

Ny-Ålesund Newsletter

41st Edition – December 2018

Updates from the four Ny-Ålesund Flagships

by Christina A. Pedersen (NPI), Radovan Krejci (SU), Jack Kohler (NPI), Kai Bischof (University of Bremen) and Maarten Loonen (University of Groningen)



Terrestrial workshop in Ny-Ålesund, August 2018. Photo: Thomas Jensen, NINA

Some updates from the four Ny-Ålesund flagships. Please check out the webpages for more detailed and up-to-date news and activities: <http://nysmac.npolar.no/research/flagships/>. If you want to be added to the email list for the flagship and receive irregular updates on activities, please visit the webpage and register.

The big 2019-event will be the second Svalbard Science Conference, taking place in Oslo 5-6 November 2019. The theme is Svalbard in a Pan-Arctic perspective. The Conference is arranged by RCN, SSF and NPI. Possibilities for side-meetings exist, and the flagships will probably take advantage to this.

Atmosphere

“Ny-Ålesund Research Station is the Arctic super site number 1, when it comes to research and infrastructures”. This was stated by the Atmosphere Flagship chair Radovan Krejci during the NySMAC meeting in Ny-Ålesund in November. The atmosphere flagship has been active for 10 years now, and is really starting to harvest from its investment.

The flagship arranged a one week workshop in Potsdam in October with great success. The workshop was attended by almost 70 researchers and students from 14 countries.

The full week agenda included overview sessions on the different working groups, sessions on various other topics suggested by the participants, discussion on atmosphere infrastructure and SIOS core data, as well as ample time for individual discussions. Further, the workshop focused on linking activities in Ny-Ålesund to related activities in the rest of Svalbard (Hornsund and Barentsburg) as well as to Villum Station at Northeast Greenland.

The flagship was successful in its grant application for Svalbard Strategic Grant by Svalbard Science Forum, and this grant is funding flagship activities for 2018 and 2019, including the just mentioned Potsdam workshop. As part of this, in early 2019, the flagship will repeat the success with the guest visit program, and accommodate for and fund visits between individual scientists working together on common data analysis and publications.

Another priority for the flagship will be to contribute to the MOSAIC expedition where the German RV Polarstern will be frozen into the ice and drift within the central Arctic Ocean: <https://www.mosaic-expedition.org/>. The Ny-Ålesund contribution will include new and complementing measurements from Gruebadet and the Zeppelin Observatory.

Kongsfjorden System

The research objectives of the Kongsfjord System Flagship Program include impacts of climate change and “atlantification” on different systems and biota within Kongsfjorden, their adaptations and responses thereto, as well as modelling future outcomes. The overarching hypotheses are that warming and acidification in Arctic coastal waters will continue, tidewater glaciers will disappear with consequences for seawater circulation and associated biological systems, “atlantification” will continue, leading to local extinction of endemic and the establishment of temperate species. The overarching research question is whether Kongsfjorden is a suitable model system to project the future of marine ecosystems on Svalbard and beyond, and to what extent the contemporary changes observed in Kongsfjorden are harbingers of the future in other fjords.

In Kongsfjorden numerous monitoring projects and long-standing time series are run by different institutes, some of them currently span over more than 20 years. Maintenance, coordination and integration of international monitoring activities and facilitated access to data collected are key objectives within the flagship and will strengthen the global significance of the Ny-Ålesund Research Station in pan-Arctic research. The flagship programme has been organised in six work-packages, which provide structure to the interdisciplinary research program of the flagship.

The flagship organised a two-days workshop in Tromsø in September in order to facilitate new interdisciplinary research activities across the work packages and flagships. About 40 scientists from many institutes and countries attended the workshop. During this workshop, the current state of the Kongsfjorden system, an overview of marine observatories and the exposure of Kongsfjorden to long-range pollutants was discussed. Furthermore, a seventh work-package on higher trophics has been initiated. Important discussion points further included the accessibility of data through SIOS and seeding of new interdisciplinary project ideas, i.e. with respect to the impact of terrestrial run-off to glacial fjord systems by including expertise from the terrestrial and the cryosphere flagship.

The flagship also submitted a proposal to Svalbard Strategic Grant this October, proposing for further activities for 2019-2020. Proposed activities include: A cross flagship meeting in Oslo November 2019 (as part of the Svalbard Science Conference), a workshop in Tromsø 2020, and guest-visit funds.

Terrestrial Flagship

The Terrestrial Flagship had its first dedicated workshop for three days in August in Ny-Ålesund. 25 scientists came together and presented their research and visited the different field sites which have been established in the last three decades. The meeting were essential to increase the cooperation in a science field, which contains many fragmented projects with different focus and time-line perspectives.

The returning issue of lack of a common GIS system for site registration again came to life. In order to be able to coordinate terrestrial research, the flagship regard it essential to get such a system alive and to include and retrieve old registrations. The flagships during the workshop worked on site registration for such a system, including video page with films of the sites.

The flagship is working on a common per-review publication to describe the highlights of former terrestrial research and the potential for future research (tentative title *Rapid changes and complex interactions in a terrestrial high arctic ecosystem*). The publication was discussed and initiated at the flagship workshop and is coordinated by the flagship chair.

A second workshop will take place in Longyearbyen during fall 2019, where the paper will be finalized and the cooperation further strengthened. This meeting will also link to parties working in other parts of Svalbard and has the possibility for site visits in the vicinity of Longyearbyen.

The terrestrial community see new possibilities with the new laboratory for terrestrial research which is being built in Ny-Ålesund. This new laboratory offers new possibilities for science, but also for more intense cooperation among the terrestrial scientists while working in Ny-Ålesund. At the moment, many of the buildings in Ny-Ålesund have smaller facilities/laboratories for samples taken in the field to analyse or prepare for transport. An open, free-to-use, well equipped, central laboratory facility will be an important contribution for terrestrial research. The terrestrial flagship look forward to contribute to the set-up of the new laboratory.

Latest notice is that Eva Fuglei from NPI has taken over as the flagship co-chair.

Glaciology

No other area in the world has so many mass-balance programs in such a small area as Ny-Ålesund. At present there are activities on twelve glaciers in the Kongsfjord area. This affords extra opportunities for investigating the spatial distribution of melt and precipitation, comparing methodologies, and sharing logistics.

Although the flagship did not have a dedicated workshop in 2018, there have been many new activities. The SIOS Infra-Nor project has financed a number of new meteorological stations in Svalbard and around Ny-Ålesund. The super site at Kongsvegen Stake 6 now features a 10-meter mast for meteorological measurements, and winter power for the radiation sensors is provided by wind generator and battery pack.

Work that will enhance cross-flagship cooperation continues, including modelling of glacier runoff, as well as monitoring of ice formation at the base of the winter snowpack.

Finally, the Kongsvegen surge continues; velocities in summer 2018 were the highest recorded since measurements began. In addition, crevasses were seen in parts of the upper glacier for the first time. As velocities continue to increase, crevasses will cover more and more of the glacier; at some point it will no longer be possible to drive snowmobiles anywhere on Kongsvegen. This will, of course, have consequences for the Ny-Ålesund community. Monitoring of the surge as part of the NPI mass balance program will continue, and in 2018 two new projects secured funding for additional measurements, including instrumented boreholes, continuous GPS and seismic monitoring.



Kongsfjorden workshop in Tromsø, September 2018. Photo Elin V. Jenssen, NPI

DORIS station of Ny-Ålesund moves within the geodetic Earth observatory

by Francois Didelot (CNES), Damien Pesce and Jérôme Saunier (IGN)

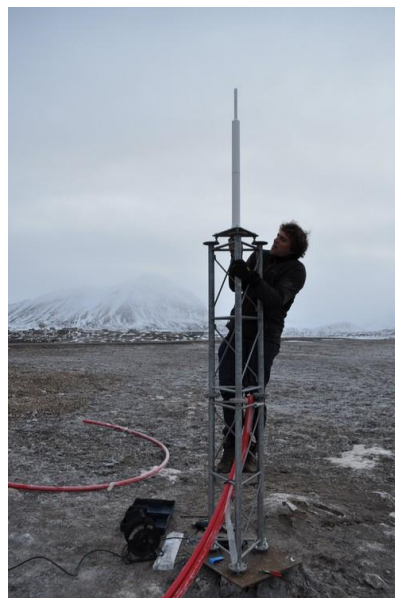
The French Space Agency (CNES) and the French Mapping and Survey Agency (IGN) have, in October 2018, completed the relocation of the DORIS station in the vicinity of the geodetic Earth observatory in Brandal lagoon.



*The new DORIS site at the Light Sensitive Cabin
Photo: Damien Pesce*

The DORIS team could successfully achieve this long-planned project thanks to the essential support from the AWIPEV station staff and to the fruitful collaboration with the teams from the Norwegian Mapping Authority and Kings Bay. After dismantling the former station located in the Charles Rabot building, the new one was installed in the Light Sensitive cabin along the road leading to the geodetic observatory. Once the correct transmission to satellites was validated, a successful testing campaign was also conducted to confirm the compatibility between DORIS and the VLBI antennas of the observatory in close cooperation with the Norwegian Mapping Authority.

The DORIS station of Ny-Ålesund was installed in 1987 in the Charles Rabot building and has been operating successfully ever since. In the course of these 30 years of operations, this site was considered as one of the most reliable and high-performance station of the DORIS network, not to mention its strategic position regarding the coverage of polar orbit satellites - which come in visibility of Svalbard at each orbit around the earth. The reactivity of the staff from AWIPEV station – in charge of the maintenance in close coordination with the DORIS team in Toulouse (France) – was decisive to achieve these performances.



*Installing the DORIS antenna
Photo: Francois Didelot*

The DORIS system is composed of a constellation of satellites each one embarking a receiver and a dense network of 60 ground stations well distributed around the globe, among them Ny-Ålesund. The system aims at providing precise orbit data of some earth observation satellites mainly involved in space oceanography applications like Jason-2 and Jason-3 (CNES, NASA, NOAA, EUMETSAT), Sentinel-3A and Sentinel-3B (ESA, EUMETSAT) or Cryosat-2 (ESA) and Saral-Altika (CNES, ISRO). Today, a 3 cm accuracy can be reached in real-time on the radial component of the satellite's orbit, which is essential for operational marine applications; an even better sub-centimeter accuracy is eventually reached in delayed time, in order to comply with the quality needs of sea surface topography measurements.

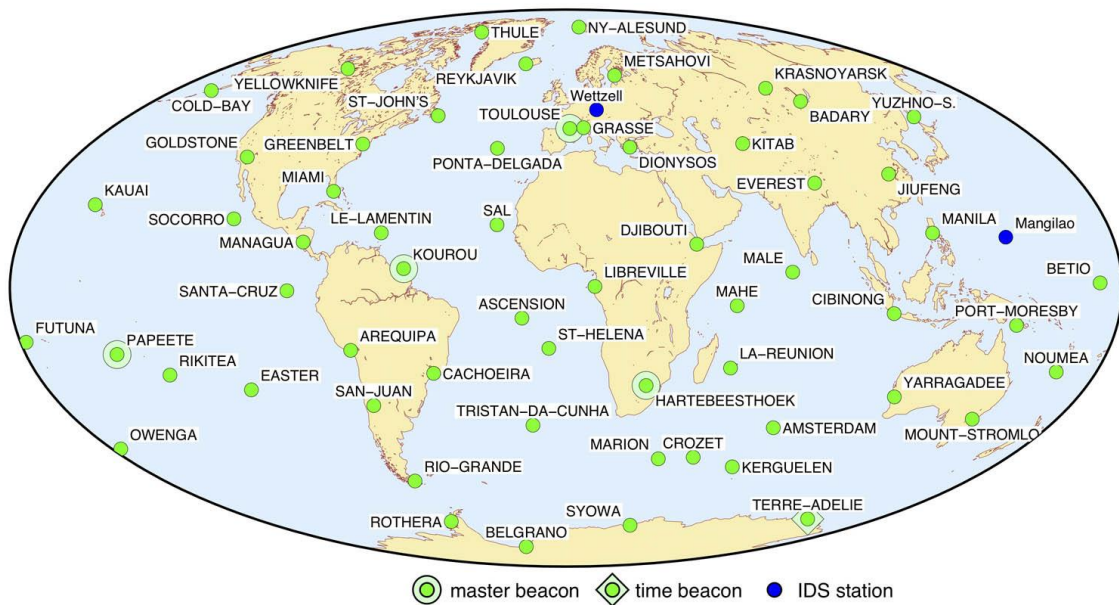
Furthermore, DORIS is considered as the 4th space geodesy technique providing precise positioning data of ground stations contributing to the International Terrestrial Reference Frame realizations. That's why the new DORIS station was installed on the geodetic Earth observatory of Ny-Ålesund to complete the instrumentation and strengthen its status of core site of the Global Geodetic Observing System (GGOS) project, developed by the International Association of Geodesy.

Therefore, the DORIS antenna had to meet strict installation requirements in term of stability of its antenna reference point. The construction work performed by Kings Bay to anchor the pillar deep in the bedrock was crucial to match these requirements. In addition, the installation also had to follow some precise guidelines in order to ensure the compatibility with the very sensitive VLBI system operated by the Norwegian Mapping Authority on the geodetic observatory. These guidelines have been established based on studies conducted by DORIS and VLBI teams over these past years in Greenbelt (NASA Goddard Space Flight Center) and in Wettzell geodetic observatory (BKG). Some first testing activities have been conducted in close cooperation with the staff of the Norwegian Mapping Authority to confirm the compatibility of both systems. Preliminary results are quite positive and will be consolidated once the observatory will be fully equipped and fully operational. It will then make Ny-Ålesund observatory one of the first GGOS core network sites to host the 4 geodetic techniques.



Inside the VLBI antenna for testing activities
Photo: Damien Pesce

In any case, the new DORIS station of Ny-Ålesund has from now entered into full operations within the DORIS system and is expected to keep up with the high level of performances demonstrated by its predecessor.



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The DORIS network of stations (map from IGN)

News from the Norwegian Mapping Authority

By Piotr Kupiszewski; NMA

The Norwegian Mapping Authority's (NMA) new Earth geodetic observatory was officially inaugurated on 6 June 2018. Representatives from the Norwegian government were present for the occasion, as well as 110 delegates of the 10th conference of the International VLBI Service for Geodesy and Astrometry, IVS2018, which took place in Longyearbyen.

The NMA's new geodetic observatory ranks as the northernmost facility of its kind. It has an estimated cost of about NOK 300 million. "The development of a basic global infrastructure for better Earth observation and for better monitoring of satellites, especially in the High North, is key in order to measure and deal with climate change. It is fundamental for our understanding of sea level change." said Lars Jacob Hiim, State Secretary to the Norwegian Minister of Local Government and Modernisation.

Once fully operational, the observatory will be one of the World's first core sites within the Global Geodetic Observing System (GGOS), co-locating the four space geodetic techniques: Very Long Baseline Interferometry (VLBI), Satellite Laser Ranging (SLR), Global Navigation Satellite System (GNSS) and Doppler Orbitography and Radiopositioning Integrated by Satellite (DORIS). As such, the observatory will be a fundamental part of a network of stations which define the global geodetic reference frame, and will be crucial to realise GGOS's ambitious goals of 1 mm accuracy and 0.1 mm/yr stability.

The new observatory features cutting-edge technology, including next-generation VGOS (VLBI Global Observing System) twin telescopes with fast-slewing antennas and a broadband (2-14 GHz) signal acquisition chain.

The telescopes, surrounded by the Brandal lagoon, Cape Mitra and Kings Fjord, are an impressive 13.2 metres in diameter and loom 18 metres above the ground. Work is currently ongoing to complete installation and testing of the signal acquisition chain. The first broadband feed will be installed in VLBI telescope 2 in spring 2019, and the second will replace the currently installed tri-band feed in VLBI telescope 1 in 2020. The backend equipment has recently arrived back in Ny-Ålesund after a manufacturer upgrade in Germany and will undergo full-scale testing late November 2018.

Concurrently, plans for construction of a state-of-the-art Satellite Laser Ranging facility by NASA are being finalized, following the signature of an agreement between NASA and NMA in August 2017. An SLR in Ny-Ålesund, with its location at a latitude of 79° N, will be important because it will allow us to observe polar-orbiting satellites, such as ICESat-2, with extremely good coverage. In preparation for installation of the SLR, Veidekke will carry out final modifications to the SLR building at Brandal in early 2019. The first major components of the SLR system, i.e., the dome, and the gimbal and telescope, will arrive in Ny-Ålesund in autumn 2019 and will be installed by NASA.

The current goal is to have all systems up and running in Ny-Ålesund by 2022. The NMA's geodetic Earth observatory is Norway's most important contribution to the United Nations General Assembly resolution "A Global Geodetic Reference Frame for Sustainable Development." Norway has played an important role in this work co-chairing (together with Australia) the subcommittee that formulated and negotiated the UN resolution.



Photo: Per Anders Bjørklund, NMA

30 years of ozone sonde balloon launches from Ny-Aalesund

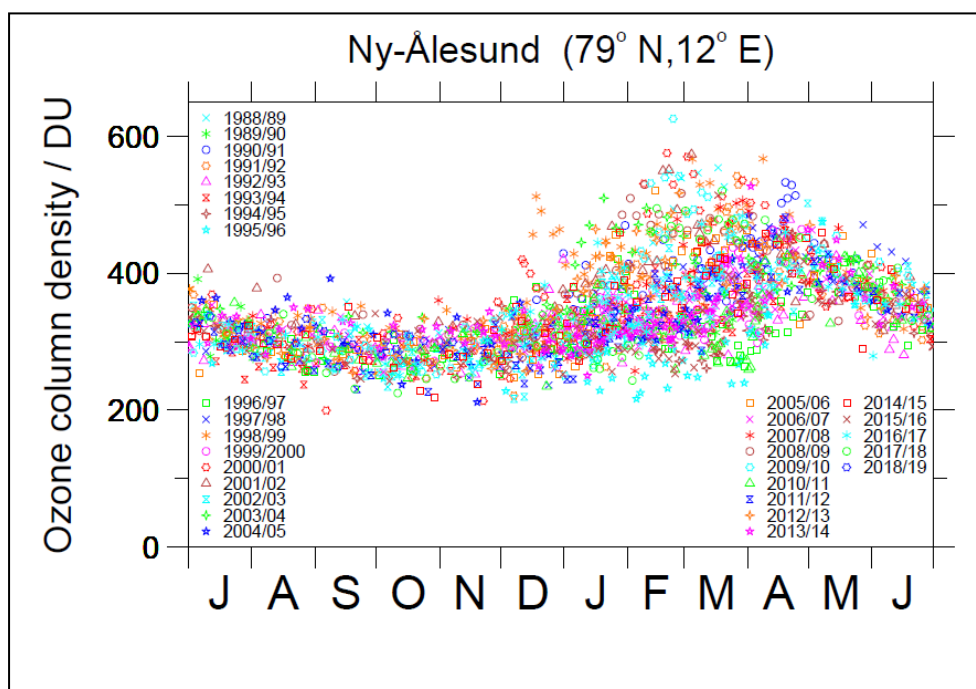
By Roland Neuber, AWI

On 27. August 1988 the first ozone profile by a weather balloon was measured over Ny-Aalesund. It was the beginning of one of the longest ozone profiling series in the high Arctic. In 1988, in the wake of the detection of the Antarctic ozone hole, three researchers from AWI, hosted by the Norwegian Polar Institute set up two ozone profiling instruments, a light radar (lidar) and a balloon launch system. In the following years intensive campaigns together with NILU and University of Bremen were staged in Ny-Aalesund as part of European research projects in order to determine the state of and the processes within the Arctic ozone layer.

On 27. August 2018 the 30. anniversary of the first ozone sonde launch was properly celebrated with the Ny-Aalesund community by launching a dedicated red balloon to the tunes of “Jeg vil ha en blå ballong”, and “99 Luftballons”, see picture by J. Obu, Univ. Oslo.



Photo: Jaroslav Obu, University of Oslo



"Ozone column densities in Dobson Units (DU) from each balloon borne ozone sonde launched since August 1988. Each dot corresponds to one sounding and indicates the amount of ozone integrated from the surface to the top of the atmosphere. X-axis is months from July to June of each year, which is colour coded for each point. The graph shows the annual course of the ozone column density and its high variability. Plot courtesy P. von der Gathen, updated from [Neuber et al., 2014](#), in *Warnsignal Klima: Die Polarregionen* ISBN: 978-39809668-63"

Grand Challenge Initiative - CUSP project

By Kolbjørn Blix, ASC

TRICE 2 and VISIONS 2 were parts of a major international rocket-based research project - the Grand Challenge Initiative (GCI) - CUSP project, with participation from NASA (6 scientific projects), JAXA (1 scientific project) and UiO / ASC (1 scientific project). In addition, all three nations participate in a joint two-stage student rocket - "G-CHASER", to be launched from Andøya as part of GCI CUSP in January 2019. GCI CUSP is a big project with 12 rocket launches from Andøya and Ny-Ålesund, Svalbard in the period 2018-2020. Probably the largest scientific rocket project NASA has ever participated in.

This being a "grand challenge" is beyond doubt for several reasons. The project idea and ownership is Norwegian. It was conceived in 2012 by Professor Jøran Moen at the University of Oslo and Kolbjørn Blix at Andøya Space Center. The basic idea was to gather scientists working on issues related to the gap in the Earth's magnetic field (CUSP) over Svalbard, and for the first time launch from both Andøya and Ny-Ålesund in the same campaign. This way, Andøya would be able to launch NASA's largest scientific rockets – the Black Brant XII's, and fly them horizontally through the CUSP, high above Svalbard. While from Ny-Ålesund, we could launch smaller rockets like Black Brant X's, straight up into the same area.

Doing this at different heights and with different instruments is important when trying to understand the processes going on in and close to the CUSP. Coordinating already planned CUSP related projects, and motivating the creation of new and complementary efforts was utterly important during the initial phase of the work with GCI CUSP. It was also important to ensure that necessary ground-based instruments and modelling communities were included in the team at an early stage.

Another important goal from the Norwegian side was to make sure that all data from rockets and ground-based instruments is fed into a common database, where all active participants have access. After all, data is the most important part of a campaign, and these must be easily available for potential users. This is achieved through an agreement signed by SIOS, NASA, JAXA and UiO in Tokyo in 2017.

One of the biggest challenges faced by GCI CUSP was the fact that two of the NASA projects consisted of two rockets each, to be launched with only 2 minutes of separation. Two rockets from ASC, 2 minutes apart, and then two from Ny-Ålesund with 2 minutes apart.

At ASC we've had multiple launch rails since many years, so we did this for the TRICE mission back in 2007. However, in Ny-Ålesund ASC has only one launch rail was available, hence the GCI CUSP had to be planned as if ASC would manage to build a second rail before the VISIONS-2 campaign in 2018. A collaborative effort by ASC and NASA ensured the success and currently both rails in Ny Ålesund are fitted with one rocket each from the VISIONS-2 project, while at the ASC the two TRICE-2 rockets are mounted and ready.

These four rockets were launched 7th and 8th December under perfect weather and science conditions. In Ny-Ålesund, NASA's project manager for the VISIONS-2 mission was Doug Rowland. At EISCAT Svalbard Radar and the Kjell Henriksen Observatory, a large team of researchers and technicians aided his decision process. Rowland was also accompanied by UiO's postdoctor, Andres Spicher, who assisted him in interpreting information from satellites and ground instruments to determine the correct launch time. At ASC, NASA researcher and project manager for the TRICE-2 mission, Craig Kletzing of the University of Iowa, used the same type of information and instrumentation to ensure the best possible launch time.

The Norwegian rocket in GCI CUSP project is ICI-5. The fifth rocket in a CUSP-related project by Professor Moen at UiO, where the main goal is to understand the basic processes in the CUSP region, and fundamentally important for making space weather models. It will provide answers to how the energy in the beam structures in the northern lights warms up the air above it to several thousand degrees, allowing oxygen to escape the gravity of the earth. We also need to understand the driving forces behind turbulence in the northern lights.

The research also has practical applications regarding the lifetime of satellites, security of astronauts, and what UiO is particularly concerned with: Understanding the fundamental physics in the cusp area of the ionosphere, necessary to model the effect of space weather disturbance on radio waves (GPS and communication signals).

UiO and ASC have collaborated developing the main instrument for this mission – the 4DSpace module, which, with its 6 daughter modules ejected above 60 km altitude, performs multipoint measurements of small-scale plasma structures and electron fields in general with a resolution of unbelievable 1 meter! Today's "standard Instrument" for such measurements - Langmuir probes, measure with a resolution of 1 km!

This means that with today's solution it is measured only once per kilometer, while 4DSpace measures 1000 times within the same kilometer. The system successfully flew on board the Nucleus hybrid rocket (made by Norwegian company NAMMO AS) launched from ASC on September 27th 2018. The next test of 4DSpace, before the ICI-5 mission, scheduled to fly with two such modules from Ny-Ålesund in December 2019, is an improved version flying on-board the student rocket - "G-CHASER" in January 2019 from ASC.

As previously mentioned, G-CHASER is a collaborative project between NASA, ASC and the Norwegian Space Center. NASA is covering the cost of the rocket; ASC covers operating and launch costs, while the Norwegian Space Centre has funded the construction and necessary travel for the "scaled-up to NASA rocket diameter" 4DSpace module. NSC has also funded the University of Tromsø "Smoke Particle Impact Detector (SPID)". UiT's goals with the SPID includes detecting smoke particles from meteors. In other words, the remains of what we see from the earth as "shooting stars". Meteoric smoke is believed to be some of the basis for the creation of so-called noctilucent clouds (NLC), occurring about 86 km above northern Norway during the summer.

Therefore, in January 2019, more than 50 students from America, Japan and Norway will arrive at ASC shortly after New Year to participate in the final integration and testing of G-CHASER before launch. From Norway, both UiO, UiT (Tromsø and Narvik campuses) and ASC are participating. A unique experience for a large group of young people. Not only do they have to make sure their own instruments work as they should, but they must also relate to the ongoing scientific part of GCI. A unique lesson and a wonderful experience!

While GCI CUSP is still in the start-up phase and lasts until 2020, Moen and Blix have already started work on the next "grand challenge" - to achieve a coordinated international effort to relieve the mesosphere (lower part of the atmosphere) of some of its secrets. This project also involves NASA and JAXA, but in the "GCI Mesosphere project", we aim for a broader participation both nationally and from Europe in general. The University of Tromsø is an important participant, and will utilize GCI Mesosphere as the basis for their funding applications for the proposed Norwegian sounding rocket in this new endeavour – MaxiDusty-2. Now with UiO and ASC as collaborators.

Further information: <http://www.grandchallenge.no>



Photos: Hans Arne Eilertsen (Andøya Space Center).

News from SSF

By Karoline Bælum, SSF

SSF – general

The SSF secretariat currently counts 3,5 positions of which 0,5 is in Oslo. Cecilia's contract has ended and Karoline is back in the office. In March and April our co-worker Margrete will be on leave to work in the Governor's winter team as a field inspector. She would like to urge everyone to mark instruments standing in the field well and to clear away unused or abandoned equipment. Our offices are still in the 2nd floor above the reception in the Svalbard Science Center in Longyearbyen. We are always happy to see you if you want to stop by for information, help or to give us an update on your projects.

The Research in Svalbard Portal

RiS is the one-stop portal for researchers coming to Svalbard. What SSF want, is to make it easier for researchers to find new partners for cooperation in projects, and for coordination of fieldwork. This has, until 2018, only been possible by manual search. RiS now does this for you when you register a new project and every time you visit your project page, so take the time to browse around in this turquoise pop-up to find new collaboration partners both for logistics and thematics!

GREAT TO SEE YOU HERE!

Did you know that there are [40](#) projects registered now with keywords matching your project, and [13](#) projects with fieldwork within 10km of your fieldwork site?

[check them out here!](#)

Remember that the search depends on the quality and quantity of the information you enter in your own project page, so please be precise!

There have also been some updates in the booking module owned by Kings Bay in 2018. The one that you will notice quite fast is that your booking will be locked for editing after you have sent it. The reason is that the host institution and Kings Bay need to be able to deal with the booking before you make any new changes to it. Please be patient and wait for them to finish it. When Kings Bay has finished, it will be either accepted or declined, and unlocked. If declined, you must make changes to the order lines that are declined before you can send it in for re-approval again. You will also notice that your booking page shows the Booking ID number. Please refer to this ID and the RiS ID when e-mailing Kings Bay or SSF about your booking.

Make it easy for yourself and avoid problems in RiS: Always make a new fieldwork period, covering the period you or your co-workers actually are out in the field (not a period covering many years). Multi-year false fieldwork periods mess up statistics and the automatic search function described above quite a lot. Never "recycle" an old fieldwork period by changing the dates to make a new one. This makes a mess in the back-end of the database and will give you lots of trouble with bookings later on. The bookings and applications are generated from the fieldwork period, so it is important not to skip steps there. Please note that the dates in applications to set up installations to the Governor are no longer locked to the same dates as the fieldwork period, so you can actually register a one week fieldwork period to set up an installation lasting multiple years. Please also remember that when you register a new person other than yourself in RiS to make a booking the standard procedure, as it is for any webpage with registered users, is that this person receives an e-mail asking them to confirm that they want to be a user in RiS. Until they have confirmed they will not appear when you search for them to continue your booking.

News from SIOS

By Christiane Hübner, SIOS



Svalbard Integrated Arctic Earth Observing System (SIOS) has entered its operational phase almost one year ago and a lot of activities have filled the previous months. Here are some highlights:

- SIOS-KC and the SIOS partners offer a range of **logistical assistance** to researchers from SIOS member institutions. Currently, you can **store items** in Longyearbyen on your travel to/from Ny-Ålesund, both in a storage room as well as in a **freezer**. Our access and logistics officer is available to act as a **local contact person** for delivery and collection of stored items. There is also an **office space** available for short-time use. Soon, more services will be made available, e.g. **transport** with the polish vessel Horyzont II. Please check our web site for contact information and updates: <https://sios-svalbard.org/Logistics>
- The **access programme** for 2019 will fund 10 projects using SIOS research infrastructure or data. 6 of the projects will visit Ny-Ålesund to access facilities including Sverdrup Base, Zeppelin Observatory, Gruvebadet and Dirigible Italia. For more information: <https://sios-svalbard.org/Access2019>
- The first **SIOS Polar Night Week** will be held in January, 14-18 January 2018. This annual meeting brings the SIOS community together for science seminars, working group meetings and discussions about the prioritisations and direction of SIOS. More information and the programme can be found here: <https://sios-svalbard.org/PolarNightWeek>. If you have not yet registered but would like to join the Polar Night Week, please contact information@sios-svalbard.org.
- The first issue of the **State of Environmental Science in Svalbard (SESS) report** will be released during the Polar Night Week. It will contain 9 chapters covering oceanography, marine biology, microbiology, atmospheric studies from lower to higher atmosphere, snow and permafrost. The SESS report will be available on the SIOS web portal: <https://sios-svalbard.org/SESSreport>
- SIOS will host a **side event during Arctic Frontier** in Tromsø: "Building a coherent observing system – the role of innovation and new technology" (Wednesday, 23 January 2019, 14:30 – 16:00; Location: Clarion Hotel The Edge – Arbeidskontoret 2). You are very welcome to join our discussion on how SIOS can contribute to and benefit of innovation within monitoring technology and methods! More information: <https://www.arcticfrontiers.com/program/session/?id=ASE022>
- SIOS-KC is planning a **course about the possibilities of remote sensing products for marine research**. The target group is researchers within marine research fields that have little or no knowledge about remote sensing. The course will include both lectures and practical exercises on how to find and use relevant remote sensing products and will be held in spring/summer in Longyearbyen – pending the approval by the SIOS General Assembly in January.

News from Kings Bay AS

By Svein Harald Sønderland, KB AS

The snow in Ny-Ålesund disappeared rapidly during heavy rainfall in May, causing an early end to the winter season. The temperature in the fjord has on the other hand dropped around two degrees since last summer. The fishing in the fjord has mostly been unsuccessful for the Ny-Ålesund community, and not much fresh fish has therefore found its way to the kitchen this year. In September Kings Bay AS became a member of UArctic, which builds and strengthens collective resources and collaborative infrastructure. The Universities with research activities in the Polar Regions could therefore be more aware of Ny-Ålesund and the possibilities the infrastructure and facilities offered by Kings Bay AS offer.

Research

Kings Bay AS and Ny-Ålesund has had an average season until June with regards to research man days in Ny-Ålesund, but after June/July we had a strong decline. Andøya Space Center and NASA will come in November/December to launch two rockets to study the northern polar cusp and loss of gases from the atmosphere to space. This large research project will give a strong increase in research days for Kings Bay AS in 2018. The Institute Paul-Émile Victor (IPEV), DORIS beacon was moved and will be a part of the new Very-Long-Baseline Interferometry (VLBI) geodetic building to Norwegian Mapping Authority (NMA). NMA hopes to start the first measurements with one of the new antennas during spring 2019. The Polar Research Institute of China, PRIC, set up a wind and temperature LIDAR, complementing other measurements in Ny-Ålesund.

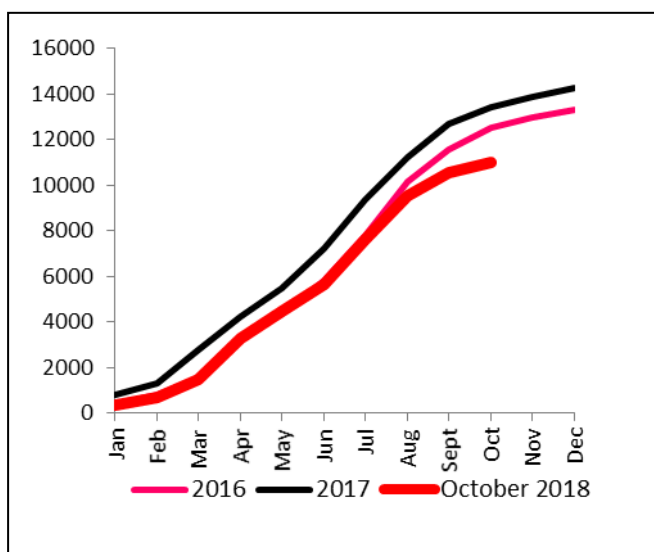


Figure 1. Cumulative total research man-days are lower than normal due to a sharp decline after the months June-July.

Buildings

The work undertaken to save Kongsfjordhallen was a success, and the building is now lifted up on a frame which is secured with pillars into the bedrock. The new Terrestrial laboratory has come along and will be finished in January, and will house laboratories for Terrestrial research as well as the new location for National Institute of Polar Research (NIPR). The old hospital, known as "Skutergarasjen" is renovated, increasing the capacity in regards to the number of researchers Ny-Ålesund can receive. Kings Bay AS has also restored the old sawmill.



The Kongsfjordhallen frame (Photo: Svein Harald Sønderland).

Other news

The decompression chamber air bank has been split, adding an extra line to the chamber providing an extra buffer. Kings Bay AS will get a new compressor for the decompression chamber in 2019. Kings Bay AS also hopes to add a permanent position as a laboratory technician, initially with a position from March until October in 2019. Travels to and from Ny-Ålesund for the rest of 2018 will be on Monday and Thursday, corresponding with the flights to and from the mainland.



Decompression chamber with air banks and the extra line (Photo: Svein Harald Sønderland)

Topics from the 48th NySMAC meeting in Davos

Topics from the NySMAC meeting held in Davos, Switzerland, 16-17 June 2018:

- Strategy for Research and higher education in Svalbard and the progress for the Research Strategy for Ny-Ålesund Research Station
 - Updates from the flagships
 - Reports and planned activities from member institutions
 - Monitoring of local environmental pollution in Ny-Ålesund
 - Marking of instruments in the field
 - Information from Kings Bay AS
 - SSF work report
 - Ny-Ålesund and radio silence
 - Update on SIOS activity
 - Upcoming meetings
-

Topics from the 49th NySMAC meeting in Ny-Ålesund

Topics from the NySMAC meeting held in Ny-Ålesund, 6-7 November 2018:

- Input and discussion on the draft research strategy for Ny-Ålesund Research Station
- Updates from the flagships
- SIOS update
- Common Research infrastructure – thematic centres
- Ny-Ålesund Research Station – local updates
- Information from Kings Bay AS
- GIS system in Ny-Ålesund and marking of instruments in the field
- Discussion about common local atmospheric monitoring during Andøys Space Centre's rocket campaign
- Radio silence in Ny-Ålesund
- SSF update
- Reports and planned activities from member institutions
- Election on vice-chair
- Upcoming meetings

A visit to the common research infrastructures was arranged after the first meeting day and included Gruvebadet, the new research building, Vaskerilab, Marine lab and the Old Pier.



NySMAC participants in Ny-Ålesund November 2018. Photo: Susanne Wasa Hagen, Kings Bay AS

CONTACT ADDRESSES FOR STATIONS AND INSTITUTIONS PRESENT IN NY-ÅLESUND

AWIPEV Arctic Research Base

9173 Ny-Ålesund, Norway
Tel: +47 79 02 68 60
E-mail: station@awi-koldewey.no
<http://www.awipev.eu>

Germany address:

Alfred Wegener Institut (AWI)
Forschungsstelle Potsdam,
Telegrafenberg A43
D-14473 Potsdam, Germany
Tel: +49 331 288 2129
E-mail: koldewey@awi-potsdam.de
<http://www.awi.de/en/go/koldewey>

France address:

Institut Français Polaire, Paul Emile Victor (IPEV)
Technopôle Brest-Iroise, BP 75
29280 Plouzané, France
Tel: +33 298 056 556
E-mail: dfleury@ipev.fr
<http://www.institut-polaire.fr>

Chinese Arctic and Antarctic Administration (CAA)

Polar Research Institute of China
Yellow River Station
9173 Ny-Ålesund, Norway
Tel: +47 79 02 79 89
E-mail: wangyong@caa.gov.cn

China address:

Chinese Arctic and Antarctic Administration
No. 1 Fuxingmenwai Street
Beijing 100860
P.R. China
Tel: +86 10 68036469
E-mail: wangyong@caa.gov.cn
<http://www.chinare.gov.cn>

Consiglio Nazionale delle Ricerche (CNR)

Dirigibile Italia
9173 Ny-Ålesund, Norway
Tel: +47 79 02 71 45
E-mail: international@polarnet.cnr.it
<http://www.cnr.it>

Italy address:

CNR-ISAC
Institute of Atmospheric Sciences and Climate
Via Gobetti 101
40129 Bologna, Italy
Tel: +39 051 6399595
E-mail: international@polarnet.cnr.it

GeoForschungsZentrum Potsdam (GFZ)

Telegrafenberg A17
D-14473 Potsdam, Germany
Tel: +49 331 288 1100
E-mail: falck@gfz-potsdam.de
<http://www.gfz-potsdam.de>

Kings Bay AS (KB)

9173 Ny-Ålesund, Norway
Tel: +47 79 02 72 80
E-mail: director@kingsbay.no
<http://www.kingsbay.no>

Korea Polar Research Institute (KOPRI)

Dasan Station
9173 Ny-Ålesund, Norway
Tel: +47 79 02 68 44
E-mail: dasan@kopri.re.kr

Korea address:

Korea Polar Research Institute (KOPRI)
26 Songdomirae-ro,
Yeonsu-gu
Incheon, 21990, Korea
Tel: +82 32 770 8400
E-mail: wjkim@kopri.re.kr
<http://kopri.re.kr>

National Centre for Polar and Ocean Research (NCPOR)

Himadri station
9173 Ny-Ålesund, Norway
E-mail: rasik@ncaor.org

India address:

National Centre for Polar and Ocean Research (NCPOR)
Headland Sada, Vasco da Gama
Goa - 403 804, INDIA
Tel: +91 832 2520876, 2525501
E-mail: rasik@ncaor.org
<http://ncaor.gov.in/>

National Institute of Polar Research (NIPR)

Rabben, 9173 Ny-Ålesund, Norway
Tel: +47 79 02 71 07

Japan address:

National Institute of Polar Research
Midoricho 10-3, Tachikawa
Tokyo 190-8518, Japan
Tel: +81 42 512 0644
E-mail: NALYR@nipr.ac.jp
<http://www-arctic.nipr.ac.jp/>

Natural Environment Research Council (NERC)

Harland House
9173 Ny-Ålesund, Norway
Tel: +47 79 02 70 11
E-mail: nc@bas.ac.uk
<http://www.nerc.ac.uk>

UK address:

National Environment Research Council
Polaris House
North Star Avenue
Swindon, SN2 1EU, UK
Tel: +44 1793 411 500

Northern Research Institute AS (NORUT)

P.O. Box 6434
9294 Tromsø, Norway
E-mail: kjella@norut.no
<http://www.norut.no>
Tel: +47 62 94 00

Norwegian Institute for Air Research (NILU)

P.O. Box 100
2027 Kjeller, Norway
Tel: +47 63 89 80 00
E-mail: kjersti.toernkvist@nilu.no
<http://www.nilu.no>

Norwegian Mapping Authority (NMA)

Ny-Ålesund Geodetic Observatory
9173 Ny-Ålesund, Norway
Tel: +47 79 02 70 10
E-mail: vlbi@statkart.no
<http://www.statkart.no>

Norwegian Polar Institute (NP)

Sverdrupstasjonen.
9173 Ny-Ålesund, Norway
Tel: +47 79 02 71 15
E-mail: stationmanager@npolar.no
<http://npolar.no>

Norway address:

Norwegian Polar Institute
PO Box 6606 Langnes,
9296 Tromsø, Norway
Tel: +47 77 75 05 00
E-mail: christina.pedersen@npolar.no
<http://www.npolar.no>

Norwegian Space Centre (NSC)

SvalRak, Andøya Rocket Range
PO Box 54, 8480 Andenes, Norway
Tel: +47 76 14 44 20
E-mail: kjell@rocketrange.no
<http://www.rocketrange.no>

NysMAC

(Ny-Ålesund Science Managers Committee)
c/o Norwegian Polar Institute
PO Box 6606 Langnes,
9296 Tromsø, Norway
Tel: +47 77 75 05 00
E-mail: nysmac@npolar.no
<http://npolar.no/nysmac/>

Stockholm University (SU)

Institute of Applied Environmental Research
Air Pollution Laboratory
Frescativägen 54
10691, Stockholm, Sweden
Tel: +46 8 674 72 87
E-mail: Radovan.krejci@aces.su.se
<http://www.itm.su.se>

University of Groningen (UoG)

Arctic Centre
P.O. Box 716
9700 AS Groningen, The Netherlands
Tel: +31 50 363 6834
E-mail: m.j.j.e.loonen@rug.nl
<http://www.arcticstation.nl>

Uit – The Arctic University of Norway

Department of Arctic and Marine Biology
Faculty of Biosciences, Fisheries and Economics
N-9037 Tromsø, Norway
Tel: +47 77 64 60 00
E-mail: geir.rudolfson@uit.no
<http://www.uit.no>