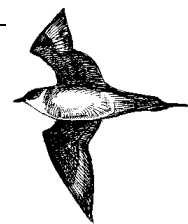


- Regulation in Kongsfjorden
- New stations are emerging
- ARCFAC-funded projects have started

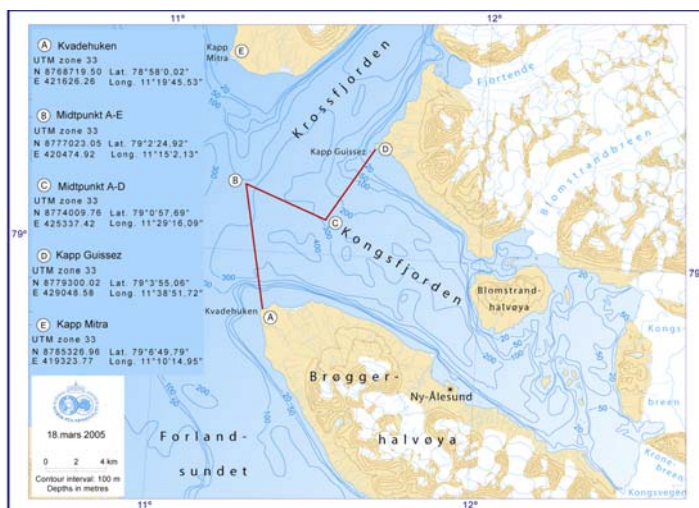
- Calendar of Meetings
- Staff News
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# Ny-Ålesund Newsletter



20<sup>th</sup> edition  
June 2007

## Regulation concerning the protection of an area in Kongsfjorden on Svalbard against fishery activities



The issue of protecting Kongsfjorden for research purposes was raised by Kings Bay AS in 2003. The Interdepartmental Polar Committee endorsed the idea and the Ministry of Justice started the process to change the Svalbard Law from 1925 to make it possible to make regulations concerning industry/business activities that are judged to be in conflict with the research activities on Svalbard.

The first conflict to be addressed was between the fishing industry and the research activities in Ny-Ålesund. A regulation has been formulated to protect, the most important, inner area of the fjord against trawling for other purposes than research. The regulation came in to force the 2<sup>nd</sup> February 2007.

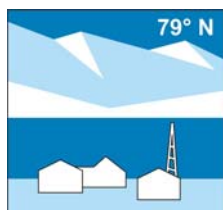
*All fishing by trawl is prohibited in the area east of the line from A-D in Kongsfjorden*

## “Ny-Ålesund and IPY”

NySMAC seminar hosted by the Natural Environment Research Council and The British Antarctic Survey (UK)

NERC and BAS will host the “Ny-Ålesund and IPY” seminar at the Møller Centre, Cambridge on the 16<sup>th</sup> and 17<sup>th</sup> October 2007. Information concerning the seminar including abstract proposal forms can be found at [www.antarctica.ac.uk/nysmac](http://www.antarctica.ac.uk/nysmac).

We look forward to seeing you there.



## NySMAC logo

Finn Bjørklid, graphic designer at Norwegian Institute for Air Research has designed the new logo for NySMAC.

## New stations are emerging

Two new nations are establishing presence in Ny-Ålesund as part of their IPY undertakings.

Russia will establish a station in Ny-Ålesund during the summer season of 2007. The station will be in the school house with a capacity for up to 10 scientists. The first group of scientists is planned to arrive in July 2007. Russia is seeking scientific co-operation and activities in Ny-Ålesund well beyond IPY. Contact person is Dr. Sergey M. Pryamikov ([priamiks@aari.nw.ru](mailto:priamiks@aari.nw.ru)) at the Arctic and Antarctic Research Institute of Roshydromet in St. Petersburg, Russia.

India will commence Arctic research by establishing themselves in Ny-Ålesund. During August 2007 a group of scientists will explore possibilities of establishing long term projects in collaboration with other stations in Ny-Ålesund. Contact person is Dr. S. Rajan ([rajan@ncaor.org](mailto:rajan@ncaor.org)) at the National Centre for Antarctic and Ocean Research in Goa, India.

## **Yellow River Station**

*Wang Yong, Polar Research Institute of China*

This year China will carry out 11 projects at Yellow River Station, two of them will be done until next year. The following is the list of projects.

1. The monitoring and studies of glaciers around Ny-Ålesund, Svalbard
2. Maintaining for Arctic GPS tracking station and station panorama data gathering
3. Level and Trends of Persistent Organic Pollutants in Arctic Svalbard Region
4. Collection of Environmental Samples Around Yellow River Station, Arctic and Primary Isolation of Actinomycetes
5. The Structure and Function of Plankton in Kongsfjorden, Svalbard
6. Study on Biodiversity of Ny-Ålesund
7. Upper Atmosphere Physics Observation at Polar Region
8. Ice-water deposit and climate records in the surrounding coasts of the Arctic Huanghe Station
9. Observational Research on the physical processes of boundary layer over the tundra of the Arctic
10. CO<sub>2</sub> System in the Kongsfjorden, Svalbard
11. Monitoring and assessing of atmospheric environment around Ny-Ålesund, Svalbard

## **2006/07: Again a winter with little sea ice in Kongsfjorden**

*Sebastian Gerland, Carl-Petter Nielsen and Olga Pavlova  
Norwegian Polar Institute*

As in the previous season 2005/06, also this winter/spring 2006/07 there was less fast ice than normal in Kongsfjorden. The inner part of the fjord developed some fast ice cover in the area between the east shore of Blomstrandøya, the northeastern innermost coastline in Kongsfjorden, and the Lovenøyane. The thickest ice measured was 40 cm in the first half of May 2007. Most of the ice disappeared earlier than normal, similar to the previous winter. There was no solid fast ice cover existing at the southern shore of inner Kongsfjorden. The data from this season are also used within the NFR project MariClim, which deals with the integration of the physical and biological environmental conditions in Kongsfjorden. The Kongsfjorden sea ice monitoring project at NPI is continuing, including mapping based on observations and photography, and direct snow and ice thickness measurements. A paper about the Kongsfjorden sea ice monitoring including results from 2003 to 2005 will be published soon in *Annals of Glaciology*, Volume 46.

## **Black carbon particles in snow; Implications for reflectance and climate**

*Terje Berntsen (CICERO), Sebastian Gerland (Norwegian Polar Institute)*

Black carbon particles (soot) deposited on snow covered surfaces can reduce the albedo significantly, affecting melting processes and climate. During a 10 day field campaign around Ny-Ålesund in March 2007 two international groups sampled BC particles in snow and made simultaneous measurements of snow reflectance. The groups, a Norwegian/Swedish group (NPI/CICERO/SU) and a US group (University of Washington and University

of Hawaii) are both performing measurements of BC in snow and ice to derive the corresponding albedo changes. By bringing the two groups together there was a unique opportunity to compare and develop our somewhat different measurement techniques for measuring BC particles. Measuring the BC content of snow and deriving the corresponding alteration of the reflective properties of the snow is not straightforward. Key issues include: Sampling procedures, melting and filtering procedures, equipment used (preparing of filters etc.), methods for analyzing the filter for BC content, and ultimately deriving the implications for albedo of measured BC content. During the campaign falling snow was collected simultaneously on the Zeppelin station and in Ny-Ålesund thereby providing a possibility to learn more about how BC particles are removed by precipitation. The work was supported by NFR through a grant for Norwegian – US collaboration on polar research within the natural sciences, and will be followed up by a second common campaign in Barrow Alaska in 2008.

## **Greenhouse gases at Zeppelin – increasing and decreasing**

*Ann Mari Fjæraa, Norwegian Institute for Air Research*

A wide range of halogenated greenhouse gases such as CFCs, HCFCs and HFCs are measured in situ at Mt Zeppelin. Since the ban on the chemically related CFCs, HFC134a has been manufactured in growing quantities for use in air conditioning systems in cars and buildings. A molecule of HFC134a has a warming effect more than a thousand times that of a molecule of CO<sub>2</sub>. Recent observations shows that the average background concentration of HFC134a from 2001-2006 is 33.5 ppt with a growth rate of 4.8 ppt/year. The amount of HFC134a is still too small to make an impact on global warming, but the fact that is so potent and increasing rapidly in volume, makes it essential for us to follow its development closely. Methyl chloroform is a strong Greenhouse gas, a strong ozone depletor and a hazardous air pollutant, identified as a toxic air contaminant in April 1993. Methyl chloroform is widely used as an industrial solvent and degreaser, as a dry cleaning agent, as a component of aerosols formulations, and as a coolant and lubricant in metal cutting oils. It was phased out in developed countries in 1996. Observations at Mt. Zeppelin show that the average background concentration in 2001-2006 was 26.8 ppt and the concentration is decreasing with a rate of 4.3 ppt/year.

## **Spring campaign 2007 – Mercury monitoring**

*Katrine Aspmo, Norwegian Institute for Air Research*

Since 2000 NILU has measured elemental gaseous mercury at the Zeppelin air monitoring station. Mercury is a very toxic element and can be strongly accumulated in the food chain. How the element enters the food chain is still under discussion. During spring, elemental mercury in the atmosphere is through a chain of reactions transformed into other forms of mercury, which is more prone to deposition onto snow and ice surfaces. Once deposited, mercury becomes available for the fragile Arctic ecosystems. Every spring since 2003, NILU has collaborated with French scientists (from LGGE, Grenoble) in Ny-Ålesund, and together we study the complex cycling and pathways of mercury in the Arctic environment in order to understand the impact of mercury on the ecosystems. In 2007 the

collaboration also includes scientists from NTNU.

### “Teisten” – the new Kings Bay boat

Kings Bay AS has acquired a new boat. She has been given the name “Teisten” (the Norwegian word for Black guillemot). Teisten is a work boat. The main purpose for use will be to give scientists good working conditions when operating in Kongsfjorden and adjacent waters. All scientists operating out of Ny-Ålesund can book the boat, also for pure transportation tasks. As a work boat it will comfortably take 5-6 persons. For transportation it can take approximately twelve passengers. It will always come with a pilot.

For booking and further information you can contact the Kings Bay AS reception.

### The first ARCFAC-funded projects have started their activities in Ny-Ålesund

*Marzena Kaczmarek, Norwegian Polar Institute*

The European Centre for Arctic Environmental Research (ARCFAC), which is the EU Specific Programme for Structuring the European Research Area in Ny-Ålesund, has accepted 15 proposals (of 31 submitted applications) to carry out scientific research in Ny-Ålesund. The accepted projects originate from 8 different European countries (United Kingdom, Germany, Poland, Sweden, Austria, Finland, Norway, and Spain) and involve 9 different nationalities (Austrian, German, English, Finnish, Hungarian, Norwegian, Polish, Spanish and Swedish). The projects cover wide spectrum of scientific themes adding new value to the ongoing research in Ny-Ålesund. The next Call for Proposals will be announced in August 2007 on the ARCFAC website: <http://www.arcfac.npolar.no>, which also contains further details about the programme. We invite European researchers to submit new applications!

### Project on mercury contamination

From April 15 to June 18, 2007, four scientists (Xavier Faïn, Raphaëlle Hennebelle, Catherine Larose, and Aurélien Dommergue) from the LGGE (Laboratory of Glaciology and Geophysics of the Environment, Grenoble, France) are investigating at Ny-Ålesund the chemical and biological processes which could be involved in the mercury contamination of this Arctic location. This research is funded by the IPEV (program CHIMERPOL II) and is part of OASIS during the IPY 2007/2009.

Mercury (Hg) behaves exceptionally in the environment due to its volatility, its potential to be methylated and its ability to bioaccumulate in aquatic food webs. It is emitted into the atmosphere from a number of natural and anthropogenic sources. The Arctic is populated by few people and has little industrial activity and is therefore perceived to be relatively unaffected by human activity. However, long distance atmospheric transport brings anthropogenic contaminants from mid and low latitude sources to both Polar Regions. In the Canadian Arctic Hg has been measured above human consumption guidelines in some marine mammals exceed. Perhaps most striking is that Hg levels recorded in some northerners living in the Arctic are higher than those recorded in people from more temperate, industrialized regions where most of the Hg originates.

In the Arctic, mercury readily bioaccumulates in marine ecosystems. To better understand the pathway by which Hg

is introduced to these environments, the LGGE group is monitoring mercury both in the atmosphere and in the seasonal snowpack. The fast oxidation processes (known as AMDEs, Atmospheric Mercury Depletion Events), the exchange fluxes between the snowpack and the atmosphere, the concentrations in snow and melt water are investigated. Bacteria biodiversity is also measured in snow and meltwater to better understand if biological processes in the seasonal snowpack before snow-melting could be involved in the transfer of a toxic specie of mercury to the marine ecosystem. Pit and snow sampling are also carried out on three glaciers around Ny-Ålesund to study the role of perennial snowpack. Preliminary results showed huge mercury deposition during short period (which correspond to AMDEs), and strong re-emission from the snowpack to the atmosphere during these events. *Contacts for the project:*

*Christophe Ferrari* ([ferrari@lgge.obs.ujf-grenoble.fr](mailto:ferrari@lgge.obs.ujf-grenoble.fr))

*Aurélien Dommergue* ([dommergue@lgge.obs.ujf-grenoble.fr](mailto:dommergue@lgge.obs.ujf-grenoble.fr))

### Predator-prey interactions in the planktonic community of Kongsfjorden (PRACEAL)

*Fanny Narcy (LOV, NPI) and Margaux Noyon (LOV)*

The marine ecosystem of Kongsfjorden is particularly well suited for studies on the impact of climate driven water mass changes on biological systems in the Arctic. At the community level, any change at one or several levels of the food web is likely to result in cascading effect from primary producers (micro-algae) to higher predators. Among the biological processes, lipid accumulation is at the centre of the various pathways controlling winter survival, reproduction and recruitment of the species as well as energy transfer through the arctic food web. Thus, modification in the factors controlling the synthesis and utilization of lipid reserves would impact the delicate timing of arctic life cycles. Changes in zooplankton population structure, in relation with increasing Atlantic water influence, affect all levels of the trophic food web and would result in a decrease in food quality for the carnivorous species associated with a reduced energy transfer.

The PRACEAL programme for 2007 consists on a seasonal description of the trophic interactions implicated in the energy and matter transfer throughout the Kongsfjorden pelagic ecosystem. From mid April to the end of September, we are monitoring the hydrographical conditions and both prey and predator populations dynamics simultaneously, once a week in the intermediate zone of the fjord.

Meanwhile, the processes controlling lipid reserves management are investigated experimentally. In addition, coupling the experimental measurement of predation rates and biochemical markers will allow a better description of the trophic relationships in the pelagic food web. The planktonic predators (mainly amphipods) are the major prey for higher trophic levels. Their adaptive capacity to face the environmental changes is crucial in defining the ecosystem response. And among the preys, we are investigating the role of the small copepods, both through their trophic links and lipid accumulation.

Contact e-mails: [narcy@obs-vlfr.fr](mailto:narcy@obs-vlfr.fr), [noyon@obs-vlfr.fr](mailto:noyon@obs-vlfr.fr)

The PRACEAL project, funded by IPEV, is part of the IPY cluster PAN-AME. **Project leader:** Patrick Mayzaud (LOV, France). [http://www.obs-vlfr.fr/LOV/index\\_e.php](http://www.obs-vlfr.fr/LOV/index_e.php)



## Calendar of Arctic Meetings

**27<sup>th</sup> NySMAC meeting**  
18-19 October 2007 in Cambridge, UK.

**NySMAC Seminar in Cambridge (UK): "Ny-Ålesund and IPY"**  
Hosted by the Natural Environment Research Council and The British Antarctic Survey 16-17 October 2007.

For a comprehensive list of published meetings related to the Arctic, look at **Arctic Calendar of Events** on the IASC home page <http://www.iasc.se> or <http://calendar.arcus.org/>

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**Yellow River Station:**  
This year the leader will be Dr. He Jianfeng, Polar Research Institute of China.

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**Next edition of Ny-Ålesund Newsletter:**  
**December 2007**

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