

# Ny-Ålesund Research Station

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Research Strategy  
Applicable from 2019

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## About the Research Council of Norway

The Research Council of Norway is a national strategic and funding agency for research activities. The Council serves as the key advisor on research policy issues to the Norwegian Government, the government ministries, and other central institutions and groups involved in research and development (R&D). The Research Council also works to increase financial investment in, and raise the quality of, Norwegian R&D and to promote innovation in a collaborative effort between the

research community, trade and industry and the public administration. It is the task of the Research Council to identify Norway's research needs and recommend national priorities and to use different funding schemes to help to translate national research policy goals into action. The Research Council provides a central meeting place for those who fund, carry out and utilise research and works actively to promote the internationalisation of Norwegian research.

## Preface



The Arctic is warming twice as fast as the rest of the globe, and the Svalbard region is warming at the fastest rate within the circumpolar Arctic. Thus, Ny-Ålesund represent a key site for observing effects of the warming that is occurring, and for undertaking research regarding how such changes influence the region and the globe.

Norway has facilitated international polar research in Svalbard for more than 50 years. The Ny-Ålesund Research Station is one of the world's northernmost year-round research communities and provides a unique access to a natural polar laboratory. It is an important Norwegian platform for international Arctic research, and it is important for several Norwegian and global monitoring programs that contribute to international agreements and conventions.

Svalbard research is characterised by a high degree of international collaboration. In Ny-Ålesund more than 20 research institutes have long-term research and monitoring activities. The station is one of four research localities in Svalbard (Ny-Ålesund, Longyearbyen, Barentsburg and Hornsund). Close cooperation between these communities is essential for the further development of Ny-Ålesund.

In 2016, the Norwegian Government announced (Meld.St.32 (2015-2016)) the development of a research strategy for the Ny-Ålesund research station. Guidelines and principles for research activity were established by the government in 2018 in the Strategy for research and higher education in Svalbard. The Research Council of Norway was given the responsibility for developing a research strategy in cooperation with relevant stakeholders, research institutions and ministries.

The ambition has been to make a research strategy that clearly defines expectations regarding quality, cooperation, openness, data-sharing and sharing of results at the Ny-Ålesund Research Station. High-quality research is already the norm in Ny-Ålesund. The intention of this strategy is to contribute to release the full potential of the Ny-Ålesund research and collaboration and thereby increase the impact of this research even further.

In developing this first research strategy for Ny-Ålesund, input from interested parties has been valuable and important. We are also depending on your cooperation in the future for developing the Ny-Ålesund Research Station.

Oslo, April 2019

John-Arne Røttingen  
Chief Executive



Photo: Steve Cousson / UNIS

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Installation of mesocosms (EU-project EPOCA).  
Photo: Ulf Riebesell / GEOMAR

## 1 Vision and Objectives

### VISION:

**Ny-Ålesund – the foremost research station for Arctic natural sciences**

### OBJECTIVES:

- › World-class science
- › Sustainable research production
- › Open access to data

Ny-Ålesund is the world's northernmost year-round research station that hosts and facilitates long-term observations and research activities. Building on well-established international collaboration, advanced research infrastructure and excellent science, Ny-Ålesund will be developed even further, such that it is a world leading observation and research platform for natural sciences known for:

- › easy access to a unique natural polar laboratory;
- › the best routines for Arctic safety;
- › efficiency and excellence in coordination, collaboration and information exchange;
- › high-quality observation systems that are well connected to international networks;
- › state-of-the-art research infrastructure and research facilities;
- › open access to data and research infrastructure;
- › a community with the highest quality scientists and research activities;
- › a good professional and social environment, building on trust and transparency.

The further development of the research station and the research itself must take due consideration to the local environment. This is important for sustaining the unique and pristine environment and cultural heritage on site. All activities must comply with the Svalbard Environmental Protection Act as well as the Ny-Ålesund land-use plan.

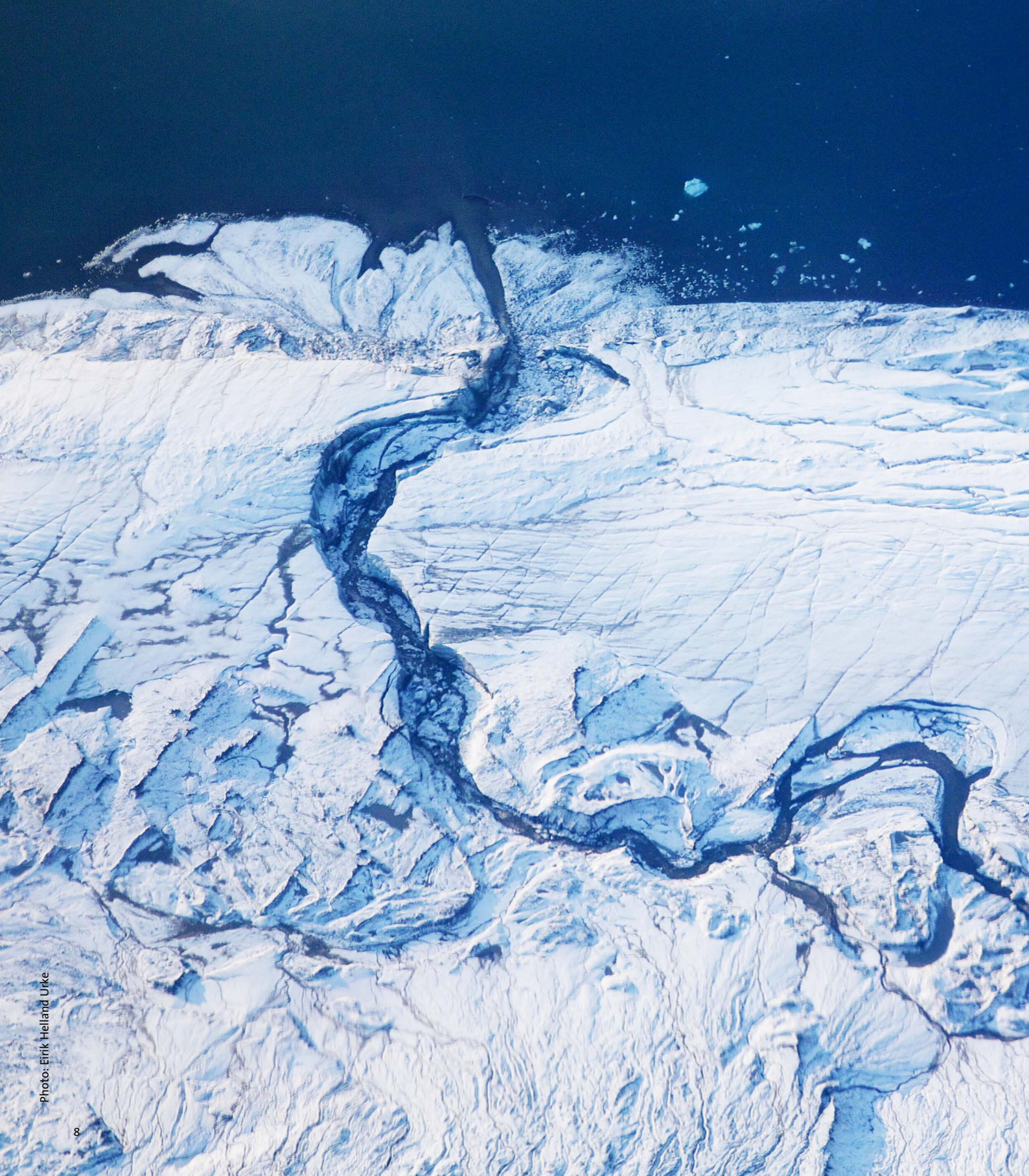


Photo: Erik Helland Urke

## 2 Background

### 2.1 Development of research activities in Ny-Ålesund

Today, Ny-Ålesund is a unique station for Arctic research and monitoring of environmental change. It has easy access and a well-established research infrastructure. From 1916 until 1962, Ny-Ålesund was primarily a coal-mining town, but research activity also had a presence in the town's early days. For example, it served as the departure point for several large-scale polar expeditions. After the mining accident in 1962, the coal mining activity was terminated by Parliamentary decree, and research became the main activity in the area. Due to the history of Ny-Ålesund, most of its buildings are protected as cultural heritage. These buildings constitute the largest collection of protected buildings in Svalbard. The Kings Bay Company owns the land and most of the buildings in Ny-Ålesund and has provided services for research activity in the area for decades.

International research activity is extensive in Ny-Ålesund. More than 20 research institutions have long-term research and monitoring activities that operate out of Ny-Ålesund. According to studies done by the Nordic Institute for Studies in Innovation, Research and Education (NIFU), the research activity<sup>1</sup> in Ny-Ålesund currently accounts for about 25 percent of the research activity in the Svalbard Archipelago.

The presence of researchers from many different institutions offers unique opportunities for collaboration. Such diversity also heightens the need for coordination. Since 1994, the Ny-Ålesund Science Managers Committee (NySMAC) has functioned as an important venue for coordination and cooperation among the research institutions in Ny-Ålesund.

Ny-Ålesund monitoring activities play an important role in a variety of national and international monitoring programmes. The research station is uniquely located for observing climate change effects and for undertaking research on how these changes influence both physical environments and resident plants and animals, both regionally and globally. Ny-Ålesund is an important location for several national and global monitoring programmes that contribute data to important international agreements and conventions.

Norway has made extensive investments in research infrastructure in Ny-Ålesund, both to stimulate research activities, and to provide general infrastructure, housing and logistics for the benefit of the international research community. The installation of a fibre-optic cable from Longyearbyen, the establishment of the Norwegian Mapping Authority's new geodetic observatory (in 2018) and the completion of a new research building focussed on terrestrial ecology (in 2019) in recent years, make Ny-Ålesund an outstanding site for Arctic research.

The combination of Norwegian investments and support in setting up specialised research buildings and laboratories, and the national and international institutional investments in research and advanced scientific equipment for monitoring and field work in Ny-Ålesund, have been key factors for success in establishing the world's most advanced and internationally oriented Arctic research station. The interest and high-quality research contributions from the large number of international research institutions present in Ny-Ålesund, have been paramount for this development.

1 Measured in researcher days. Source: NIFU report 2015:37



Photo: Ólafur Ingólfsson / UNIS

## 2.2 Framework for the strategy

Norwegian authorities have high ambitions for research in Svalbard<sup>2</sup>. A key ambition is to develop Ny-Ålesund as a Norwegian platform for high quality international research, higher education and environmental monitoring, with global significance. An important basis for this is a research strategy that emphasises how the unique research opportunities in Ny-Ålesund can be more efficiently used through increased coordination of resource use, and how clearer priorities and enhanced quality of the research can be achieved within the context of the international research community present in Ny-Ålesund.

The Government of Norway issued its Strategy for research and higher education in Svalbard in May 2018 that establishes the guidelines and principles for the research activities in Svalbard. This strategy, together with the Government's White paper on Svalbard, provide the overall framework for the research strategy for the Ny-Ålesund Research Station<sup>3</sup>.

Important elements that apply to Ny-Ålesund Research Station are in particular:

- ▶ Research is to exploit the area's distinctive character as a clean natural science laboratory.
- ▶ The environment must remain as pristine as possible during all future development.
- ▶ Research is the prioritized activity in Ny-Ålesund. Other activities in and around Ny-Ålesund must adapt to limit possible impact on the research activity.
- ▶ Ny-Ålesund is a radio silent area because of important instruments that can be affected by radio emitting devices.
- ▶ Development will be towards a more thematically-based structure and shared-use of infrastructures to ensure optimal use.

<sup>2</sup> Meld. St. 32 (2015–2016), white paper on Svalbard

<sup>3</sup> The term Ny-Ålesund Research Station covers all research activity based in Ny-Ålesund and the Kongsfjorden area

The Norwegian Polar Institute (NPI) is a directorate organized under the Ministry for Climate and Environment. NPI will perform Norway's host role in Ny-Ålesund and is responsible for the implementation and daily follow-up of the research strategy locally. NPI is thus the point of contact in Ny-Ålesund for scientific research and associated activities, such as questions regarding the planning of official visits. NPI also has the over-riding responsibility to follow up the action points in this strategy, unless otherwise stated. Action points will be followed up in close cooperation with relevant actors with activity in Ny-Ålesund.

The research strategy for Ny-Ålesund aims to strengthen scientific development and improve coordination. Development and implementation of procedures for prioritising and allocating use of existing buildings and laboratories, and further developing Ny-Ålesund's infrastructure, buildings and services, is important. The strategy clearly defines Norway's expectations regarding quality, cooperation, openness, data-sharing and results.

<sup>4</sup> The term Ny-Ålesund Research Station covers all research activity based in Ny-Ålesund and the Kongsfjorden area

The Research Council of Norway (RCN) was commissioned by the Norwegian Government through the White paper on Svalbard<sup>4</sup> to develop the research strategy for Ny-Ålesund. Input from the scientific community and other relevant stakeholders has been crucial in finalising it. They have given important insight in the well-established and excellent international cooperation on-site and shared their views and future priorities and plans.

Regular dialogue will be established between the RCN, NPI, Kings Bay AS and relevant ministries to ensure that the strategy is appropriately followed up. This includes making necessary decisions related to progress.

RCN will periodically evaluate the status of the research and implementation of the strategy. The strategy will be revised when necessary.



### 3 Key institutions and forums for Ny-Ålesund research

All research actors in Ny-Ålesund have a responsibility to coordinate their activities with the other institutions on site. This chapter describes the institutions with special responsibilities for coordination and operations, as well as important fora for cooperation.

#### Norwegian Polar Institute

The Norwegian Polar Institute (NPI) is a directorate under the Ministry of Climate and Environment. As a directorate, it performs Norway's host role in Ny-Ålesund and is responsible for implementation and follow-up of the strategy locally. NPI is the point of contact for scientific research and associated activities, and has the overall on-site responsibility for ensuring coordination. Accordingly, NPI holds weekly meetings attended by representatives of other organisations working at the Ny-Ålesund Research Station.

NPI is also Norway's central institute for environmental monitoring, mapping and scientific research in the Polar Regions. NPI has had a year-round presence in Ny-Ålesund since 1968.

#### Kings Bay AS

Kings Bay AS is a limited company, entirely owned by the Ministry of Climate and Environment. Kings Bay AS owns the land that comprises the Brøggerhalvøya Peninsula and Ny-Ålesund. As owner, the company is responsible for the safety in the area and for the land-use plan. The purpose of Kings Bay AS is to operate, maintain and develop research infrastructure in Ny-Ålesund and provide other necessary facilities and services. Kings Bay AS serves as the point of contact to the Governor of Svalbard regarding safety matters, is in charge of port and airport operations, and provides board, lodging and other logistics in Ny-Ålesund. The company offers services and facilitates the use of research infrastructure, as well as having the responsibility for safeguarding cultural heritage sites on their property.

#### Ny-Ålesund Science Managers Committee

The cooperative forum Ny-Ålesund Science Managers Committee (NySMAC) was established in 1994 by the researchers in Ny-Ålesund to enhance cooperation and coordination. NySMAC contributes to the development of Ny-Ålesund as an outstanding site for Arctic research, through advancing cooperation between scientists and research projects, and assisting in effective and sustainable utilization of Ny-Ålesund as a research site. As a major initiative to promote international collaboration, NySMAC created the four flagship programmes (see chapter 4.1).

Any scientific institution that runs a long-term programme based in Ny-Ålesund and/or has significant research activities in Ny-Ålesund is eligible to join NySMAC as a member. New members are accepted following a consensus decision by NySMAC. There are currently 18 member-institutions and four observers (see Box 1). NySMAC has a Chair and Co-chair; these roles circulate among the member institutions. The Chair and Co-chair are appointed for two years and each representative can serve for a maximum of two periods. NPI serves as the forum's Secretariat. The committee plays an important role in coordinating research and infrastructure and sharing of information. NySMAC serves as an adviser and collaborator regarding the development of research activity at the Ny-Ålesund Research Station.

#### Box 1

#### NySMAC members and observers by April 2019

##### Members

- › Alfred Wegener Institute (AWI), Germany
- › Andøya Space Center (ASC), Norway
- › Chinese Arctic and Antarctic Administration (CAA), China
- › Consiglio Nazionale delle Ricerche (CNR), Italy
- › GeoForschungsZentrum Potsdam (GFZ), Germany
- › Institut Polaire Francais, Paul Emile Victor (IPEV), France
- › Korea Polar Research Institute (KOPRI), South Korea
- › National Centre for Polar and Ocean Research (NCPOR), India
- › National Institute of Polar Research (NIPR), Japan
- › Natural Environment Research Council (NERC), UK
- › Northern Research Institute Tromsø (NORUT), Norway
- › Norwegian Institute for Air Research (NILU), Norway
- › Norwegian Mapping Authority (NMA), Norway
- › Norwegian Polar Institute (NPI), Norway
- › Stockholm University (SU), Sweden
- › The University Centre in Svalbard (UNIS), Norway
- › University of Groningen (UoG), The Netherlands
- › University of Tromsø (UiT), Norway

##### Observers

- › Kings Bay AS (KB), Norway
- › The Research Council of Norway (RCN), Norway
- › Svalbard Integrated Arctic Earth Observing System (SIOS)
- › Svalbard Science Forum (SSF), Norway

## Institutions with national coordinating responsibilities

Several institutions with long-term research and monitoring activities in Ny-Ålesund have national responsibilities as coordinators of their national activities at the Ny-Ålesund Research Station. These institutions are assessing and approving projects prior to registration in the Research in Svalbard (RiS) portal (see Box 2). They are expected to ensure that projects from their country comply with this research strategy, minimize project overlap and ensure that projects are of high international calibre and that environmental concerns are addressed. In cases of doubt, the institution involved is encouraged to discuss with NySMAC prior to registration in the RiS-portal.

NPI has the overall responsibility to ensure that all activities at the station are in line with this strategy and has the final authority to approve access.

## Svalbard Science Forum

The Svalbard Science Forum (SSF) was established in 1998 to increase cooperation and coordination within Svalbard research. SSF promotes open sharing of data and reduction of the environmental impact of research activities in the archipelago. All research communities; Longyearbyen, Ny-Ålesund, Barentsburg and Hornsund are represented in SSF. NySMAC represents the Ny-Ålesund research community in the Forum. The Research Council of Norway (RCN) serves as Chair of the SSF and is responsible for administering the permanent secretariat in Longyearbyen.

SSF administers two funding schemes on behalf of RCN – the Svalbard Strategic Grant programme and the Arctic Field Grant programme (see also Box 4). The aim of these grants is to promote SSF priorities. The funding is essential for maintaining and developing strategic research priorities, for instance the Ny-Ålesund flagship programmes. The Arctic Field Grant is very important for recruitment. It facilitates access to field work in Svalbard, including Ny-Ålesund for young scientists. The SSF Secretariat is also responsible for operating and developing the unique coordination tool – the RiS-portal (see Box 2).

#### Box 2

#### Research in Svalbard (RiS) Portal

The portal Research in Svalbard (RiS) is the essential tool for researchers, the Governor of Svalbard, Kings Bay AS, SSF, NPI and others when it comes to information about research in Svalbard. The portal facilitates finding new partners for collaboration and for coordinating fieldwork and logistics. Hence, RiS is a tool for thematic cooperation and logistics coordination for those carrying out research, fieldwork and monitoring in Svalbard. By using this open-access portal, users gain information about projects and the participating researchers and institutions. RiS also offers an overview of the fieldwork activity and of publications and metadata. It is mandatory to register all research projects with activity in Ny-Ålesund in RiS. In addition, RiS is a one-step portal and contains Kings Bay AS's booking module for ordering services in Ny-Ålesund (travel, lodging and use of infrastructure) as well as the Governor's module for permit applications and reporting. The portal is operated by the SSF Secretariat and is owned by the RCN. To ensure that this portal remains an essential tool for research coordination, overview and information, the portal will be developed further.

## Svalbard Integrated Arctic Earth Observing System

Svalbard Integrated Arctic Earth Observing System (SIOS) addresses Earth System Science questions and is a Norwegian-initiated international large-scale research infrastructure programme that aims to establish a broadly distributed regional observing system for long-term measurements in and around the Svalbard Archipelago. SIOS integrates existing observational infrastructure and generates added value for their members beyond what their individual capacities can provide. The observing system strives to provide members with systematic high-quality observations in a cost-efficient and environmentally friendly manner.

The consortium brings long-term measurements together into a coherent and integrated observational programme. Within the member-based consortium of SIOS, researchers can cooperate to access instruments, acquire data and address questions that would not be practical or cost effective for a single institution or nation alone. The knowledge centre, the central hub of SIOS, is located in the Svalbard Science Center in Longyearbyen and offers coordinated services for the research community. A significant part of the instrumentation and infrastructure included in SIOS is physically located in Ny-Ålesund. SIOS is an observer in NySMAC.





Zeppelin Observatory.  
Photo: Ove Hermansen / NILU

## 4 World-class science

Well-developed research infrastructure, an international research environment and extensive international research activity provides a unique environment for cooperation in Ny-Ålesund. The Research Station further provides a very comprehensive observing system for multidisciplinary research. This, combined with extraordinary accessibility and location, enables the Ny-Ålesund Research Station to be an important supplier of globally significant science.

### 4.1 Scientific priority areas

Research and monitoring activities in Ny-Ålesund are to be within the natural sciences and should use the unique infrastructure and field possibilities that the area offers. The area around Ny-Ålesund is a limited resource and several research and monitoring activities are dependent on pristine conditions. The historic environment is unique and an important cultural heritage site on Svalbard. Cultural heritage research in Svalbard is therefore welcome in Ny-Ålesund.

Research in Ny-Ålesund comprises the activities of various institutional, national and international programmes. Substantial portions of these activities are related and complementary. To release its full potential, four flagship programmes were established in the period 2009-2011, which in combination constitute most of the research and monitoring in Ny-Ålesund. The established flagship programmes are atmospheric research, terrestrial ecosystems, the Kongsfjorden system, and glaciology research (see Box 3 for more information).

#### Box 3 Flagship programmes

The combination of a northern location, a coastal setting, a heterogenous landscape, and relatively easy access has provided a unique environment for long-term research and time-series observations and makes Ny-Ålesund a key location for research and environmental monitoring in the High Arctic.

The research and monitoring activity in Ny-Ålesund is organized in four broad and dynamic flagship programmes, with extensive cross-disciplinary and cross-flagship collaboration. The flagship programmes have regular meetings and are open to all scientists who are either actively engaged in studies in the area, or who wish to develop new insights based on monitoring and research in the area.

Further, the flagship programmes function as arenas for contact, coordination and cooperation in science.

**The Atmosphere Flagship** focuses on measurements from the surface up to the upper atmosphere utilizing a wide array of different techniques and instruments. The Kongsfjorden system – a high Arctic marine environment, which is often influenced by influx of warmer Atlantic waters, and thus highly sensitive to climate change in the Arctic – is the main scope of **The Kongsfjorden system Flagship**. **The Terrestrial Ecology Flagship** brings together all studies on plant, animals, soil, permafrost and lakes, and coordinates field manipulations and study sites. **The Glaciology Flagship** studies the cryosphere around Ny-Ålesund, especially fast-flowing, surge type, polythermal and calving glaciers.

The flagship programmes are networks that bring together scientists working in Ny-Ålesund to enhance holistic approaches through long-term observations, process understanding and modelling. The flagship programmes are led by a scientific committee with a Chair and a Co-chair. Scientists contributing to the flagships are expected to further develop the science and work together to identify areas where additional effort is needed. They are also expected to take advantage of opportunities for synergies arising from the diversity of the international community and its many research disciplines, including cross-flagship activity.

Ny-Ålesund is a central reference station with important long-term climate and environment data series. NySMAC and SSF have highlighted the potential and opportunities to develop an integrated monitoring programme for Ny-Ålesund; this should be developed further. Key elements of this programme would be data accessibility and the use of data in research.

### Conditions for research in Ny-Ålesund:

- › Research is to be within the natural sciences<sup>5</sup>.
- › Research is to make use of the area's distinctive characteristics. In general, research that can significantly benefit from being done in Ny-Ålesund should be prioritized.
- › Research is to take environmental concerns into account and be within the Land-use plan and the Svalbard Environmental Protection Act.

### The actors are encouraged to:

- › make sure that interference and overlap with other activities is avoided whenever possible;
- › become familiar with, and participate in the thematic flagship programmes;
- › maintain long-time series and share data;
- › ensure that all new projects identify themselves by registering their projects in the RiS-portal;
- › discuss activities in NySMAC.

### Action points:

- › Integrated monitoring programmes should be developed as a cooperation between institutions with monitoring activities.
- › Research and research infrastructure priorities should be discussed in the flagship programmes and gap-analysis should be considered.
- › Further development of the flagship programmes should be secured.

## 4.2 Research quality

High-quality research is conducted in Ny-Ålesund, and there is potential to increase the impact of this research even further. Studies done by NIFU<sup>6</sup> shows that Svalbard articles have been less cited than polar research generally (10-20 percent). NIFU reports have shown that publications with international collaboration were cited more than the rest. Citation rates vary somewhat by discipline, but it appears that Svalbard articles, including Ny-Ålesund-based research, are published in journals with lower citation rates than the journals most used to publish polar research in general. Citation rates do not capture all aspects of quality, however, the NIFU findings suggest potential for improvement.

The results of NIFU's studies suggest that measures to increase international cooperation and improve coordination of research in Svalbard may result in higher quality research outputs. Research carried out in Ny-Ålesund should strive to be placed in a pan-Arctic or global context, and research results should be published in high-impact peer-reviewed journals. It is important to exploit the diversity of Ny-Ålesund's research communities further. To improve dissemination of research activity, the Research Station should produce a common annual report.

The research institutions present in Ny-Ålesund are expected to have high research ambitions and pursue international cooperation when this is beneficial. To optimally exploit the unique research opportunities and develop the Research Station into an even better platform for high-quality research and long-term monitoring, researchers are expected to take responsibility to encourage that:

- › research projects are quality-assured prior to start-up and then maintain high professional standards;
- › researchers collaborate with the best international partners in Ny-Ålesund and elsewhere to enhance scientific quality;



Karin Springer, University of Bremen.  
Photo: Kings Bay AS

- › results are published in English in open, internationally peer-reviewed journals;
- › research is placed, whenever possible, in a wide context at the pan-Arctic or global level.

### Action point:

- › the Ny-Ålesund Research Station should present its ongoing scientific contributions in an annual report, highlighting research results, including a list of publications, contribution to international networks and important research campaigns.

5 Exception for Culture heritage research

6 The term Ny-Ålesund Research Station covers all research activity based in Ny-Ålesund and the Kongsfjorden area





### 4.3 Education

There is a need for recruitment in polar research, both in Norway and internationally. Ny-Ålesund is a unique learning site with access to infrastructure, field locations and an important international research environment. Ny-Ålesund should contribute to the recruitment of a new generation of polar researchers by hosting masters students and doctoral fellowship-holders in connection with research projects.

Courses are welcome in Ny-Ålesund as long as the following criteria are met:

- › They are targeted for MSc and/or PhD (or similar level) education.
- › The courses will use research infrastructure or unique field opportunities available on-site.
- › They are within natural science disciplines.
- › There is capacity at the station.
- › Sufficient consideration to the cultural-historical attributes and natural environment are taken into account.

Courses should not be a dominant activity in Ny-Ålesund. UNIS is a unique centre for university-level study and research in Svalbard. Ny-Ålesund is an important location for some of their course activities, and courses based at the University Centre in Svalbard (UNIS) will be given priority in Ny-Ålesund.

In order to have a good overview and secure coordination and transparency, an overall assessment of the needs and desires for teaching activities will be required. It may be appropriate to impose deadlines for submitting requests. All course activity requests must include a reason why the course in question must be held in Ny-Ålesund.

SSF allocates funding for fieldwork in Svalbard in which the main priority is to support MSc students, PhD students and researchers not currently established in Svalbard. This granting programme recruits the new generation of young scientist and facilitates the opportunity to conduct fieldwork in Svalbard (Box 4).

#### Action points:

- › Recruitment in polar research by promoting involvement of MSc and PhD students in research projects should be encouraged.
- › RCN will continue to support field activity for MSc students and PhD students through Arctic Field Grants.
- › Develop procedures for facilitating course activities at MSc and PhD levels.

#### Box 4 Arctic Field Grant (AFG)

The Arctic Field Grant (AFG) has been awarded to more than 1600 researchers, master and PhD students since 1953. The grant has been managed by the RCN since 2011 and has since that time allocated 22 million NOK to 435 projects, including 148 PhD and 225 MSc students.

#### Some facts about AFG:

- › 3 of 10 recipients are now pursuing a career in polar science because of AFG;
- › 4 of 10 projects were conducted in Ny-Ålesund;
- › 5 of 10 projects resulted in a peer reviewed paper;
- › 6 of 10 applications were successful;
- › 8 of 10 recipients are MSc or PhD students;
- › 9 of 10 former recipients and supervisors said AFG helps with recruitment of young scientists into polar research.



Photo: Marianne Johansen / RCN

## 5 Sustainable research production

The present scope of research activity in Ny-Ålesund makes it necessary to strengthen the interaction, cooperation and coordination of research activities to ensure sustainability. Sustainable research production stimulates new innovative ideas and gives the opportunity to do basic research. Further, sustainable research refers to activity that has low environmental impact, promotes effectiveness through optimal use of data, avoids extensive overlap and makes the best possible use of the area's distinctive character.

### 5.1 Coordination of research activity

Various fora for logistical and practical research coordination in Ny-Ålesund have been established. The area has extensive research infrastructure and a long tradition of research cooperation. NPI will facilitate day-to-day coordination of activity through a weekly meeting with representatives from all key actors present in Ny-Ålesund.

NySMAC contributes to coordination of the research activities in Ny-Ålesund. The committee has an essential role in developing cooperation between the institutions present in Ny-Ålesund. It also acts as an advisory body, regarding cooperation and priorities, to the research actors with ongoing or planned projects in the area.

Kings Bay AS serves as the provider of research logistics, and it develops and maintains research infrastructure for common use.

The member-based consortium SIOS has a significant role regarding instrumentation and infrastructure in Ny-Ålesund. SIOS has a coordinating role in the optimization of observation of earth system science from research infrastructure located in Ny-Ålesund.

SSF acts as a coordinating body for all research activity on Svalbard and will continue to contribute to and stimulate enhanced cooperation and collaboration between the four research communities: Longyearbyen, Ny-Ålesund, Barentsburg and Hornsund.

Close cooperation between all the above-mentioned bodies is essential for the further development of the Ny-Ålesund Research Station.

### 5.2 International cooperation

The unique international community present in Ny-Ålesund has a history of extensive cooperation, which has been essential to enhance quality in polar research. There is, however, potential for further utilization of the extensive infrastructure that is established in Svalbard. International cooperation and exchange are a prerequisite for maintaining a creative, innovative and world-class scientific environment in Ny-Ålesund.

Promotion of cooperation between the research communities in Ny-Ålesund, Longyearbyen, Hornsund and Barentsburg, as well as between Svalbard and other research communities around the world is of great importance to enhance knowledge on global issues.



**Terrestrial Laboratory.**  
Photo: Susanne Wasa Hagen / Kings Bay AS

SSF stimulates cooperation and collaborative efforts between all research communities in Svalbard and within all research disciplines. SSF facilitates the RiS-portal (Box 2) for sharing information regarding research projects being conducted anywhere in Svalbard, including the four permanently manned research communities in Svalbard (Ny-Ålesund, Longyearbyen, Barentsburg and Hornsund). The RiS-portal is a unique tool for information exchange and for enhancing cooperation and coordination.

SSF administers the Svalbard Strategic Grant (SSG) programme. This is a seed money program aimed at advancing coordination, collaboration and data sharing between researchers working with Svalbard research, as well as increasing cooperation and coordination between the four research communities in Svalbard.

A Svalbard Science Conference – with the goal of stimulating and inspiring cooperation in and advancement of the research conducted in Svalbard, was held for the first time in 2017. This conference gathered scientists, experts and relevant key players needed to put Svalbard research in a global context. The success of this first meeting has resulted in a plan to have this conference continue on a biennial basis. This international conference strives to increase connectivity, broadening the research network and bringing Svalbard research into a pan-Arctic setting.

#### Action points:

- RCN in cooperation with SSF will continue and further develop SSG and RiS to support cooperation and coordination of research in Svalbard.
- RCN and SSF will establish the Svalbard Science Conference, in cooperation with NPI and other relevant partners, as an important arena for cooperation and dissemination of research in Svalbard.

### 5.3 Sharing and development of research infrastructure

Coordination of infrastructure and logistical services is key to better utilisation of research infrastructure. In Ny-Ålesund, the area available for new buildings is limited. It is therefore

crucial that existing buildings are used efficiently. The need of efficient use of existing buildings has resulted in joint services, provided at the Marine Laboratory, Zeppelin Observatory, Climate Change Tower, Gruvebadet, Vaskeri Lab, MS Teisten, Light Sensitive Cabin, and the newly established Terrestrial Laboratory (see Box 5).

#### Box 5

##### Shared infrastructure

**The Marine Laboratory** is an experimental laboratory for research in marine ecology, physiology and biochemistry, as well as oceanography, marine geology and ice physics. The Marine Lab is owned and managed by Kings Bay AS, and booking is done through the RiS-portal. The deadline for booking space is 1 April every year.

**The Zeppelin Observatory** is an observatory for atmospheric research and monitoring. The Observatory is part of a network of very important global observatories for atmospheric measurements, and part of several regional and global monitoring networks. The observatory is located at the mountain Zeppelinfjellet, 475 masl. The Zeppelin Observatory is owned and managed by the Norwegian Polar Institute.

**The Climate Change Tower (CCT)** with a height of 32 m hosts many instruments, mainly to investigate energy budgets in the Earth surface layer, boundary layer dynamics and exchange fluxes at the atmosphere–land interface. CCT is owned and managed by the CNR.

**Gruvebadet** is an atmospheric laboratory and observatory located 1 km from the centre of Ny-Ålesund. The building currently hosts instrument for atmosphere and aerosol measurements. Gruvebadet is owned and managed by Kings Bay AS.

**The Vaskeri Lab** is an older building that consists of several rooms, some of which can be used for common labs, f.ex for environmental, or terrestrial laboratory work, and is perfect for work with soil, sediments, animal sampling etc. Vaskeri Lab is owned and managed by Kings Bay AS.

**MS Teisten** is a small work boat 31 feet long and equipped to do smaller scientific operations and surveys in Kongsfjorden and Krossfjorden. MS Teisten is owned and managed by Kings Bay AS, and booking can be done through RiS.

**The Terrestrial Laboratory (Veksthuset)** is located in the middle of town and includes brand new dry and semi-wet lab facilities. The labs are expected to be ready for use from summer 2019. The lab is owned and managed by Kings Bay AS.

**The Light Sensitive Cabin** is located 2.5 km from the centre of Ny-Ålesund, and is specially designed to host instruments that require minimal light contamination. The cabin has four domes on the roof, is connected to high-speed internet, and is insulated. The light sensitive cabin is owned and managed by Kings Bay AS.

In addition, there are some smaller observatories/platforms run by various IKEF located at the various buildings in Ny-Ålesund that host instruments for long-term monitoring. Several of these are available for other users by request to the owner.

Developing shared thematic laboratories will improve the utilisation of the buildings in Ny-Ålesund. Being an attractive provider of research infrastructure requires effective professional operations, efficient utilisation and a realistic cost level. For this approach to succeed, it is important to develop the existing buildings in accordance with research needs and to facilitate professional joint services that researchers find attractive. Ny-Ålesund's scientific community should take part in the decisions regarding development of new joint services to ensure that they match research needs. Norway's long-term ambition is to further develop thematically-based research infrastructure in Ny-Ålesund.

SIOS is an important tool for sharing and collaborating in the utilisation of Svalbard's infrastructure. Scientists conducting earth system research in Ny-Ålesund are encouraged to become members of SIOS. SIOS offers opportunities to access the member's infrastructure and data through regular strategic calls. Access will be based on scientific excellence. Applications for access should be made through SIOS; decisions will be made in collaboration with the member responsible for the specific infrastructure. Research infrastructure includes physical spaces such as laboratories as well as scientific instruments, samples, data and e-infrastructure.

**The actors are encouraged to:**

- › coordinate their activities in Ny-Ålesund with those of other institutions to optimize research infrastructure utilisation;
- › make infrastructure available to others;
- › become members of SIOS;
- › collaborate and coordinate use of logistics services.

**Action points:**

- › Draw up a “gap- analysis” for the development of new infrastructure.

- › Create a cost-efficiency model for Ny-Ålesund that includes development of joint research infrastructure.

**5.4 Radio silence**

Ny-Ålesund is a radio silent area, with the long-term goal to further minimize the emissions of electromagnetic (radio wave) pollution. Some important sensing-instruments, like the VLBI radio telescopes at Norway's geodetic laboratory, need radio silence to function optimally. The General authorisations regulations in Norway (fribruksforskriften), which allows use without permit for common equipment, is not valid for the frequencies 2 GHz–32 GHz within a 20 km radius from Ny-Ålesund. Technology using the 2 GHz–32 GHz frequency range requires application to the National Communications Authority (Nkom).

Upholding a pristine environment also includes avoiding electromagnetic pollution. Ny-Ålesund is a unique location worldwide in having radio silence, while also providing the infrastructure and logistical support necessary for large-scale research installations. Consequently, maintaining radio silence is a key priority, and efforts to develop the infrastructure to conduct necessary measurements outside the protected frequency band should be intensified. For research that requires use of the radio frequency range in question, and that cannot be conducted elsewhere in Svalbard, it is necessary to have overview of frequencies in use in Ny-Ålesund. The radio silence working group established under NySMAC is important in this context.

**Action points:**

- › All actors have to contribute to maintain radio silence and prioritise research that does not interfere with the radio silence.
- › Develop good procedures and priorities for the use of technology with active transmitters.



**5.5 Making information available**

Making information available to others is essential to establish communication among on-going projects and initiatives. The RiS-portal is the important tool to register projects and to find information about activities in Ny-Ålesund.

The flagship programmes have created meeting places for the largest disciplines in Ny-Ålesund that are important for network building and increasing collaboration.

NySMAC has established an internal *Project Information and Discussion (PID) forum* to share information regarding planned activities. These collaborative tools are used by NySMAC in between the semi-annual meetings.

To improve dissemination of information relevant to all researchers planning, or engaged in activities in Ny-Ålesund, NPI and Kings Bay AS will develop a dedicated and comprehensive web site for Ny-Ålesund Research Station.

**Researchers and institutes are expected to:**

- › register Svalbard-based research projects in RiS and keep the information updated;
- › become familiar with other relevant activities by using RiS

**Action points:**

- › SSF will further develop RiS and continue their efforts to ensure that RiS is used by researchers as an attractive portal for information regarding research, and opportunities for thematic collaboration and logistics cooperation in Svalbard.
- › Development of a dedicated and comprehensive web site for Ny-Ålesund Research Station.



Photo: Shagde Barua Martins

## 6 Open access to data

Open access to data makes it easier to validate and assess findings as well as to use data in new ways. Combining data facilitates more interdisciplinary research. Open access to research data reduces duplication of effort, increases efficiency and reduces environmental impacts. Broader access to research data will strengthen the quality of research in Svalbard.

Norwegian and international research policies<sup>7</sup> emphasises that research data should be made openly accessible when no legitimate considerations prevent its accessibility, or “as open as possible, as closed as necessary”<sup>8</sup>. This point is made in the Strategy for research and higher education in Svalbard, in which the following Norwegian Government objective is expressed: “Research communities active in Svalbard shall take the lead in moving towards shared research data and infrastructure.”

Strong metadata, i.e. information about collection, delineation, definition, and other factors relevant for further use, is a prerequisite for being able to find and interpret data. It is therefore important that data producers are meticulous about standardising the methods and sharing metadata in a way that make data easier to use, ideally in line with the FAIR-principles.<sup>9</sup> FAIR stands for findable, accessible, interoperable and reusable. The concept interoperable entails that both data and metadata must be machine-readable and that a consistent terminology is used.

The SIOS consortium has developed a data policy that is consistent with international principles including requirements for the availability and quality of metadata<sup>10</sup>. The members of SIOS, which includes research conducted in Ny-Ålesund and Svalbard, will be obliged to comply with these principles. Standardised metadata requirements should be established for all research in Ny-Ålesund.

7 Report No. 30 (2008–2009) to the Storting, a white paper on research policy; Meld. St. 18 (2012–2013), the white paper Long-term perspectives – knowledge provides opportunity; Meld. St. 27 (2015–2016), a white paper on Norway’s digital agenda; the Ministry of Education and Research’s National strategy on access to and sharing of research data (2017); the EU Commission’s decision to make open data access the norm in the Horizon 2020 programme; its “[Guidelines on FAIR Data Management in Horizon 2020](#)”; its publication “[Open Innovation, Open Science, Open to the world – a vision for Europe](#)”; and the [European Research Area and Innovation Committee’s Opinion on Open Research Data](#), etc.

8 Ministry of Education and Research’s [National strategy on access to and sharing of research data](#) (2017)

9 <https://www.force11.org/group/fairgroup/fairprinciples>

10 [SIOS Data Policy](#)





Weather station at Kronebreen.  
Photo: Helge Tore Markussen / NPI

#### Researchers and institutes present in Ny-Ålesund are expected to:

- › have a data management plan associated with all research projects;
- › prepare research data for further use (including metadata) in line with the FAIR principles and store them securely at their own institution or in national or international archives and databases;
- › make research data and metadata available as quickly as possible and at lowest possible cost, while maintaining the right of the individual researcher for exclusive utilisation of their data for a limited time;
- › publicise a short popular science presentation of ongoing and completed projects in Ny-Ålesund in the RiS-portal;
- › encourage institutions to develop their own policies and guidelines for safe storage and management of, and improved accessibility to, research data.

#### Action point:

- › Establish common routines for data management in Ny-Ålesund including:
  - maintaining the right of the individual researcher for exclusive utilisation of their data for a limited time;
  - common standards for ensuring strong metadata that applies to all Researchers and institutes in Ny-Ålesund.

## Sammendrag

### VISION:

**Ny-Ålesund – den fremste forskningsstasjonen for arktisk naturvitenskapelig forskning**

### Mål:

- › Verdensledende forskning
- › Bærekraftig forskningsproduksjon
- › Åpen tilgang til data

Forskningsstasjonen Ny-Ålesund er en unik plattform for internasjonal forskning og overvåking i Arktis. Stasjonen er en av verdens nordligste med helårsbemanning og er en viktig node for internasjonal forskning og overvåking innen klima og miljø. Institusjoner fra mange land har langsiktig forsknings- og overvåkingsaktivitet i Ny-Ålesund. Det er utviklet et godt og utpreget samarbeid på stasjonen gjennom samarbeidsforumet Ny-Ålesund Science Managers Committee (NySMAC) og tematiske flaggskipprogrammer.

Forskningsrådet har på oppdrag fra Regjeringen utviklet den første forskningsstrategien for forskningsstasjonen Ny-Ålesund. Oppdraget var varslet i Stortingsmeldingen for Svalbard (St.meld. 32 (2015-2016)) og skal følge opp Svalbardpolitikken og bidra til blant annet å styrke den norske vertskapsrollen.

Strategi for forskning og høyere utdanning (2018) gir de overordnede rammene for forskningsstrategien for Ny-Ålesund. Forskningsstasjonen Ny-Ålesund skal benyttes til naturvitenskapelig forskning i verdensklasse, forskningen skal utnytte stedets særegenheter, og hensynet til miljøet skal ivaretas. For å sikre bedre ressursutnyttelse og bedre tilrettelegging for forskning av høy kvalitet, skal forskningsinfrastrukturen på sikt utvikles slik at den blir mer tematisk basert, og at det legges enda mer til rette for samarbeid. Norsk Polarinstitutt er vertskap i Ny-Ålesund og har ansvaret for å implementere og følge opp strategien lokalt. Strategien vil bli oppdatert ved behov.

Forskningsstrategien for Ny-Ålesund støtter opp under det gode samarbeidet, verktøyene som er etablert, kvalitetsforskningen og den unike infrastrukturen i Ny-Ålesund.

Det er forskningsmiljøene som i praksis må bidra til at målene i strategien nås. Dette setter klare forventninger til aktørene som bl.a. må:

- › bidra til å sikre at forskningsprosjektene er kvalitetssikret
- › publisere i fagfelleverderte åpne tidsskrifter på engelsk
- › sette forskningen, når mulig, i en større pan-arktisk eller global sammenheng
- › bidra til rekruttering ved å inkludere master- og PhD-studenter i prosjektene
- › holde seg oppdatert om andres aktivitet, samarbeide og bidra til å unngå overlapp
- › bidra til å opprettholde lange tidsserier
- › registrere prosjektene i portalen Research in Svalbard (RiS) og holde informasjonen oppdatert
- › bidra til å optimalisere bruk av forskningsinfrastruktur og gjør infrastruktur tilgjengelig for andre når dette er mulig
- › være medlemmer i Svalbard Integrated Earth Observing system (SIOS)
- › gjøre data og informasjon tilgjengelig

#### Viktige oppfølgingspunkter for å utvikle Ny-Ålesund forskningsstasjon:

- › Utvikle et integrert overvåkingsprogram
- › Videreutvikle flaggskipprogrammene
- › Utarbeide en felles årsrapport for stasjonen
- › Utvikle klare retningslinjer for kursvirksomhet på master- og PhD-nivå
- › Utarbeide en gapanalyse for ny forskningsinfrastruktur
- › Videreutvikle portalen Research in Svalbard (RiS)

Ansvaret for å følge opp ligger hos Norsk Polarinstitutt, med mindre annet er nevnt spesielt i oppfølgingspunktene.





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