
	Paul Webb	Morten Mejlænder-Larsen	Jelmer Jeuring	Wieslaw Maslowski	Uma Bhatt	Torbjørn Eltoft
	Kirsten Werner	Berill Blair	Gudrun Sylte	Kenneth Johannessen Eik	Joe Metzger	Einar Olason
	Frigg Jørgensen	Maiite Knol	Jason Lee	Mikail Itkin	Ingrid Onarheim	Steinar Paulsen
	Machiel Lamers	Fiona Tummon	Kelvin Murray	Nicolas Fournier	Odd Jarl Borch	Monica Ionita-Scholz
		Øyvind Breivik	Pradeep Bobby	Kjell Stokvik		Helen Wiggins



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List of Participants

Name	Affiliation
Aaboe Signe	MET Norway
Alfthan Bjorn	GRID-A
Allard Rick	Naval Research Laboratory
Baer Kristina	AWI
Bertino Laurent	NERSC / ESA
Bhatt Uma	Univ Alaska
Biebow Nicole	AWI
Blair Berill	Wageningen University
Blockley Ed	Met Office UK
Bobby Pradeep	Memorial University
Borch Odd Jarl	Nord university Business School
Berivik Øyvind	MetNo
Dinessen Frode	MET-Norway
Eik Kenneth	Metocean & Arctic design, Statoil
Eldevik Tor	Bjerknes
Eltoft Torbjørn	CIRFA
Fournier Nicolas	UK Met Office
Graversen Rune	UiT
Hamon Gwen	CLiC
Hislop Lawrence	CLiC
Hughes Nick	Met.no
Ionita-Scholz Monica	Alfred Wegener Institute for Polar and Marine Research
Itkin Mikail	NPI
Jeuring Jelmer	Umeå University
Jørgensen Frigg	AECO
Knol Maiite	UiT
Lamers Machiel	Wageningen University
Lee Jason	G-Marine Service Co., Ltd.
Løset Sveinung	Arctic Marine Technology - NTNU
Maslowski Wieslaw	Naval Postgraduate research lab
Mejlænder-Larsen Morten	Arctic Operation, DNV GL
Metzger Joe	Naval Research Laboratory
Muilwijk Morven	University of Bergen, Bjerknes Centre for Climate Research
Murray Kelvin	EYOS Expeditions
Müller Malte	Met.no
Olason Einar	NERSC
Onarheim Ingrid	Bjerknes
Paulsen Steinar	UiT The Arctic Univeristy og Norway



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Potter Sarah	UiT student
Qvistgaard Keld	Danish Ice Service
Rabenstein Lasse	Director, Drift & Noise
Smedsrud Lars	Uni Bergen
Stokvik Kjell	CHNL Nord university
Stroeve Julienne	UCL / SIPN
Sylte Gudrun	Bjerknes Centre for Climate Research
Tummon Fiona	University of Tromsø
Turner-Bogren Betsy	Arctic Research Consortium of the U.S.
Vaskinn Tor-Arne	Fiskbåt
Wagner Penny	Met.no
Wang Keguang	MET Norway
Webb Paul	SAR controller for Alaska, US Coast Guard
Werner Kirsten	AWI / PPP
Wiggins Helen	Arctic Research Consortium of the US (ARCUS)
Ørbæk Jon Børre	Research Council Norway