

Research school on cross-disciplinary science in the Arctic and collaboration with local communities

02 – 07 December 2018

UNIS, Longyearbyen, Svalbard



Longyearbyen in winter night

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The research school is organised by the Nansen Environmental and Remote Sensing Center and collaborating partners in the project “Useful Arctic Knowledge: partnership for research and education” (UAK) in collaboration with the H2020 project Integrated Arctic Observation System (INTAROS) and the University Centre in Svalbard (UNIS).

Contact person: Stein Sandven, e-mail: stein.sandven@nersc.no tel. +47 93368440



Introduction

The research school is organised by the Nansen Environmental and Remote Sensing Center under the project **Useful Arctic Knowledge: partnership for research and education (UAK)** funded by the INTPART programme 2018-2020 under contract no 274891. INTPART (International partnerships for excellent education, research and innovation) is funded by the Research Council of Norway and the Norwegian Centre for International Cooperation in Education. The project, which includes partners from Norway, USA and Canada, brings together leading researchers, educators and young scientists working on Arctic science topics described below. The research school is part of the H2020 project INTAROS – Integrated Arctic Observation System, contract no 727890 (<http://intaros.eu>, <http://intaros.nersc.no>).

Project partners and contact personnel

Nansen Environmental and Remote Sensing Center (NERSC)	Stein Sandven, Hanne Sagen, Torill Hamre
University of Bergen, Department of Earth Science (UIB-GEO)	Mathilde Sørensen,
Norwegian Meteorological Institute (MET Norway)	Øystein Godøy
Western Norway University of Applied Sciences (HVL)	Kjell Eivind Frøysa
The University of Manitoba (UM)	Søren Rysgaard
University of Calgary, Arctic Institute of North America (UC-AINA).	Maribeth Murray
University of Colorado, Boulder, National Snow and Ice Data Center (UCB-NSIDC)	Peter Pulsifer

Topics for the research school

- (1) Studies of natural and human-made hazards in the Arctic addressing problems such as earthquakes, oil spills, slope failures and ice-related hazards. The studies include physical processes and causes behind the hazards, how they can be detected and monitored, and how risks can be minimized and impact mitigated.
- (2) Status and change of the ocean acoustic environment is affected by increased shipping, tourism and exploitation of resources in the Arctic regions. The research school will demonstrate how acoustic data is collected, processed and used to study natural processes and human-induced noise.
- (3) Cross-disciplinary data analysis and data management is important in order to and build knowledge from the increasing amount of data in the Arctic. The research school will have lectures and practical exercises based on data from topic (1) and (2), satellite data and other data proposed by the students.
- (4) Community-based monitoring evolves as an important contribution to an integrated Arctic Observing System, with focus on collaboration and communication between academic research and local communities. The research school will have lectures on such activities in Canada, Alaska and Svalbard.

Daily programme

Sunday 02 December

Room: Lassegrotta (auditorium)

Ca. 1500: Arrival in Longyearbyen and check-in at the Guest House

1700 – ca. 1830: Introductory session

- Introduction to Svalbard and UNIS, by Harald Ellingsen, director of UNIS
- Introduction to the research school, by Stein Sandven, coordinator of the UAK project
- Lecture: “Arctic multidisciplinary science in Canada”, by Maribeth Murray, University of Calgary

1830-2000: Tapas dinner at UNIS canteen

Monday 03 December. Topic: Natural hazards in the Arctic

Room: Lassegrøtta

- 0900–1000: Introduction lecture on Arctic data collection, bringing data into a management systems, use of data, data limitations, etc. (the data life cycle), by Peter Pulsifer, University of Colorado and Pedro Goncalves, Terradue
- 1000-1030: Invited lecture: On permafrost thawing and impact on local community in Longyearbyen, by Hanne Christiansen, UNIS
- 1030-1100: Coffee break
- 1100-1230: Short presentations by each student on their ongoing activities related to the UAK project. Max 5 min/5 slides per student (15 students x 5 min = 75 min)
- 1230-1300: Lunch
- 1300-1330: Lecture: Overview of natural hazards in the Arctic with focus on seismic hazards and techniques used for data collection and data management, by Mathilde Sørensen, UiB.
- 1330-1500: Workshop: “Visualization and interpretation of natural hazard data”, organised by Mathilde Sørensen
- 1500-1530: Coffee break
- 1530-1700: Workshop: “Visualization and interpretation of natural hazard data”, cont.

Rooms: Lassegrøtta and Kapp Wijk (classroom)

Tuesday 04 December. Topic: Ice and oil spill related hazards in the Arctic

Room: Lassegrøtta

- 0900-0930 Lecture: Decreasing ice - increasing ice hazards, by Søren Rysgaard, Univ. of Manitoba and Aarhus University
- 0930-1000 Lecture: Fate of oil spills in Arctic environments, by Leendert Vergeynst, Aarhus University
- 1000-1030 Invited lecture: Cruise tourism in the Arctic – risks and impact, by Frigg Jørgensen, AECO
- 1030-1100: Break
- 1100-1130 Lecture: EO data applications in the Arctic, by Pedro Gonçalves, Terradue
- 1130-1200 Lecture: How to discover, access and process EO data for a simple snow and ice classification, glacier velocity and multi-temporal composites, Pedro Gonçalves, Terradue
- 1200-1300: Lunch
- 1300-ca. 1700: Workshop on ice and oil spill related hazards, including student work
- 1500-1530: Coffee break

Rooms: Lassegrøtta and Kapp Wijk (classroom)

Wednesday 05 December. Topic: The Ocean Acoustic environment

Room: Lassegrøtta

- 0900-0930 Lecture: Sound for survival, pleasure and exploitation, by Hanne Sagen, NERSC

0930-1000 Lecture: The need for ocean acoustics data in Canada, for planning and monitoring ship traffic, and legislation around offshore development and marine species co-management, by Maribeth Murray, University of Calgary

1000-1030 Lecture: Handling of acoustic data in integrated data management systems, by Torill Hamre

1030-1100: Break

1100-1130: Invited lecture: Presentation of Arctic Safety Centre, by Ann Christin Auestad, UNIS.

1130-1140: Information about Svalbard Science Forum and funding possibilities, by Karoline Bælum, Svalbard Science Forum.

1140-1200: Lecture: Instrumentation in ocean acoustics, by Kjell Eivind Frøysa

1200-1300: Lunch

1300 – 1330: Introduction to processing and visualisation of acoustic data, by Espen Storheim

1330 - 1500:

Practical Exercise:

Where to find and use background material and data for ocean acoustics. Hanne Sagen (NERSC), Maribeth Murray (UCalgary) and Torill Hamre (NERSC).

Hands-on use of instruments, listen and look at data, by Kjell Eivind Frøysa, HVL, and Espen Storheim, NERSC

1500-1530: Coffee break

1530 – 1700: Continuation of practical exercise.

Rooms: Lassegrotta and Kapp Wijk (classroom)

Thursday 06 December: Topic – Community-based observing and communication

Room: Møysalen (auditorium)

0900-0920 Lecture: Working with and knowledge exchange among types of experts and representatives from the Longyearbyen community, by Lisbeth Iversen, NERSC

0920-1040 Lecture: Communication and knowledge transfer to end users of information – types of communication media, cautionary use of certain media types, dealing with sensitive topics, by Maribeth Murray, University of Calgary

0940-1000 Invited lecture: The role of information sciences in Arctic research and knowledge production, by Marthe Tolnes Fjellestad, University of Bergen, University library.

1000-1030 Invited lecture: A citizen science project in Svalbard, by Børge Damsgaard, UNIS

1030-1100 Break

1100-1130 Invited lecture: Examples of citizen science activities using NASA cloud observer and CASTAWAY CTD for temperature and salinity measurements, by Hilde Fålund Strøm, Hurtigruten Svalbard

1130- 1500 Student work on own projects

1200-1300: Lunch

1500-1530: Coffee break

1530 – 1800: Dialogue café with invited participants from Longyearbyen, led by Lisbeth Iversen (INTAROS) and Alexandra Meyer (NUNATARYUK)

Room: Møysalen. Also Templet (classroom) is available for student work, etc.

1900: Dinner at Stationen

Friday 07 December: 0900-1200: Wrap-up of the research school

Room: Lassegrotta

0900-1030: Summary of the work from Monday-Thursday, 15 min on each of the topics:

- (1) Natural hazards with focus on seismic hazards, by M. Sørensen
 - (2) Ice and oil spill related hazards, by L. Vergeynst/S. Rysgaard
 - (3) The ocean acoustic environment, by H. Sagen/M. Murray
 - (4) Community-based observing and communication, by L. Iversen/M. Murray
 - (5) Cross-disciplinary data collection, management and usage, by P. Pulsifer/Ø. Godøy
- Comments and questions

1030-1100: Break (including check-out from UNIS Guesthouse)

1100-1200: Discussion of follow-up activities including future workshops and internships.

1200-1300: Lunch

1300: Departure to airport. The airport bus departs from UNIS at about 1300 for the SAS flight.
(For the Norwegian flight there is an airport bus ca 2 hours earlier).

Lecturers

Stein Sandven Nansen Environmental and Remote Sensing Center (NERSC): Stein is the leader of the UAK proposal and the coordinator of the INTAROS project.

Hanne Sagen (NERSC): Hanne has expertise in ocean acoustics and has been leader of several projects on ocean acoustics in the Arctic.

Torill Hamre (NERSC): Torill has expertise in computer science and has been working with data processing and data management in many projects related to Arctic and marine research

Lisbeth Iversen (NERSC): Lisbeth is a social scientist working with Community based monitoring – projects/political and socio-economic approach.

Mathilde Sørensen, University of Bergen. Department of Earth Science (UIB-GEO). Mathilde has a leading role and provides education in earthquake seismology, seismic hazard, tsunami hazard and seismo-tectonics.

Øystein Godøy, Norwegian Meteorological Institute (MET Norway). Øystein will contribute with expertise in Arctic data management.

Kjell Eivind Frøysa, Western Norway University of Applied Sciences (HVL). Kjell Eivind has expertise and provides education in underwater and subsea instrumentation as well as ocean acoustics at HVL.

Søren Rysgaard, University of Manitoba and Aarhus University. Søren has wide expertise in cross-disciplinary Arctic research and will contribute to education in community-based observing, human and natural hazards, and data integration.

Odile Crabeck, University of Manitoba (postdoc) has expertise in sea ice biogeochemistry and multidisciplinary topics related to sea ice

Leendert Vergeynst, Aarhus University, postdoc, expertise in Ice hazards and oil spills

Maribeth Murray, Arctic Institute of North America, University of Calgary (AINA/UC). She will contribute to education in natural and human hazards, ocean acoustics and community-based observing.

Peter Pulsifer, National Snow and Ice Center, University of Colorado, Boulder (UCB). Peter will contribute with expertise and education in data management and integration as well as in community-based observing.

Pedro Gonçalves, Terradue, expertise in EO data processing, management, interoperability

Marthe T. Fjellestad, academic director at the University of Bergen Library Picture Collection.

Invited lecturers from UNIS and Longyearbyen

Ann Christin Auestad, UNIS. Ann Christin will give a presentation of the newly established Arctic Safety Centre at UNIS.

Børge Damsgård, UNIS. Børge is professor in marine biology, Vice Dean of Research and the departmental leader of the UNIS Arctic Biology department.

Hanne Christiansen UNIS. Hanne is professor in physical geography, Vice Dean of Education and department leader of UNIS Arctic Geology department.

Frigg Jørgensen, Executive Director of AECO - Association of Arctic Expedition Cruise Operators

Hilde Fålund Strøm, Product manager, Hurtigruten Svalbard. Local inhabitant of Svalbard working with tourism and role as “citizen scientist”

List of participants

Name	Inst. Country	Background - competence
Trygve Halsne (MSc, res. scientist)	Meteorological Inst. Norway	Remote sensing, data management, Sea ice algorithms
Joshua Jones (MSc, researcher III)	Univ. Alaska, Fairbanks, USA	Sea ice and hazards, CBM, AAOKH (linked to INTAROS)
Kent Spiers (PhD student)	Univ. of Calgary, Canada	Coastal and marine socio-ecological systems
Takuya Nakanowatari (researcher)	NIPR, Japan	Sea ice modelling and forecasting, Arctic navigation
Zeinab Jeddi (postdoc)	Univ. of Bergen, Norway	Seismology, earth quakes, data processing, works on INTAROS
Henrik Hellem (MSc student)	Univ. of Bergen, Norway	Processing and analysis of acoustic data
Bjørnar H. Røsvik (MSc student)	Univ. of Bergen, Norway	Processing and analysis of acoustic data
Jan Michalek (senior engineer)	Univ. of Bergen, Norway	Seismic data processing, visualization and management
Sascha Schjøtt (PhD student)	Aarhus Univ., Denmark	Marine ecosystems. Also at Greenland Inst. of Nat. Resources
Samantha Jones (PhD student)	Univ. Calgary, Canada	Lakes, rivers, ecosystems, hazards, CBM work
Oliver Bartlett (PhD student)	Univ. of Exeter, UK	Hazardous glaciers, remote sensing, GIS
Delphine Collin (MSc student)	Sorbonne Univ., France	Cross-disciplinary environmental studies, hazards, GIS,
Agata Grynczel (PhD student)	IOPAN, Poland	Oceanography, sea ice
Morgan Ip (PhD student)	Oslo School Arch. and Design, Norway	Ethnographic data, cultural landscape, data management tools
Thomas Tuesen (PhD student)	Univ. of Bergen, Norway	Natural hazards: flooding and slope failure, cross-disciplinary
Alexandra Meyer (PhD student)	Univ. of Vienna, Austria	Social scientist, working on the H2020 NUNATARYUK project

Practical information

Flights Oslo- Longyearbyen

From Oslo to Longyearbyen				
Date	Airline	Departure from Oslo	Arrival in Longyearbyen	
Friday 30 Nov	Norwegian	0845	1145	Non-stop
Friday 30 Nov	SAS	1115	1410	Non-stop
Sunday 02 Dec	SAS	1000	1410	Via Tromsø
Monday 03 Dec	Norwegian	0950	1250	Non-stop
Monday 03 Dec	SAS	1125	1420	Non-stop

From Longyearbyen to Oslo				
Date	Airline	Departure from Longyearbyen	Arrival in Oslo	
Friday 07 Dec	Norwegian	1230	1530	Non-stop
Friday 07 Dec	SAS	1455	1750	Non-stop
Sunday 09 Dec	SAS	1455	1910	Via Tromsø
Monday 10 Dec	Norwegian	1335	1635	Non-stop
Monday 10 Dec	SAS	1505	1800	Non-stop

(SAS has also flights on Tuesday and Thursday. There are no flights on Wednesday and Saturday)

Transport from/to airport: there is a bus to/from UNIS, the hotels and UNIS Guest House for each arrival/departure (cost 75 NOK).

Accommodation: will be in the UNIS Guest House, located near UNIS (see map). You will receive a key upon arrival from the airport. Each of you will have a small apartment with kitchen.

Food - restaurants: For breakfast it is recommended to buy own food in the grocery store. It is also possible to buy a full breakfast at the Radisson Hotel or in other restaurants. Lunch is available in the UNIS canteen from 1100 – 1300 at a price of 125 NOK. Coffee and refreshments are provided by the organisers during the morning and afternoon session. For dinner there are several restaurants in town, but they can be expensive. It is fully possible to prepare own dinner in the apartments. There will be a sponsored dinner Sunday evening in the UNIS canteen and a conference dinner in restaurant STATIONEN on Thursday evening. More information about restaurants is found at https://www.tripadvisor.com/Restaurants-g503715-Longyearbyen_Spitsbergen_Svalbard.html

Clothing: Normal winter clothes for Arctic climate. Remember to bring indoor shoes. For weather statistics, see <https://www.yr.no/place/Norway/Svalbard/Longyearbyen/statistics.html>

Credit cards: most credit cards can be used in all shops, restaurants and the UNIS cantina.




WiFi: there is wifi in both UNIS and the Guest House




Own laptop: It is recommended to bring own laptop/iPad for the student work.




Longyearbyen overview



Lecturers at the UAK research school at UNIS 2 – 7 December 2018

	<p>Stein Sandven is research director at Nansen Environmental and Remote Sensing Center in Bergen, Norway and adjunct professor at University Centre in Svalbard (UNIS). He has more than 30 years experience in polar research with main expertise in marine and cryosphere remote sensing, polar oceanography and sea ice research. He works with development of operational observing systems for the Arctic using both satellite, in situ, and underwater sensors. He has been coordinator of many research projects funded by EU, ESA, Norwegian Space Centre, Norwegian Research Council and industry over the last 30 years. From 2011-2018 he was science leader of the ESA CCI project on sea ice climate data records. He is presently coordinator of the EU project INTAROS with about 47 partners from 20 countries. At UNIS he is leader of the Master/PhD course “Shipping in the Arctic”.</p>
	<p>Hanne Sagen is Research leader at the Nansen Environmental and Remote Sensing Center. Her expertise is in applied mathematics specialized within ocean acoustic. Her research interests are focused on using new technologies for observing the Arctic environment, such as acoustic tomography, passive acoustics, floats and gliders. Sagen has led the development of the Fram Strait Multipurpose Acoustic system starting in 2005. She has coordinated annual ocean/acoustic cruises to the Fram Strait since 2007 (involving open ocean vessel, icebreakers and aircraft missions). She is the deputy coordinator of the EU project INTAROS - Integrated Arctic Observation System. Currently, Sagen leads the Coordinated Arctic Acoustic Thermometry Experiment (CAATEX), which will run from 2018 to 2022. CAATEX is connected to MOSAiC and to INTAROS. She is member of the SCOR Working Group “International Quite Ocean Experiment.”</p>
	<p>Maribeth Murray is the Executive Director of the Arctic Institute of North America (AINA) and a Professor in the Department of Anthropology and Archaeology at the University of Calgary, Canada. Her research is focused on human and marine system dynamics in the Arctic and sub-Arctic, emphasizing the integration of climate, historic, oceanographic and ecologic data. In recent years, she has been engaged in the development of an Arctic Research Data Infrastructure for Canada, and an integrated Arctic Observing System that provides both scientific and societal benefits, including for Arctic Indigenous people, for adaptation planning, renewable resource management, and operational services. She is a member of the Board of Directors of Polar Knowledge Canada, the Board of Directors of the Arctic Research Consortium of the United States, and the EXCOM and Steering Committee of T-MOSAiC (Terrestrial Multi-disciplinary Distributed Observatories for the Study of Arctic Connections)</p>

	<p>Torill Hamre, is research leader at the Nansen Environmental and Remote Sensing Center. She holds a PhD in Informatics, from the University of Bergen, Norway (1995). She has more than 25 years of experience in software development and analysis of satellite data. Research interests include development of marine information systems using web GIS technologies, and marine data management. She is co-author of 3 Java introductory programming books. She has been leader and participant in several projects funded by EU and Research Council of Norway. Presently, she is co-leader of the INTAROS WP5 Data management and Integration.</p>
	<p>Øystein Godøy is a satellite remote sensing scientist (trained in meteorology and oceanography) and data manager at the Norwegian Meteorological Institute and the Svalbard Integrated Arctic Earth Observing System (SIOS). He has spent much effort on scientific programming within an operational environment and the transition from science to operations. Starting with the International Polar Year (2007-2009) he got interested in interdisciplinary distributed data management and is now sharing the working time between remote sensing and data management activities. He is actively involved in national and international data management activities through development of research infrastructures nationally (e.g. NORMAP and NMDC) as well as internationally through WMO (Global Cryosphere Watch and Year of Polar Prediction) and through SAON/IASC related activities.</p>
	<p>Søren Rysgaard. Professor and Canada Excellence Research Chair in Arctic geomicrobiology and climate change. Research interests: Marine microbiology and biogeochemistry in Arctic sea ice, ocean and sediments. Understanding carbon and nutrient cycling in Arctic marine ecosystems, sea ice processes and glacier-fjord-ocean interactions. Global change. Scientific leader - Arctic Science Partnership (ASP). Founding Director – Greenland Climate Research Centre (Greenland), Arctic Research Centre (Denmark). Led several large science projects in the Arctic (NOG, CAMP, Anoxia, Sea Ice dynamics, FreshLink, GCRC, ASP campaigns) and initiated two long-term marine monitoring programs (High- and Sub-arctic). Authored/co-authored 200 publications on arctic and biogeochemical processes</p>

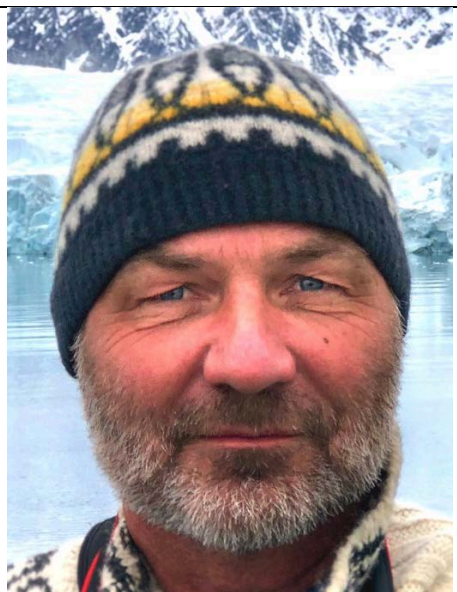
	<p>Mathilde B. Sørensen is Associate Professor in Seismology at Dept. of Earth Science, University of Bergen. Her research is mainly focused on earthquake and tsunami hazards, historical earthquakes and seismotectonics. She has a long experience teaching courses in geohazards, seismic hazard assessment and general geophysics. She teaches at graduate level in geoscience, seismic Risk, and geohazards.</p>
	<p>Kjell-Eivind Frøysa is professor at Western Norway University of Applied Sciences in Bergen, Norway. He teaches and supervises electrical engineering students on all levels from Bachelor to PhD. His main research interests are industrial and underwater measurement solutions, including acoustic and ultrasonic measurements. He is also involved in measurement science in a broader sense. In addition, he is involved in education of national authorities in Africa and Asia on measurement procedures, practice and requirements. Kjell-Eivind has earlier worked more than 20 years for an industrial research institute, CMR in Bergen. In that period he worked on development of industrial flow meters, evaluation of measurement solution and metering stations. He cooperated closely with industry companies in many sectors, including environmental, automotive, maritime and petroleum.</p>
	<p>Dr. Peter Pulsifer is a research scientist at the National Snow and Ice Data Center, University of Colorado, where he leads the Exchange for Local Observations and Knowledge of the Arctic (ELOKA) and other projects. His research addresses questions around computer-based information representation with a particular focus on interoperability and sharing across knowledge domains. This includes examining technical and social aspects of data and information sharing. In his role as Chair of the international Arctic Data Committee, the co-chair of the U.S. Interagency Arctic Research Policy Committee, and a representative to the Arctic Science Forum at the upcoming Second Arctic Science Ministerial, Peter is active in leading the coordination of polar data resources. This includes co-chairing the international Polar Data Forum in 2015, the Polar Connections workshop on polar data interoperability in November 2016 and the Polar Data Planning Summit in May of 2018.</p>







Lisbeth Iversen is presently a Public Sector PhD-candidate at Oslo School of Architecture, Institute for Urbanism and Landscape. She has a MSc in Regions and Regionalization, University of Bergen (MA) (2013), and a Master of Management, (MM), Norwegian Business School, Oslo; (2007). From 2003 to 2013 she was Commissioner in the Municipality of Bergen in the Department of Social - Housing and Local Development, (2011-2013), in the Department of Urban development, Climate and Environment (2007-2011), and in the Department of Environment, and Urban Development. (2003-2007). At present she is part-time employed at NERSC, working with Community based monitoring – projects/political and socio-economic approach in the INTAROS project. She is leader of the Norwegian national pilot project-now a network, interacting between the municipality, the organization of municipalities of Norway, voluntary organizations, research and the private sector.



Odile Crabeck is postdoctoral fellow at the Centre for Earth Observation Science, University of Manitoba. Her research is in Geochemistry and Oceanography with a focus on sea ice. She developed a strong background in earth, ocean and atmospheric sciences, during her B.Sc. and M.Sc. degrees in Geography. During her PhD, she further gained experience in sea ice biogeochemistry and multidisciplinary study. Her expertise is focussed on transport of matter and formation of air bubbles in sea ice medium: including climate active gases such as CO₂, CH₄ and N₂O.



Børge Damsgård is HoD in Arctic Biology at the University Centre in Svalbard (UNIS). He is also Vice Dean of Research at UNIS. He is professor in marine ecology, and received his PhD from the University in Tromsø in 1993, followed by a postdoc period in Vancouver, Canada. He has > 25 years of experience in various fields for aquatic sciences, focusing mostly on fish biology, in addition to cross-disciplinary approaches ranging from human medicine, economy and social anthropology. The research projects have been funded mostly from the Norwegian Research Council and EU. The project CRUISE#SCIENCE in Svalbard aims to develop citizen science in the cruise industry. We participate in circumnavigation tours round the archipelago, and take ordinary marine biological samples at the same time as we demonstrate scientific work for the cruise guests, aiming to bridging the gap between researchers and lay people.

	<p>Frigg Jørgensen is the executive director of the Association of Arctic Expedition Cruise Operators (AECO).</p> <p>Frigg has worked in Arctic tourism for 25 years, included positions as manager for the local tourist office and adviser to the Governor of Svalbard. She has been involved in developing tourism policies and framework, as well as strategies and industry development. Frigg has been involved in many projects aiming at ensuring sustainable development and activities, especially related to environmental protection, community relations and safe operations.</p>
	<p>Ann Christin Auestad is a project manager at The University Centre in Svalbard (UNIS), developing the new Arctic Safety Centre. Ann Christin has extensive experience from the oil- and gas industry, heading several development projects within safety and risk management for the Norwegian oil company Statoil. Ann Christin's orientation will focus on the work executed to develop a new competence center for Arctic Safety.</p>
	<p>Leendert Vergeynst is postdoctoral researcher at the Arctic Research Centre, Aarhus University. Engineering biochemical processes at the interplay between organisms and pollutants is his main research interest. He investigates consequences of environmental pollution and develops advanced technologies for combating environmental pollution. Currently, Leendert investigates oil spill biodegradation processes in Arctic marine environments (seawater, sea ice, sediment) by means of both laboratory experiments and field experiments in Greenland.</p>
	<p>Pedro Gonçalves is Terradue director, a company started in 2006 as a spinoff of the European Space Agency following his postdoctoral work designing the Earth Observation Grid infrastructure, the ESA G-POD. Terradue is a leading Cloud Services provider supporting international organizations, research institutes and commercial companies in deploying their Earth Observation services into Cloud platforms tapping new computational and data resources.</p> <p>With the participation in several European Commission and European Space Agency projects, Terradue is promoting a vision where scientific publications are fully reproducible, verifiable experiments and part of an interoperable ecosystem.</p>



Hanne H. Christiansen is a Professor of Physical geography, specialized in periglacial geomorphology. She is the Head of the Arctic Geology Department at UNIS, and the Vice Dean for Education at UNIS. She has worked with field-based permafrost research and education particularly since 2003, when she started working at UNIS. She has been active in the International Permafrost Association since 1999, first operating its International Secretariat and later being a member of its Executive Committee. Now she is its President 2016-2020, focussing on international collaboration at the highest level within permafrost research and education. She has led several NRC funded research projects with both national and international partners. Her research activities in Svalbard presently include being active in SIOS, being the main permafrost responsible in the InfraNor long-term infrastructure project in SIOS.



Hilde Fålun Strøm is product Manager for Hurtigruten, Svalbard. She has been living in Svalbard for 23 years and her engagement includes activities such as: Expedition Leader- Svalbard Summit Ski Festival 2016, Arctic Haute Route 2017, Arctic Ski & Sail 2018, Reality TV Program “71° Nord”, and she is responsible for all operations of the classic ship M/S Nordstjernen.

She has been Meteorological Observer at Jan Mayen and at Bear Island, 2013-14 (8 months total) and she has spent more than a full year total in Trapper’s Huts in the High Arctic, including more than 200 polar bear encounters. She is proficient in big game hunting – reindeer, fox, fowl – Svalbard, and has extensive experienced in Kayaking, Snowmobiling, Glacier Travel, Boat handling – Captain, Skiing, Dogsledding, Photography and Trekking



Marthe T. Fjellestad is the academic director at the University of Bergen Library Picture Collection, where she is actively involved in the research and dissemination of knowledge –through public lectures, writing and exhibition making – around a collection of some 1,200,000 historic photographs. Her main research interest has been Arctic landscape photography in the context of visual geography, art and media history and science photography. She is the author (with Solveig Greve) of Starman – Sophus Tromholt Photographs 1882–1883, on the northern lights researcher and photographer Sophus Tromholt, and the editor (with Spencer Acadia) of an upcoming volume titled The Routledge Handbook of Library, Archival, Information, and Data Sciences in the Arctic.