

Summer 2015

PROGRAMME COORDINATOR: JEREMY WILKINSON BRITISH ANTARCTIC SURVEY, UK

The last few months have been an extremely busy period for ICE-ARC for various aspects. Early 2015 saw the start on this year's field programme, with ice-mass balance buoys (IMBs), Ice - Atmosphere - Arctic Ocean Observing System (IAOOS), and Affordable Arctic Radiation (AFAR) buoys heading out to the RV Lance, a Norwegian research vessel frozen into the sea ice north of Svalbard. This was in collaboration with the N-ICE campaign. In conjunction with this programme, BAS and DTU performed airborne surveys over the Lance from Svalbard, and from Station Nord in Greenland. Other field programmes during this time centred around constructive dialogue with communities in NW Greenland, as well as oceanographic measurements in the fjord around Qaanaaq and the continuing success of the SATICE high precision GPS systems.



Data from these campaigns are available via the ICE-ARC data portal on the website - follow the links, or visit <http://www.ice-arc.eu/category/field-work/> (If you have more data to upload, see the data guidance doc on dropbox for details on how to log in to the ftp site).

A significant milestone of the last couple of months was the end of the Reporting Period and the consequential requirement to complete the Periodic Report - which had technical, management, and financial components. The report in the end was necessarily long, and contained a comprehensive update of the progress of each team towards the goals and objectives in the Grant Agreement. It was therefore a useful process to make sure we are all on track. The minimal comments from the EC show that the Commission are happy with our progress. Many thanks for all your contributions. If you're in need of some bedtime reading, the report is available on [Dropbox](#) (but I am sure you have read it already!).

In addition to the field work and reporting, there have also been lots of meetings/workshops, that various members of ICE-ARC have attended. These are described in more detail in this newsletter (and on the website). These meetings include:

- EU Climate Research Alliance (ECRA), Brussels, 25th March 2015
- Arctic Science Summit Week (ASSW), Toyama, Japan, 23-30th April (including EU-Japan-US meeting with EU-PolarNet)
- Ilulissat Climate Days (part hosted by ICE-ARC through DTU), Greenland, 2-5th June
- Our Common Future under Climate Change (pre-COP), Paris, 7-10 July

Over the summer we see more Arctic deployments, more meetings (with the Japanese ArCS project), quite a lot of milestones due (see back page), and hopefully we'll all be able to fit some summer holidays in, ready for a busy autumn schedule! At the centre of this is the next General Assembly Meeting—hosted by Flavio from CNR in Bologna, Italy. Keep an eye out for registrations, and look forward to seeing you all there!

MEETINGS AND EVENTS

7-10 July **Our Common Future Under Climate Change Paris**
Attending: Jeremy Wilkinson, Jean-Claude Gascard, Christine Provost, Chris Hope, Frank Kauker, Mark Nuttall.

17-18 October **Arctic Circle** Reykjavik, Iceland *Attending:* Jeremy Wilkinson

20-22 October **ICE-ARC General Assembly Meeting** Bologna, Italy.
Including External Advisory Board meeting

22-23 October **ICE-ARC Steering Committee Meeting** Bologna, Italy

30 Nov - 11 Dec **COP21** Paris, France

7-11 December **ArcticNet** Vancouver, Canada

14-18 December **AGU Fall Meeting** San Francisco, USA


24-29 January **Arctic Frontiers** Tromso, Norway


17-22 April **EGU** Vienna, Austria

FURTHER DETAILS:

<http://www.ice-arc.eu/events/>

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EU-JAPAN-US WORKSHOP

ASSW - ARCTIC SCIENCE SUMMIT WEEK
TOYAMA, JAPAN - 23-30 APRIL 2015

The aim of this Workshop was to bring together nationally and internationally recognised Arctic experts from Japan, the US, and Europe in order to strengthen international cooperation in different Arctic sectors and disciplines relating to change in the Arctic marine environment. Sectors include: technology, physical sciences, modelling, social sciences, and economics.

Participants of the Workshop were key members of large multi-disciplinary Arctic change programmes such as: Japan: GRENE, USA: SEARCH/MIZ, and EU: ICE-ARC, and EU-PolarNet. The workshop was well attended with almost 50 participants. Representatives for funding agencies were also present. These were the Japanese Ministry MEXT and US funding agencies NSF and ONR. Presentations from the meeting are available on [Dropbox](#), along with the final report on the meeting and future plans.

Since the meeting in Toyama, the Japanese have announced the funding of their new Arctic integrated programme, ArCS. We are in discussions with possible collaboration opportunity for ICE-ARC participants.

Watch this space....



April 23-30, 2015

Toyama International Conference Center, Toyama, Japan

ILULISSAT CLIMATE DAYS

ILLULISSAT, GREENLAND - 2-4 JUNE 2015



Back in June, Jeremy Wilkinson, Elaina Ford (BAS), Jimena Alvarez, and Dmitry Yumahsev (EUR), Naya Miikklesen (GEUS), Mark Nuttall, and Lene Kielsen Holm (GCRC), Steffen Olsen (DMI), Jean-Claude Gascard (UMPC) attended the Ilulissat Climate Days conference in Greenland - which was co-hosted by ICE-ARC through the efforts of Rene Forsberg (DTU). Jeremy, Jean Claude, Jimena, Mark and Lene gave presentations on the ICE-ARC project, while Mark and Lene also organised and ran a discussion session on the social and cultural effects of climate change.

The conference talks covered a large number of facts concerning the melting on the Greenland ice sheet past, present and future, Arctic change in general and the implications for Greenland, other polar nations and the rest of the world. We also had several fruitful discussions with several attendees.

WP4 hope to work with Jason Box (Geological Survey of Denmark and Greenland) both on stakeholders engagement and on defining scenarios for GIS mass loss that could be implemented in PAGE-ICE. Jens Christensen (DMI) is leading a consortium on developing a coupled modelling system which aims to shed light on multiple Arctic climate feedbacks that are currently under-represented. Hilmar Ogmundsson's (Greenland Ministry of Finance) first-hand account of the Greenland economy was truly fascinating. It showed the need for conducting regional economic modelling studies under future climate scenarios.

WP3 met with Toku Oshima who is a hunter from Qaanaaq in the north west of Greenland and will help us develop more ways of engaging communities to take measurements, and to increase education about science.

We are excited about the possibility to follow these leads and contribute further to the ICE-ARC project!



ICE-ARC AIRBORNE FIELD CAMPAIGN—APRIL 2015

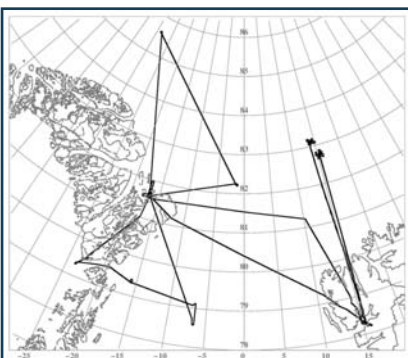
The first ICE-ARC airborne field campaign was successfully accomplished in April, 2015. Researchers from the Danish National Space Institute (DTU Space), Sine M. Hvidegaard, and British Antarctic Survey (BAS), Russell S. Ladkin, collected coincident laser/radar measurements over sea ice in the Fram Strait, north of Svalbard and north of Station Nord for validation of CryoSat-2 sea ice thickness and ocean dynamic topography.

The field campaign took place April 13-24 using BAS Twin Otter as a platform. The main purpose was to overfly the research vessel RV Lance, where scientists from the Norwegian Polar Institute (NPI) measured the sea ice and snow properties in situ, as part of the Norwegian Young sea ICE cruise (N-ICE). The airborne campaign was a success and a unique data set for validation of CryoSat-2 has been collected, including:

- Two overflights of the validation site near RV Lance on April 19 and 24, including short parallel lines (mow-the-lawn) near the ship for both flights, together with two longer lines aligned with EM soundings obtained by helicopter for the second flight;
- Overflight of sea ice in the Fram Strait including a moorings upward looking sonars run by NPI;
- Overflight of survey site on fast ice near Station Nord, and repeat flight lines from previous years out of Station Nord. | *Henriette Skourup, DTU* |



Photos credits: S. M. Hvidegaard



Overview of flight tracks

GREENLAND 2015 FIELDWORK

Mark Nuttall and Lene Kielsen Holm visited Kullorsuaq in February 2015 as part of another project for GCRC. However, they were able to combine this work with ICE-ARC tasks and had meetings with the community hunting association and gathered initial material on the challenges hunters and fishing are facing as a result of changing sea ice conditions and current hunting and fishing management regulations.

They also carried out fieldwork in the Qaanaaq region from 18th March-15th April 2015, visiting Qaanaaq and the villages of Savissivik, Siorapaluk and Qerqertat. Journeys were made on the sea ice with hunters, including a seven-day trip by dog sledge which mapped local observations of the changing environment, including travel routes, hunting places, and new fishing areas. Workshops and interviews also focused on women's perspectives on environmental and social change, and a project working relationship was put in place with Qaanaaq School—both ensuring a sharp focus on the gender and generational aspects of the project's themes.



On the sea ice near Savissivik, March 15 Photo: Mark Nuttall

In early February 2015, Steffen Olsen and Rasmus Tonboe (DMI) deployed a weather station and three oceanographic moorings on the sea ice across the fjord to monitor the currents and surface water stratification during winter and spring. The weather station is equipped to measure the surface energy balance and the moorings are designed to record variations in the upper ocean current shear and stratification in temperature and salinity affecting the heat flux to the ice. The deployment is done in close collaboration with the two hunters who will also keep an eye on the instruments until they will be recovered in early June before the break-up of the fjord ice.

As part of the March 2015 field campaign to Qaanaaq, Steffen Olsen met with Dan Norman, the Director (Atuarfiup pisortaa) for the local schools in the municipality of Qaanaaq, to discuss the possibilities to engage students in the research carried out within ICE-ARC. Initial plans include a lecture for the oldest group of students in the school in June 2015. | *Mark Nuttall, GCRC* |

EU ARCTIC POLICY CONFERENCE

BRUSSELS, 1-2 JUNE 2015



About 130 delegates attended the conference on EU Arctic Policy, which was organized by the EEAS; among the delegates were representatives from missions to the EU, from ministries of foreign affairs, and from NGOs; members of parliament, program managers, representatives of indigenous peoples, as well as representatives of the EEAS and the Commission. Both Council and Parliament have asked the Commission to develop a coherent and integrated Arctic policy. The major theme was to identify a number of visions and ideas from stakeholders for EU Arctic policy, and a roadmap on how to realize these ideas. The following topics were discussed:

Climate change and pollution; research; observations and data; economic opportunities and risks; local communities and indigenous people; and security dimension and international cooperation.

ICE-ARC partner Thomas Diehl (JRC) attended the meeting and provided a useful summary of discussions which can be read on [dropbox](#).

UPDATES FROM ICE-ARC COMMUNITY

NEW MEMBERS

We welcome the following new members to ICE-ARC:

- Karel van Hussen, Junior Consultant, Ecorys
- Nikos Daskalakis, Post-doc, LATMOS, UPMC

CNR - SENTINEL I IMAGERY OF PANCAKE ICE

Flavio Parmiggiani has provided two Sentinel-I images of pancake icefields in the East Greenland Sea, relating to the work he is carrying out with Peter Wadhams for deliverable 1.23. (View the photos in [dropbox](#).)

DMI WEBSITE DELIVERS SATELLITE IMAGES OF SEA ICE TO GREENLAND COMMUNITIES

DMI has set up an operational service which makes near-real-time ice information (ice edge, ice characteristics) available on the web:

(<http://www.dmi.dk/groenland/maalingersatellit>) with a specific focus area on the Qaanaaq area. Additional information and archived data are delivered on a separate, frequently visited site:

<http://ocean.dmi.dk/arctic/qaanaaq.php> . By advertising these systems through local contacts, this ice information is also posted daily at the local shop whereby it reaches almost the entire community.

GRANT AGREEMENT AMENDMENT

For several reasons, we need to amend the ICE-ARC Grant Agreement. This will be completed in August/September, following the transfer of ICE-ARC members at EUR(RSM) - Gail, Dmitry, and Jimena to the University of Lancaster. We are taking this opportunity to make some other changes—a couple of corrections to partner descriptions, and budget transfers for field work costs. These have all been approved by the Steering Committee, and the changes will be sent out shortly—if there are any issues, please let us know early.

PROGRAMME OFFICE NOTICES

GENERAL ASSEMBLY MEETING, BOLOGNA, 20-22 OCTOBER 2015

The second ICE-ARC General Assembly meeting will take place on 20-22nd October, along with the Steering Committee Meeting, in Bologna, Italy. Registrations will open shortly, all ICE-ARC members are invited to attend and we hope as many as possible of you will be able to make it.

Another FP7 project, OCEAN-CERTAIN, that were in the same EC call as ICE-ARC, have expressed interest in collaboration and will hopefully present some of their work at the GA. In return we hope to present ICE-ARC to their annual meeting, in December.

NEW – MEMBERS AREA OF WEBSITE

There is now a members area of the [ICE-ARC website](#) where project documents, reports, meeting notes, logos can be found (as is currently available on Dropbox).

Login by clicking on 'Members Area' entering your username (which is your email address) then click on 'lost your password?' to receive a new password, which you can change once you login. Contact Katie Gosling katsli@bas.ac.uk if you have any problems.

PERIODIC REPORT

The Periodic Report (all 166 pages, or 47,000 words!) was submitted to the EC for the first Reporting Period, and is [available on Dropbox](#). Many thanks for everyone's contributions, particularly those that provided them on time!

We have had only one query on the technical report (on the loss of the IAOOS buoy), which has been answered to their satisfaction, and request for more detail for only two of the financial claims—both answered. We have just received formal acceptance of the report from the EC and are now awaiting receipt of funds for distribution.

The EC have to perform a technical review of all their projects—they would normal schedule this in with the first periodic report. However as they are happy the project is running well, and few science deliverables are due, the EC **are going to hold a review early next year**.

This means the deliverables due this year (many in December) must be of good quality and on time(!), to enable us to smoothly pass the review. (This is usually held by two independent experts in the field).

UPCOMING DELIVERABLES AND MILESTONES

Deliverable/ Milestone	Due
MS111 Data from the Summer 2015 deployment of autonomous platforms made available to the ICE-ARC community	Aug 15
MS141 Results of first in situ deployment with integrated sensor (CO2 and pH) during a North Pole ice camp	Aug 15
MS151 Results of 1st in situ Arctic tests with the integrated sensor package (nutrients, PAR, fluorometry)	Aug 15
MS331 Completion of terrestrial fieldwork and interviews with Community elders.	Aug 15
MS412 Evaluation of functional relationships in PAGE and selection of appropriate relationships which will	Aug 15
MS271 Skill assessment of SINMOD for the Arctic	Aug 15
MS143 Full size air-sea CO2 survey in the Chukchi, east Siberian and Laptev seas	Oct 15
MS272 Prepare data input to WP4 (PAGE) from SINMOD	Oct 15
D1.24 Report on interannual ocean variations at, and conceptual model framework for fjord systems	Dec 15
D2.21 Report and dataset describing the snow water equivalent and ice thickness distribution and the sea ice rheology based on the AMSR-E era from 2001-2011	Dec 15
D2.61 Assessment of model uncertainties related to treatments of atmospheric processes (aerosols, clouds)	Dec 15
D3.11 Socio-economic scenarios for communities in NW Greenland	Dec 15
D3.31 Past and present adaption strategies of indigenous marine based communities in NW Greenland based on published literature and field studies.	Dec 15

Recently submitted deliverable:

D4.21 Report on improved parameterizations within PAGE-ICE for each industrial sector - read the full report in [dropbox](#).

Thank you to those who contributed to this newsletter. If you would like to contribute to the next edition please send your text and images to ice-arc@bas.ac.uk. Deadline: 30 September 2015

