



Responsive Ice Services: Innovating Science and Service for a Changing Environment
Provisional Agenda +3

MONDAY, SEPTEMBER 23		
Task Team Meetings – Open to all		
09:00 – 12:00	Task Team Meetings (open to all)	
09:00 – 10:00	• Task Team 1 – ROSE-L (Wolfgang Dierking)	5 th flr, Main Conference Room, Table A
	• Task Team 2 – Iceberg Modelling (Mike Hicks)	3 rd flr, small meeting room
	• Task Team 5 – Ice Analyst/Forecaster Competencies (Scott Weese – replacing Catalin Tita)	2 nd flr meeting room
	• Task Team 4 – Uncertainty (Sean Helfrich)	5 th flr, Main Conference Room, Table B
10:00 – 10:30	Health Break	
10:30 – 11:30	• Task Team 6 – RCC Contributions (John Parker representing Adrienne Tivy)	3 rd flr, small meeting room
	• Task Team 3 – E-Navigation (Jürgen Holfort)	5 th flr, Main Conference Room, Table A
	• Task Team 7 – Arctic Council Interaction (Marianne Thyrring)	2 nd flr meeting room
	• Task Team 8 – Mariner Training (Keld Qvistgaard)	5 th flr, Main Conference Room, Table B

Tours of the Danish Meteorological Institute

DMI has offered to host two tours of the operational ice charting facilities for those IICWG-XX participants that are interested. One tour will be held on Monday September 23. The second tour will be held Friday September 27. The tours are identical and will last about one hour. The tentative agenda for the tour is:

- Welcome, Anne Højer Simonsen, Deputy Director general
- Operational Ice Service, Søren Olufsen, Head of DMI Ice Service
- Ice service perspectives, Matilde Brandt Kreiner, DMI R&D
- Tour of the Ice service

For the Monday Tour: Meet outside DMI Reception at 10:00 am

For the Friday Tour: Meet outside DMI Reception at 03:00 pm

Danish Meteorological Institute
Lyngbyvej 100
2100 Copenhagen Ø
Phone: +45 39 15 75 00

Participants are responsible for their own transportation to and from DMI. DMI is about 8 km from Nordatlantens Brygge. You can take the S-train towards Farum and get off at Ryparken Station. The train runs every 10 minutes. The trip from the Central Station to Ryparken takes about 15 minutes.



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MONDAY, SEPTEMBER 23		
IICWG OPEN MEETING		
All plenary sessions will be held in the 5 th Floor Conference Room		
12:00 – 13:00	Registration	
13:00 – 13:35	Official Meeting Opening	
13:00 – 13:10	<ul style="list-style-type: none"> Co-Chairs' Welcome & Opening Remarks 	Marianne Thyrring (DMI) Tom Cuff (NOAA)
13:10 – 13:20	<ul style="list-style-type: none"> Welcome from the Danish Meteorological Institute 	Dan Jørgensen, Minister for Climate, Energy and Utilities,
13:20 - 13:25	<ul style="list-style-type: none"> Meeting Logistics 	Keld Qvistgaard (DMI)
13:25 – 13:35	<ul style="list-style-type: none"> Participant Introductions 	All - Roundtable
13:35 – 13:35	<ul style="list-style-type: none"> Adoption of Agenda 	Co-Chairs
13:35 – 14:55	Task Team Reports	
13:35 - 13:40	<ul style="list-style-type: none"> Task Team 1 – ROSE-L 	Wolfgang Dierking (AWI)
13:40 – 13:50	<ul style="list-style-type: none"> Task Team 2 – Iceberg Model Modernization 	Mike Hicks (IIP)
13:50 – 14:00	<ul style="list-style-type: none"> Task Team 3 – E-Navigation 	Jürgen Holfort (BSH)
14:00 – 14:25	<ul style="list-style-type: none"> Task Team 4 – Uncertainty <ul style="list-style-type: none"> Presentation - <i>Accuracy and inter-analyst agreement of visually estimated sea ice concentrations in Canadian Ice Service ice charts</i> 	Sean Helfrich (NOAA) Dean Flett (CIS)
14:25 – 14:30	<ul style="list-style-type: none"> Task Team 5 – Ice Analyst/Forecaster Competencies 	Scott Weese (CIS)
14:30 – 14:40	<ul style="list-style-type: none"> Task Team 6 – Regional Climate Centre Contributions 	John Parker (CIS)
14:40 – 14:50	<ul style="list-style-type: none"> Task Team 7 – Arctic Council Interaction 	Marianne Thyrring (DMI)
14:50 – 14:55	<ul style="list-style-type: none"> Task Team 8 –Mariner Training Needs 	Keld Qvistgaard (DMI)
14:55 – 15:00	Report of the Secretariat	
15:00 – 15:15	Poster Introductions (3 x 5 minutes each)	
15:15 – 16:00	Health Break & Poster Session	
16:00 – 16:10	Review of Plenary Action Items	
16:10 – 16:30	Reports from Other Ice Working Groups	
5 min each	<ul style="list-style-type: none"> European Ice Services 	Nick Hughes (MET Norway)
	<ul style="list-style-type: none"> North American Ice Service 	Kevin Berberich (NIC)
	<ul style="list-style-type: none"> IAPB / IPAB 	Bryan Brasher (NIC)
	<ul style="list-style-type: none"> Expert Team on Sea Ice 	Jürgen Holfort (BHS)
16:30 – 16:40	Introduction of Proposed Press Release	
16:40 – 17:00	Feature Presentations	
	<ul style="list-style-type: none"> The History of Nordatlantens Brygge 	Asta Stefansdottir
	<ul style="list-style-type: none"> The Greenland Ice Service First 60 Years 	Marianne Thyrring
17:00 – 19:00	Icebreaker Reception	
	Sponsored by: Danish Shipping Government of Greenland	
	Nordatlantens Brygge	



20th MEETING OF THE INTERNATIONAL ICE CHARTING WORKING GROUP
September 23-27, 2019 – Nordatlantens Brygge, Copenhagen, Denmark



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TUESDAY SEPTEMBER 24		
IICWG OPEN MEETING – User Needs and Improved Ice Charts		
08:30 – 09:00	Registration	
09:00 – 12:00 webcast	Session 1: Actions to Address User Needs Surveys	Keld Qvistgaard & Task Team 8
09:00 – 09:20	<ul style="list-style-type: none"> Results of the 2019 Survey on Mariners' Needs 	Keld Qvistgaard (DMI)
09:20 – 09:40	<ul style="list-style-type: none"> Kepler User Needs Survey 	Nick Hughes (MET Norway)
09:40 – 10:00	<ul style="list-style-type: none"> Reflections on User Surveys 	John Parker (CIS)
10:00 – 10:15	Poster Introductions (3 x 5 minutes each)	Oleg Folomeev Florence Fetterer Pip Bricher
10:15 – 11:00	Health Break & Poster Session	
11:00 – 12:00	<ul style="list-style-type: none"> Panel Discussion: Actions that the IICWG and Ice Services can take in response to user surveys Panelists: Nick Hughes (NIS) Duke Snider (NI) John Parker (CIS) Thomas Bøggild (GPS) Bjorn Kay (MMA) 	Moderator: Keld Qvistgaard
12:00 – 13:00	Lunch	
13:00 – 14:40 webcast	Session 2: In-Situ and Airborne Observations to Support Improved Ice Charting	Wolfgang Dierking
13:00 - 13:20	<ul style="list-style-type: none"> IceWatch / ASPeCT 	Nick Hughes (MET Norway)
13:20 - 13:40	<ul style="list-style-type: none"> INTAROS and Copernicus Arctic In-Situ Data 	Erik Buch (EuroGOOS)
13:40 - 14:00	<ul style="list-style-type: none"> IIP Iceberg Tagging Project 	Kristen Serumgard (IIP)
14:00 - 14:20	<ul style="list-style-type: none"> Planned in-situ, airborne, and satellite measurements during MOSAIC 	Marcus Huntemann (UBremen/AWI)
14:20 - 14:40	<ul style="list-style-type: none"> The RADARSAT Constellation Mission (RCM) - Early Mission Experience and Transition Plan and Status at the Canadian Ice Service 	Dean Flett (CIS)
14:40 – 15:00	Poster Introductions (4 x 5 minutes each)	Thomas Lavergne Helge Tangen Nick Hughes Dean Flett
15:00 – 15:45	Health Break & Poster Session	
15:45 – 17:00 webcast	Panel Discussion: Scalable Charts - User Needs and Technical Challenges with Ice Charts as an Example	Jürgen Holfort (BSH)
	<ul style="list-style-type: none"> Users ranked scalable ice charts a close second in priority for what ice services should focus on. A panel of experts will discuss what Ice Services can do to meet user expectations. <ul style="list-style-type: none"> What do users mean by “scalable ice charts”? What are the challenges to produce them? What can ENCS manufacturers sell? What is worthwhile to do - what can Ice Services deliver? Can we develop a product standard that Ice Services and ENCS manufacturers could use? 	Panelists: Jens Peter Weiss Hartmann (Danish Geodata Agency) Richard Hall (Equinor) Pascale Bourbonnais (Enfotec/Fednav)
17:00	END OF DAY 2	



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WEDNESDAY SEPTEMBER 25		
IICWG OPEN MEETING – Automated Ice Monitoring and Products		
08:30 – 09:00	Registration	
09:00 – 12:15 webcast	Session 3: Automated Detection of Sea Ice and Icebergs	Co-Chairs
09:00-09:20	<ul style="list-style-type: none"> Advances in Iceberg Detection and Analysis 	Mike Hicks / Don Rudnickas (IIP)
09:20-09:40	<ul style="list-style-type: none"> Sea Ice and Iceberg Service Demonstrations at CIRFA 	Thomas Kraemer (CIRFA / UiT)
09:40-10:00	<ul style="list-style-type: none"> New Strategies for Automated Sea Ice Classification at CIRFA 	Johannes Lohse (CIRFA / UiT)
10:00-10:20	<ul style="list-style-type: none"> Improved Possibilities to Observe Sea Ice and Icebergs with Interferometric SAR 	Leif Eriksson (Chalmers)
10:20 – 10:35	Poster Introductions (3 x 5 minutes each)	Lasse Rabenstein Janet Inrieri Natalia Zahvatkina
10:35 – 11:15	Health Break & Poster Session	
11:15-11:35	<ul style="list-style-type: none"> Arctic Sea Ice Thickness Estimation Based on Sentinel-1 SAR Imagery and CryoSat-2 Radar Altimetry 	Juha Karvonen (FMI)
11:35-11:55	<ul style="list-style-type: none"> Copernicus Imaging Microwave Radiometer (CIMR) for Sea Ice 	Rasmus Tonboe (DMI)
11:55-12:15	<ul style="list-style-type: none"> ROSE-L Results 	Wolfgang Dierking (AWI)
12:15 – 13:15	Lunch	
13:15 – 17:00 webcast	Panel Discussion: Incorporating Automated Products into the Operational Production of Ice Information	
13:15 – 17:00 With Health Break at an appropriate time approx. 15:15	<p>Panelists:</p> <ul style="list-style-type: none"> Pierre Bahurel (Mercator Ocean Int'l) Dominique Obaton (Mercator Ocean) Jørgen Buus-Hinkler (DMI) Juha Karvonen (FMI) Frode Dinessen (Met Norway) Andrew Fleming (BAS) Keld Qvistgaard (DMI) Nick Hughes (Met Norway) Mike Hicks (IIP) Sean Helfrich (NOAA) <p>Following opening statements by each of the panelists, there will be a Q&A format with the audience to discuss the challenges of integrating automation into the operational production chain and what the science groups and operational services can do to smooth the transition and achieve the best results for their users. (see Background Paper)</p>	Moderator: Marianne Thyrring
17:00	END OF DAY 3	



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THURSDAY SEPTEMBER 26		
IICWG OPEN MEETING – Working Sessions, Climate Change		
08:30 – 09:00	Registration	
09:00 – 12:00	Working Sessions – existing or new Task Teams meet to address actions and issues identified	
09:00 – 09:30	<ul style="list-style-type: none"> Based on the Monday-Wednesday sessions, the Group will meet in plenary to briefly discuss whether existing tasks should be revised or new tasks identified – this should be a very cursory assessment at this time 	Co-Chairs
09:30 – 12:00 With Health Break at an appropriate time approx. 10:30	<ul style="list-style-type: none"> Task Teams break to meet separately or together as needed 	Task Team Leads
12:00 – 13:00	Lunch	
13:00 – 14:30 webcast	Session 4: Climate Change and the Implications for Ice Services	
13:00-13:20	<ul style="list-style-type: none"> Sea Ice in the Climate System: Incorporating Ice Service Expertise in Climate Projections 	Dr. Ruth Mottram (DMI)
13:20-13:40	<ul style="list-style-type: none"> Ross Sea Melt-out and Changes to Operation Deep Freeze 	Evan Neuwirth (NIC)
13:40-14:00	<ul style="list-style-type: none"> Changing Ice Conditions and Implications for Navigation in the Canadian Arctic 	Scott Weese (CIS)
14:00-14:30	<ul style="list-style-type: none"> Plenary Discussion: How can we bring together various Ice Service initiatives in extended range ice forecasting for improved benefit to our users? 	Scott Weese (CIS)
14:30 – 15:00	Open Meeting Summary and Close	
14:30-14:45	<ul style="list-style-type: none"> Comments on the meeting Suggestions for future meetings 	All
14:45-14:50	<ul style="list-style-type: none"> IICWG XXI Invitation 	Alvaro Scardilli (SHN)
14:50-15:00	<ul style="list-style-type: none"> Final Words & Acknowledgments 	Co-Chairs
15:00 – 15:25	Health Break & Poster Session	
15:25 – 17:30	Technical Tour – Narrated Boat Trip Around Copenhagen Harbours	
	<ul style="list-style-type: none"> Meet outside Nordatlantens Brygge to catch tour boat Boat trip ends at Restaurant SALT for dinner 	
END OF OPEN MEETING		
18:00	Meeting Dinner Hosted by the Danish Meteorological Institute	
		Restaurant SALT Toldbodgade 24-28



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FRIDAY SEPTEMBER 27		
IICWG BUSINESS MEETING		
09:00 – 09:15	Opening Remarks	Co-Chairs
	<ul style="list-style-type: none"> Review / Adoption of Agenda 	
09:15 – 09:55	Task Team Round Table	
5 min each	<ul style="list-style-type: none"> Task Team Leaders report on new developments affecting their tasks Cancel or re-frame tasks 	
09:55 – 10:30	Plenary Discussion on Business Arising	Co-Chairs
	<ul style="list-style-type: none"> Address new issues that have arisen during this meeting or over the past year Decide whether to adjust existing tasks or create new tasks in response 	
10:30 – 11:00	Health Break	
11:00 – 11:30	Plenary Discussion on Business Arising (cont)	
	<ul style="list-style-type: none"> 	
11:30 – 11:45	Approval of Press Release	Secretariat
11:45 – 12:00	Review of Action Items	Secretariat
12:00 – 12:15	Planning for IICWG-XXI	Co-Chairs
	<ul style="list-style-type: none"> Comments on the meeting format / suggestions for future Nominations for IICWG-XXI Organizing Committee 	
12:15 – 12:30	Close of Business Meeting	Co-Chairs
	<ul style="list-style-type: none"> Final words and charge from Co-Chairs 	
12:30 – 13:30	Lunch	
13:30 – 17:00	Task Teams meet separately or together as necessary to finalize work plans for the coming year	Task Team Leads
END OF IICWG-XX		
SATURDAY SEPTEMBER 28		
10:00 – 16:30	Post-Meeting Excursion to Elsinore <i>M/S Maritime Museum of Denmark</i>	



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Posters

1. Florence Fetterer (NSIDC); *Archiving and Promoting Operational Data from NIC and from CIS*
2. Pip Bricher (SOOS) (presented by Florence Fetterer); *[Due South](#) and [SOOSMap](#) (tbc)*
3. Thomas Lavergne (MET Norway); *Climate Data Records of Sea-Ice Variables*
4. Lasse Rabenstein (Drift Noise); *MAP-BORealis Ice Routing Optimization*
5. Janet Intrieri (NOAA); *Sea Ice Forecasting Coupled Model*
6. Helge Tangen (MET Norway); *Arctic Regional Climate Service Network*
7. Natalia Zahvatkina (AARI), Vladimir Smirnov (AARI), Irina Bychkova (AARI); *Old Ice Edge Detection Using SAR Data*
8. Oleg Folomeev (AARI), Tatyana Alekseeva (AARI), Semiyula Yalyshev; *Support of Low Ice Class Vessels on the NSR Eastern Routes During Summer 2019*
9. Nick Hughes (MET Norway); *Current Development Activities in the Ice Service"*
10. Alexander Bobkov, Anna Telegina (SCANEX); *Post-event analysis of the Kara sea navigation 2017-2018: SAR data for monitoring of hazardous ice conditions and situations*
11. Marc DeVos (SAWS); *Ice Activities at the South African Weather Service*
12. Klaus Strübing (BSH Ret); *On the relation between the ice transport in the East Greenland Current and the atmospheric circulation over the Arctic Ocean – a historic review*
13. Adrienne Tivy, L. Eerkes-Medrano and D. Atkinson (presented by Dean Flett); *Understanding and responding to changing sea ice conditions in northern communities: Needs assessment for local ice information and forecasts.*
14. Leif Eriksson (Chalmers); *Improved possibilities to observe sea ice and icebergs with interferometric SAR.*
15. Jennifer Sevajian, Cara Wilson, Sinead Farrell, and Sean Helfrich; *NOAA PolarWatch*



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ACRONYMS

AAD	Australian Antarctic Division	IAATO	International Association of Antarctic Tour Operators
AARI	Arctic and Antarctic Research Institute	IABP	International Arctic Buoy Program
ACECRC	Antarctic Climate and Ecosystems Cooperative Research Centre	IIP	International Ice Patrol
ASF	Alaska Satellite Facility	IMetO	Icelandic Meteorological Office
ASRSC	Applied Science and Research Standing Committee	IMO	International Maritime Organization
AWI	Alfred Wegener Institute for Polar and Marine Research	IPAB	International Programme for Antarctic Buoys
BAS	British Antarctic Survey	ITOPF	International Tanker Owners Pollution Federation Ltd.
BSIM	Baltic Sea Ice Meeting	JPL	Jet Propulsion Laboratory
BSH	Bundesamt für Seeschifffahrt und Hydrographie	KSAT	Kongsberg Satellite Services
BOM	Australian Bureau of Meteorology	MMA	Marstal Maritime Academy
CCG	Canadian Coast Guard	MET Norway	Norwegian Meteorological Institute
CDPF	Canadian Data Processing Facility	MSC	Meteorological Service of Canada
CIRFA	Centre for Integrated Remote Sensing and Forecasting for Arctic Operations	NAIS	North American Ice Service
CIS	Canadian Ice Service	NERSC	Nansen Environmental and Remote Sensing Center
CLS	Collecte localisation satellites	NIC	National Ice Center
CMEMS	Copernicus – Marine Environment Monitoring Service	MET Norway	Norwegian Meteorological Institute
CNES	Centre national d'études spatiales, France	NOAA	National Oceanic and Atmospheric Administration
COMNAP	Council of Managers of National Antarctic Programs	NRCC	National Research Council Canada
CPOM	Centre for Polar Observation and Modelling	NRL	Naval Research Laboratory
CSA	Canadian Space Agency	NSIDC	National Snow and Ice Data Center
DICSSC	Data, Information and Customer Support Standing Committee	NSOC	NOAA Satellite Operations Center
DLR	Deutsches Zentrum für Luft- und Raumfahrt (German Aerospace Center)	NWS	National Weather Service
DMI	Danish Meteorological Institute	OSRL	Oil Spill Response Ltd.
ECCC	Environment and Climate Change Canada	SMHI	Swedish Meteorological and Hydrological Institute
EC-PHORS	WMO Executive Council Panel of Experts on Polar and High Altitude Observations, Research and Services	SHNA	Servicio de Hidrografia Naval de Argentina
EIS	European Ice Services	SPRI	Scott Polar Research Institute
EMSA	European Maritime Safety Agency	UAF	University of Alaska Fairbanks
ESA	European Space Agency	UCL	University College London
ETSI	Expert Team on Sea Ice	UiT	University of Tromsø
FMI	Finnish Meteorological Institute	UTAS	University of Tasmania
GPS	Greenland Pilot Service	WMO	World Meteorological Organization