



Finland's Antarctic Research Strategy

Reports of the Ministry of Education 2008:4

Finland's Antarctic Research Strategy

Reports of the Ministry of Education 2008:4



OPETUSMINISTERIÖ

Undervisningsministeriet

MINISTRY OF EDUCATION

Ministère de l'Éducation

Ministry of Education
Department for Education and Science Policy
P.O. Box 29, 00023 Government
Finland
<http://www.minedu.fi>

Helsinki University Print 2008

ISBN 978-952-485-483-2 (nid./htf)

ISBN 978-952-485-484-9 (PDF)

ISSN 1458-8102

Publications of the Ministry of Education 2008:4

Description

Publisher Ministry of Education		Date of publication 21.1.2008	
Authors (If a committee: name of organ, chair, secretary) Coordination Committee for Antarctic Research Chair: Petteri Kauppinen Secretary: Eeva Kaunistmaa		Type of publication Reports of the Ministry of Education, Finland	
		Contracted by Ministry of Education	
		Committee appointed on 27.2.2007	Dnro 38/040/2007
Name of publication Finland's Antarctic Research Strategy			
Parts Memorandum + appendices			
<p>Abstract</p> <p>On 27 February 2007 the Ministry of Education appointed the Coordination Committee for Antarctic Research for the period 2007–2010. Among other Committee tasks, the Ministry called for development of Finland's Antarctic research strategy in cooperation with science communities, taking into consideration the results of the evaluation of Finnish Antarctic research, as well as the development needs of national and global polar research.</p> <p>Coordination Committee for Antarctic Research has approved of Finland's Antarctic Research Strategy at its meeting October 25 2007. Antarctic research will produce high quality scientific data that concern Antarctica or for which information obtained from Antarctica is irreplaceable. Research may be either literally global, or limited to the two polar regions, but which would not be possible without data from Antarctica.</p> <p>Coordination Committee for Antarctic Research defined the vision of the state of Finland's Antarctic research in 2015, according to which:</p> <ul style="list-style-type: none"> - Finnish Antarctic research in selected areas is at a high international level, recognised as such, and open to new directions - Researchers take advantage of both national and international funding opportunities - Interaction between Antarctic and Arctic region researchers is active - Research is well coordinated nationally and the national funding for research and associated logistics will be at a level suitable for quality research operations - Research results are published in internationally recognised journals and are communicated effectively to a wider audience - Finland takes part in the decision making of the Antarctic Treaty System. - Finland supports and actively develops comprehensive protection of the Antarctic region's environment <p>As the means to achieve these goals the Coordination Committee for Antarctic Research defined:</p> <ol style="list-style-type: none"> 1 Selective emphasis on strong areas of research 2 Increasing research collaboration 3 Finland will maintain a research station and expedition efforts 4 Funding to be granted for larger projects 5 Greater utilisation of national and international funding possibilities 6 Finland will participate in the cooperation called for by the international Antarctic Treaty System 			
Other information			
Name and number of series Reports of the Ministry of Education, Finland 2008:4		ISSN 1458-8102	ISBN 978-952-485-483-2 (pbk.) 978-952-485-484-9 (PDF)
Number of pages 21	Language English	Price	Degree of confidentiality public
Distributed by Helsinki University Print		Published by Ministry of Education	

Kuvailulehti

Julkaisija
Opetusministeriö

Julkaisun päivämäärä
21.1.2008

Tekijät (toimielimestä: toimielimen nimi, puheenjohtaja, sihteeri) Etelämanner-tutkimuksen koordinaatioryhmä Puheenjohtaja: Petteri Kauppinen Sihteeri: Eeva Kaunismaa	Julkaisun laji Opetusministeriön työryhmämuistioita ja selvityksiä Toimeksiantaja Opetusministeriö Toimielimen asettamispv 27.2.2007 Dnro 38/040/2007		
Julkaisun nimi (myös ruotsinkielinen) Suomen Etelämanner-tutkimusstrategia (Strategi för finsk Antarktiskforskning)			
Julkaisun osat Muistio + liitteet			
Tiivistelmä <p>Opetusministeriö asetti 27.2.2007 Etelämanner-tutkimuksen koordinaatioryhmän toimikaudelle 2007–2010. Koordinaatioryhmän tehtäväksi opetusministeriö osoitti mm. Suomen Etelämanner-tutkimusstrategian laatimisen yhteistyössä tiedeyhteisöjen kanssa ottaen huomioon Suomen Etelämanner-tutkimuksen arvioinnin tulokset sekä kansalliset ja globaalit polaaritutkimuksen kehittämistarpeet.</p> <p>Koordinaatioryhmä on hyväksynyt Suomen Etelämanner-tutkimusstrategian kokouksessaan 25.10.2007. Etelämanner-tutkimuksen tehtävänä on tuottaa korkeatasoista tieteellistä tutkimustietoa, joka koskee Etelämanner-tai jolle Etelämanneralueelta saatava aineisto on korvaamatonta. Tutkimus voi olla joko globaalia tai molempia napa-alueita koskevaa, mutta jonka toteuttaminen ilman Etelämanner-aineistoa ei olisi mahdollista.</p> <p>Etelämanner-tutkimuksen koordinaatioryhmä määritteli Suomen Etelämanner-tutkimuksen tilasta vuonna 2015 vision, jonka mukaan mm.:</p> <ul style="list-style-type: none">- Suomalainen Etelämanner-tutkimus on valikoiduilla alueilla kansainvälisesti korkeatasoista ja tunnustettua sekä avoin uusille avauksille- Tutkijat käyttävät hyödyksi sekä kansalliset että kansainväliset rahoitusmahdollisuudet- Etelämanner-tutkijoiden ja arktisten alueiden tutkijoiden vuorovaikutus on aktiivista- Tutkimus on kansallisesti hyvin koordinoitua ja kansallinen tutkimus- ja logistiikkarahoitus ovat laadukkaan tutkimustoiminnan edellyttämällä tasolla.- Tutkimustulokset julkaistaan kansainvälisissä vertaisarvioituissa julkaisuissa ja niistä tiedotetaan yleisölle- Suomi osallistuu Etelämanner-sopimusjärjestelmän päätöksentekoon- Suomi tukee ja kehittää aktiivisesti Etelämanneralueen ympäristön kokonaisvaltaista suojelua <p>Keinoiksi tavoitteiden saavuttamiseksi koordinaatioryhmä määritteli seuraavat:</p> <ol style="list-style-type: none">1 Valikoiva panostaminen tutkimuksen vahvuusalueille2 Tutkimusyhteistyön lisääminen3 Suomi ylläpitää tutkimusasemaa ja retkikuntatoimintaa4 Rahoitusta myönnetään suurempina hankekokonaisuuksina5 Tehokkaampi kansallisten ja kansainvälisten rahoitusmahdollisuuksien hyödyntäminen6 Suomi osallistuu kansainväliseen Etelämanner-sopimusjärjestelmään liittyvään yhteistyöhön			
Avainsanat Etelämanner-tutkimus, strategia, Etelämanner-sopimus, polaaritutkimus			
Muut tiedot			
Sarjan nimi ja numero Opetusministeriön työryhmämuistioita ja selvityksiä 2008:4	ISSN 1458-8102	ISBN 978-952-485-483-2 (nid.) 978-952-485-484-9 (PDF)	
Kokonaissivumäärä 21	Kieli englanti	Hinta	Luottamuksellisuus julkinen
Jakaja Yliopistopaino		Kustantaja Opetusministeriö	

Presentationsblad

Utgivare
Undervisningsministeriet

Utgivningsdatum
21.1.2008

Författare (uppgifter om organets namn, ordförande, sekreterare) Koordineringsgruppen för Antarktiskforskningen Ordförande: Petteri Kauppinen Sekreterare: Eeva Kaunismaa	Typ av publikation Undervisningsministeriets arbetsgruppspromemorior och utredningar		
	Uppdragsgivare Undervisningsministeriet		
	Datum för tillsättande av 27.2.2007	Dnro 38/040/2007	
Publikation (även den finska titeln) Strategi för finsk Antarktiskforskning (Suomen Etelämanner-tutkimusstrategia)			
Publikationens delar Promemoria + bilagor			
Sammandrag <p>Undervisningsministeriet tillsatte den 27 februari 2007 en koordineringsgrupp för Antarktiskforskningen för mandatperioden 2007–2010. Undervisningsministeriet gav koordineringsgruppen i uppgift att bl.a. utarbeta en strategi för finsk Antarktiskforskning i samarbete med vetenskapssamfundet med beaktande av resultaten av utvärderingen av Finlands Antarktiskforskning samt nationella och globala behov när det gäller att utveckla polarforskningen.</p> <p>Koordineringsgruppen godkände Strategin för finsk Antarktiskforskning vid sitt möte den 25 oktober 2007. Antarktiskforskningens uppgift är att producera högklassig vetenskaplig forskningskunskap som gäller Antarktis eller forskningskunskap för vilken material om Antarktis är oundgängligt. Forskningen kan vara antingen global eller gälla båda polerna, men den skall inte kunna genomföras utan material om Antarktis.</p> <p>Koordineringsgruppen för Antarktiskforskningen målade upp en vision för läget inom finsk Antarktiskforskning år 2015 enligt vilken bl.a.</p> <ul style="list-style-type: none">- Den finska Antarktiskforskningen inom valda områden är högklassig och erkänd i internationellt hänseende samt öppen för nya metoder och forskningsområden- Forskarna utnyttjar såväl nationella som internationella finansieringsmöjligheter- Det finns en aktiv växelverkan mellan Antarktiskforskare och andra som bedriver forskning om arktiska områden- Forskningen på det nationella planet är välkoordinerad och den nationella forsknings- och logistikfinansieringen är på en sådan nivå som en högklassig forskningsverksamhet förutsätter- Forskningsresultaten publiceras i internationella vetenskapligt granskade publikationer och allmänheten informeras om dem- Finland deltar i beslutsfattandet inom ramen för systemet gällande Antarktiskfördraget- Finland stöder och utvecklar aktivt ett övergripande skydd av miljön på Antarktis <p>Metoderna för att uppnå målen är enligt samordningsgruppen följande:</p> <ol style="list-style-type: none">1 Avvägda satsningar på forskningens styrkeområden2 En ökning av forskningssamarbetet3 Finland upprätthåller en forskningsstation och expeditivverksamhet4 Finansiering beviljas i större projekthelhet5 Nationella och internationella finansieringsmodeller utnyttjas effektivare6 Finland deltar i samarbete som hänför sig till det internationella systemet gällande Antarktiskfördraget			
Nyckelord Antarktiskforskning, strategi, Antarktiskfördrag, polarforskning			
Övriga uppgifter			
Seriens namn och nummer Undervisningsministeriets arbetsgruppspromemorior och utredningar 2008:4	ISSN 1458-8102	ISBN 978-952-485-483-2 (htf.) 978-952-485-484-9 (PDF)	
Sidoantal 21	Språk engelska	Pris	Sekretessgrad offentlig
Distribution Universitetstryckeriet		Förlag Undervisningsministeriet	

Sisältö

<u>Finland's Antarctic research strategy</u>	7
<u>Vision of the state of Finland's Antarctic research in 2015</u>	8
<u>The means to achieve these goals</u>	10
1 Selective emphasis on strong areas of research	10
2 Increasing research collaboration	10
3 Finland will maintain a research station and expedition efforts	11
4 Funding to be granted for larger projects	12
5 Greater utilisation of national and international funding possibilities	12
6 Finland will participate in the cooperation called for by the international Antarctic Treaty System	13
<u>Appendices</u>	
Appendix 1. Background	14
Appendix 2. Reporting and public relations	17
Appendix 3. Evaluation of Antarctic research	19
Appendix 4. Coordination Committee for Antarctic Research 2007–2010	21

Finland's Antarctic research strategy

Antarctic research will produce high quality scientific data that concern Antarctica or for which information obtained from Antarctica is irreplaceable. Research may be either literally global, or limited to the two polar regions, but which would not be possible without data from Antarctica. Moreover the research will generate information to support national and international decision-making. Finnish Antarctic research will be well coordinated with and integrated to the international research community. This will require emphasis on those areas of strength in which Finland has the opportunity to promote in a significant way international scientific research as well as improve collaboration with different participants.

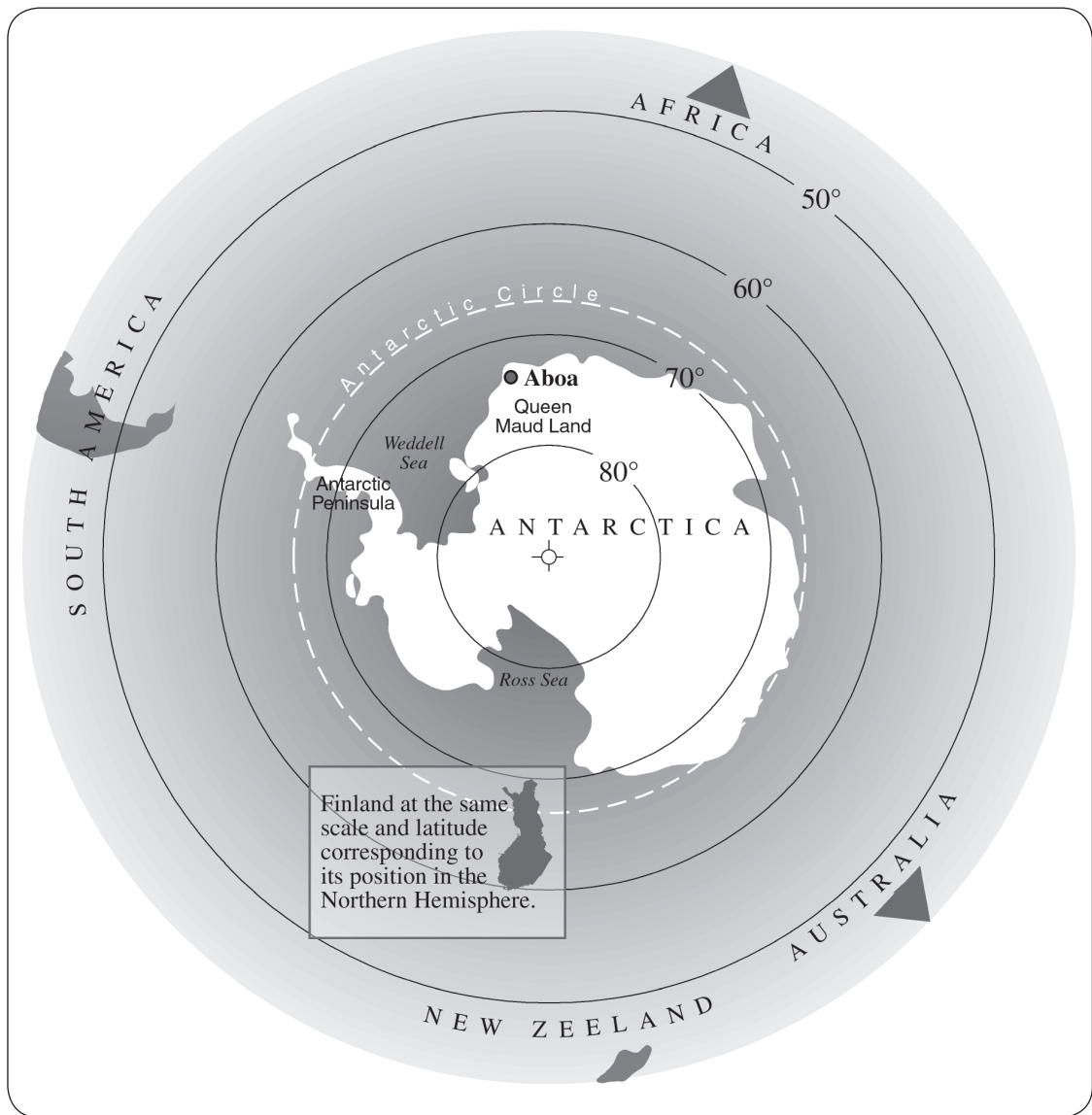
Finland signed the Antarctic Treaty in 1984. The Finnish research station, Aboa, was established in Queen Maud Land in 1988 and Finland was accepted as a Consultative Party in 1989, (i.e. voting member). Research activities and associated administrative functions are coordinated by the Coordination Committee for Antarctic Research (CCAR), established by the Ministry of Education to represent various branches of government and research communities. It examines the Antarctic research strategy at regular intervals and updates it as appropriate.

According to the international evaluation carried out in 2006 (Publication of the Academy of Finland 13/06, www.aka.fi/publications/) Finnish Antarctic research was partly successful in the period 1998–2005, but on average research results remained below both national and international standards. Finnish research was weakly integrated to the international community and collaboration among national research groups was modest.

The original background motivation for funding research was support of Finland's joining the Antarctic Treaty. In particular, the polar regions' changing climate conditions and their broad effects on the world have increased the significance of Antarctic research in scientific and social matters. Global change and the study of its consequences require careful study of both Poles, including both Arctic and Antarctic regions. Antarctica is a unique natural laboratory, where phenomena affecting the entire globe are studied. The high capability of Finnish research in Arctic regions forms a strong base for Antarctic research, and there are efforts to make it stronger in the future.

Vision of the state of Finland's Antarctic research in 2015

- Finnish Antarctic research in selected areas is at a high international level, recognised as such, and open to new directions.
- At least three groups in Finland show a demonstrated capability for Antarctic research at a high international level.
- Finnish scholars' participation in international collaboration (for instance, the SCAR programmes) is supported by long-term financing of broad, multi-disciplinary research projects.
- Researchers take advantage of both national and international funding opportunities.
- Researchers and research groups are involved in both national and international multi-disciplinary cooperation, including technological activities.
- Interaction between Antarctic and Arctic region researchers is active.
- Finland participates actively in the work of the Scientific Committee on Antarctic Research (SCAR) and play an effective role in the planning and realisation of research projects concerning the Antarctic.
- Research is well coordinated nationally and the national funding for research and associated logistics will be at a level suitable for quality research operations.
- Research results are published in internationally recognised journals and are communicated effectively to a wider audience.
- Research results are made use of broadly, including national and international decision-making.
- Antarctic logistics assures that the high requirements for research on the Antarctic continent are met.
- Finland takes part in the decision making of the Antarctic Treaty System.
- Finland supports and actively develops comprehensive protection of the Antarctic region's environment.



Picture. Map of the Antarctic region (CIM/Asko Simanainen)

The means to achieve these goals

1 Selective emphasis on strong areas of research

According to the 2006 Antarctic research evaluation, strong national and international capabilities in certain subject areas already exist in Finland. Finland has the potential to achieve leading international research level by 2015 in the following areas:

- Geodetic and glaciological research
- Bi-polar meteorological and space physics research
- Bedrock geological and geophysical research
- Marine biology and sea-ice research

These subjects are multi-disciplinary and are related to investigation of global change, as well as to studying changes induced by plate tectonics. They support the internationally significant main focal points of interest set by the Scientific Committee on Antarctic Research (SCAR).

Researchers are encouraged to consider new directions that offer promise for breakthroughs in Antarctic research. This might happen, for example, by participating in the work of one or more of the expert groups under the SCAR's standing scientific committees, or in some SCAR research project(s). Similarly, strengthening the cooperation with SCAR and the International Arctic Science Committee (IASC) offers such a possibility.

2 Increasing research collaboration

According to the evaluation of Antarctic research, successful research requires coupling of the know-how of Finnish groups and more effective exploitation of already existing research materials and data. National cooperation in Antarctic research requires broader and more multi-disciplinary research projects.

Finland will strengthen research in Antarctica by utilising and stressing in its own research essential international programs, in which Finnish research groups will become

a recognised full participant. Finland will become more active in SCAR's main activities and SCAR workgroups. The International Polar Year (IPY), already under way in 2007–2008, will offer Finnish researchers a good opportunity to strengthen international research cooperation. Bi-polar research also requires close cooperation in the IASC context. More and more Finnish researchers will work at foreign research stations and on board foreign vessels. The Finnish Aboa research station will welcome foreign researchers and Finnish databases will be available for the use of other groups. One measure of foreign collaboration can be joint high-quality international publications, scientist exchanges, and international funding, as well as the use of data in international research and monitoring.

The role of the National Committee on Arctic and Antarctic Research as a national link in coordinating research will be strengthened. Representatives of organisations active in Antarctic research will be members of the committee and the committee will take care of official representation in SCAR. The committee will also appoint national representatives to SCAR's Standing Scientific Groups. The representatives will be the operative links between SCAR organs and national activities. The committee will also promote cooperation with the IASC.

Postgraduate education of Antarctic researchers will be strengthened. Improved cooperation and integration of present graduate schools as a part of polar research will further national cooperation and researcher education.

Antarctic researchers should have strong cooperation also with researchers in other disciplines in order to obtain the necessary expertise, observation methods and technologies to guarantee the renewal of Antarctic research. The harsh conditions require extraordinary durability of structures, energy sources and instruments, as well as continuous development.

Efficiency of the archiving of and access to research data will be further strengthened. Finns have acquired significant sample series and long-term observation series, which should be archived in open databases, and thus enable their effective use, for example, in numerical modelling.

Collaboration among researchers and keeping the public informed will be assured by regular research seminars.

3 Finland will maintain a research station and expedition efforts

The operational requirements for Antarctic logistics will be assured by making sure of the adequacy of overall funding. Effective logistical support is required to assure safe research operations in the Finnish Aboa research station, as well as to enable researchers and projects to work at the stations of other countries. The 2006 international evaluation of Finnish Antarctic research recommended strongly an increase in logistics financing of 40 %, if current operations and maintenance of the research station are to be covered.

The gathering of measurements on a year-round basis is essential for many research projects, requiring the Aboa research station's instruments to operate automatically and to tolerate the demanding conditions. Development of the Finnish Aboa research station and strengthening its use also in international cooperation is important. When needed, FINNARP's equipment and networks could be used in arctic research, too (for example, in exploration operations and measurement campaigns). This must be done, of course, consistently with Finnish Antarctic research priorities.

4 Funding to be granted for larger projects

The Academy of Finland will fund research in long-term, multi-year projects that will be chosen on the basis of evaluation by international experts. The goal is to recognise from the group of applicants the most valuable research projects, the most promising researchers and the projects with the most significant social impact.

Effort will be made to fund fully projects that have been judged to be “excellent”. This will enable long-term concentration on research. The size of suitable funding will nonetheless be determined on the basis of evaluation relevant to the project. The careers of young, talented researchers and researcher education will be supported and at the same time the renewal of both research and the body of researchers will be secured. In making Antarctic funding decisions, national and international cooperation will be stressed. Large, international, joint projects and research related to large international projects will be positive factors in funding decisions. National cooperation in Antarctic research requires broader research projects based on a broader range of disciplines. Finland’s Antarctic research strategy will be taken note of in funding decisions.

The Academy of Finland’s Antarctic Research Call for applications has been the basic required element for realising the obligations of the Antarctic Treaty, as well for coordinating logistics supporting the research. The needs of multi-year research projects form a framework in which it will be possible to plan expeditions logically and in an economically expedient manner. The Academy of Finland will continue funding of Antarctic research at least at the current level. The Coordination Committee for Antarctic Research will prepare as necessary recommendations concerning the appropriate magnitude of funding by the Academy of Finland for Antarctic research.

5 Greater utilisation of national and international funding possibilities

In addition to the funding through the Academy of Finland’s Antarctic Research Call, utilisation of other national and international funding resources is of vital importance. The goal is to obtain broad-based funding for successful projects. Researchers will utilise the Academy’s other funding programmes so successfully that as much funding of research will be from such sources as from the Antarctic Research Call itself. EU funding possibilities offer research and mobility funding. Effective utilisation of Nordic funding sources would assure closer Nordic research cooperation. Universities and research institutes will make available their own resources in Antarctic research. Efforts will be made to keep the amount at least at the present level. Some part of the resources and infrastructure used in research work is such that self-funding is the only possible way of maintaining them.

Independently of funding source, all research projects belonging to measurement campaigns in Antarctica should be in contact with FINNARP.

6 Finland will participate in the cooperation called for by the international Antarctic Treaty System

Attention will be paid in Finnish Antarctic research to international regulations and to the special requirements concerning environmental protection of the sensitive Antarctic region. Finland will participate actively in the Antarctic Treaty, as well as in discussions and decisions concerning its status and its future. Finland has put into effect the stipulations of the Antarctic Treaty System. Moreover, future possible new regulations will be put into effect by national legislation. In the future climate change may cause changes in the protection of the Antarctic environment. In such a case Finland should be in a position to utilise its broad expertise, which cannot be obtained other than by research of the region and with the aid of the high-quality training based thereon. Finland will introduce Finnish research and expertise in an active and appropriate manner in connection with the annual Antarctic Treaty System Consultative Meetings.

Background

The Antarctic Treaty

Finland joined the Antarctic Treaty (SopS 31/1984) in 1984 and acquired full membership, i.e. “Consultative Party” status in 1989. Finland’s purpose was in particular to assure opportunities for scientific research. By the year 2007, some 46 countries have signed the treaty, of which 28 are consultative parties. In Finland the Ministry for Foreign Affairs has overall responsibility for administration of the Antarctic Treaty. Full membership requires significant scientific research in Antarctica and grants voting rights in the Antarctic Treaty Consultative Meetings (ATCM). The Antarctic Treaty and related treaties are dealt with in the international ATCM meetings. The most important of these is the Protocol on Environmental Protection to the Antarctic Treaty, signed in Madrid in 1991 (SopS 5/1998). The Treaty may be signed by any country that is a member of the United Nations, or by any other State that may be invited to accede to the Treaty with the consent of all the consultative parties. Finland’s obligated annual payment to the Antarctic Treaty System is 30 000 USD, but because of budget surpluses in recent years less has been required. When Finland began negotiations to join the Antarctic Treaty, its goal was already to attain consultative party status. Thus preparations were made already then to invest in research and logistics. Consultative party status cannot be attained directly. It can be attained when after joining the Treaty interest is shown in carrying out significant research in Antarctica, establishing a research station in the region or by sending scientific expeditions to the region. The Finnish research station Aboa was established in the 1988/1989 season.

The Antarctic Treaty and the related Madrid Protocol on Environmental Protection regulate activities occurring in the Antarctic region (i.e. the area south of latitude 60° S). The Antarctic Treaty’s principle aims are the demilitarisation of Antarctica, regulation of scientific research, safeguarding of freedom of research, and freezing of territorial claims. The environmental protection protocol is an attempt to provide comprehensive protection of the Antarctic environment, as well as of the associated ecosystems dependent upon it. The environmental protocol forbids such activities concerning mineral resources that are not scientific research. The protocol was entered into force in Finland as part of the Antarctic environment protection law (18.10.1996/28) and decrees (13.2.1998/122). In Finland the Ministry of the Environment is the authority responsible for the protocol.

Funding

Every third year and presently every fourth year the Academy of Finland has issued a call for applications for Antarctic research, granting approximately 2 M€. Research projects can also apply for funding from other Academy programmes.

The Ministry of Trade and Industry held responsibility for funding and administration in the period 1988–1997. Since 1998 responsibility has rested with the Ministry of Education and thus research funding has been the responsibility of the Academy of Finland, while logistics funding has been the responsibility of the Finnish Institute of Marine Research (FIMR) under the Ministry of Transport and Communications.

The Academy of Finland is responsible for the funding of Finnish Antarctic research projects in the presumed breadth of the Antarctic Treaty, taking into consideration the recommendations of the Ministry of Education's Coordination Committee for Antarctic Research. There have been three application rounds for the Academy's Antarctic funding: 1998, 2001 and 2004. The next application round is scheduled for 2008. Research institutes also depend on their own funding to carry out Antarctic research. In addition, there are national and international funding instruments for researchers.

Logistics and maintenance of the Aboa station are taken care of by the Finnish Institute of Marine Research's Finnish Antarctic Research Programme (FINNARP), whose annual budget is approximately 850 000 €.

Logistics

FINNARP is responsible for the Aboa research station (73° 03'S, 13° 25'W) as well as its maintenance and equipment. In addition, FINNARP is responsible for arranging expeditions that are necessary to carry out the Antarctic research funded by the Academy and others, such as research institutes. Logistics funding is also used for Finnish projects taking place in other countries' research stations. In the event research requires working at another country's station or onboard a ship, the arrangements are principally taken care of by FINNARP.

Antarctic fieldwork is usually concentrated at the Aboa research station, but Finland also has ongoing ozone and UV research at the Argentine Marambio research station. When needed FINNARP arranges working facilities at other countries' research stations. Working facilities for oceanographic projects are also arranged on other countries' ships. Mainly such projects should be international joint projects. Every year foreign researchers participate in FINNARP expeditions, just as Finnish researchers do in other countries' expeditions.

FINNARP takes care of travel costs, transportation, health, field training, clothing, provisioning, as well as some consumable materials. FINNARP does not cover research equipment and equipment packaging costs for research projects. The general rules for researchers' participating in other countries research expeditions have been agreed upon in the framework of COMNAP (Council of Managers of National Antarctic Programmes).

At most eight researchers can work at the Aboa research station and its environs during one summer season. The station's year-round automatic measuring system is supported by assuring and increasing the electricity supply. Currently a weather station, an aerosol particle measuring system, a stationary GPS station and a seismometer are operating at Aboa.

The Aboa research station's next fuelling will take place by ship in 2010. Expedition transportation in 2007 and 2008 will be by air.

Additional information about FINNARP, the Finnish research station Aboa, and research can be found FIMR's web pages (<http://www.fimr.fi/en/etelamanner.html>).

Research

Already because of its geographic location Finland is recognised internationally for its strong, multi-aspect expertise in arctic research. Finland's Antarctic research has been based on earlier existing arctic expertise and research. The goal of Finnish research policy has been to carry out Antarctic research in the first instance in those scientifically significant and current areas where Finland has excellent expertise, and whose research connects appropriately to northern region questions and their research.

Finland's research operations in Antarctica are focused on marine research, meteorology and geology, and to a lesser extent on marine- and sea-ice biology. Long-term participants in research activity include the University of Lapland's Arctic Centre, the Finnish Geodetic Institute, the Geological Survey of Finland, the University of Helsinki, the Finnish Meteorological Institute, the Finnish Institute of Marine Research and the University of Oulu.

In the period 1998–2005 Finnish Antarctic research took place in the following areas:

- Geodesy (Finnish Geodetic Institute)
- Sea-atmosphere interface phenomena (FIMR)
- Aerosol research (FMI and the University of Helsinki)
- Ozone- and UV research (FMI)
- Space research (FMI and the University of Oulu)
- Geology (Geological Survey of Finland)
- Geophysical snow research (University of Helsinki)
- Glaciology (University of Lapland Arctic Centre)
- Sea geology (University of Oulu Thule Institute)
- Antarctic atmospheric research (University of Helsinki)
- Sea-ice and marine biology (FIMR and the University of Helsinki)

As a full member Finland is involved in the Scientific Committee on Antarctic Research (SCAR). Finland's membership fee is coordinated through the Delegation of the Finnish Academies of Science and Letters. The Finnish National Committee on Arctic and Antarctic Research acts as the national contact to SCAR, appoints the national representatives to SCAR meetings and to SCAR's standing scientific groups. The National Committee is a member of the International Council for Science (ICSU) General Assembly and includes representatives of institutes and universities involved in Antarctic research. Finnish researchers participate in some extent in the work of expert groups in the SCAR's standing scientific groups and in one of the five SCAR projects.

Reporting and public relations

The University of Lapland's Arctic Centre maintains the "Antarctic Master Directory" database, with Finnish researchers' research material gathered in Antarctica (*arcticcentre.ulapland.fi/amdl*). The Antarctic Master Directory is an international database, where descriptions of research materials gathered in Antarctica are stored. According to the Antarctic Treaty every country that is conducting research in Antarctica should take care to make sure that research metadata are stored properly and available publicly. Every Finnish Antarctic researcher is obligated to store his/her own data in the Antarctic Master Directory.

The Finnish Meteorological Institute (FMI) gathers its ozone data in two databases: the World Ozone and Ultraviolet Data Centre (WOUDC, Toronto, *www.woudc.org*) and the Norwegian Institute for Air Research (NILU, Oslo, *www.nilu.no/nadir*). Similarly UV measurement results are available from the address *polarvortex.org*. Both ozone and UV observations are delivered to the World Meteorological Organisation as ozone background information, a view of which is available in the WMO Antarctic Ozone Bulletin (*www.wmo.int*).

SCAR and the Council of Managers of National Antarctic Programmes (COMNAP) established in 1997 a group for management of Antarctic data materials, the Joint Committee on Antarctic Data Management (JCADM), whose task is to coordinate and assist availability and use of Antarctic information in various countries' databases. Most usually national representatives on the JCADM are people responsible for national archives. Thus there is the Standing Committee on Antarctic Geographic Information (SC-AGI), on whose suggestion, for instance, the Antarctic Digital Database (ADD) is being developed. By means of the JCADM nationally gathered information is available in a coordinated way to the international science community.

SCAR calls for the delivery of national reports at the end of each year's field season and at the latest 6 weeks before the biannual meeting of national delegates. The report is now a relatively short, table-format file, which is visible to members on the SCAR web pages. It contains contact persons' information and a short explanation of the most important research done during the year.

The exchange of information among member states required by the Antarctic Treaty and the Madrid Protocol on Environmental Protection takes place via the pages of the Antarctic Treaty Secretariat, (*www.ats.aq*). The Finnish Antarctic Research Programme (FINNARP) updates the information required from Finland via web pages maintained by the FIMR, (*www.fimr.fi/en/etelamanner/information.html*).

A research group participating in a Finnish Antarctic expedition reports on its research work to the expedition leader within one month of the completion of the expedition. The expedition leader compiles a report on the entire expedition within two months of the expedition's completion. The report is delivered to the office responsible for the expedition, to the Coordination Committee for Antarctic Research and to the research group's sponsoring organization(s).

Researchers supported by the Academy of Finland report on their progress to the Academy. The report will be handled by the electronic transaction system of the Academy no later than the 15th of June of the year following the end of the funding period. The period to be reported on is the funding period.

Publication of Antarctic research information is shared between the Finnish Institute for Marine Research and the Academy of Finland.

Evaluation of Antarctic research

In 2006 the Academy of Finland carried out in cooperation with the Ministry of Education an evaluation of the scientific level and administrative efficiency of Finnish Antarctic research for the years 1998–2005. Antarctic research funding shifted to the Academy in 1998. The evaluation was performed by an independent international group of experts, using international standards. Included in the evaluation were 11 research groups as well as Coordination Committee for Antarctic Research and FINNARP. Excluded from evaluation were sea biology and sea-ice biology research, whose funding was either internal or came from private foundations or other funding agencies.

The evaluation was published in November of 2006, (Publications of the Academy of Finland 13/06, www.aka.fi/publications). The evaluation group's report, "Antarctic Research in Finland 1998–2005", was very critical. It pointed out that although the background of Finland's Antarctic research was principally international policy, the last should not be the main driver for research. Finland lacks an overall consistent scientific strategy and the level of research could be raised by developing more strongly the area's research networking. Funding has been modest, but according to the evaluation it is appropriate to the expectations currently placed on the research. The body of Antarctic researchers is small and isolated. Finnish research carried out in the period 1998–2005 generally has not reached a national or international scientific level, although some parts have definitely been successful. The following research topics were named as success stories: ozone-, UV- and aerosol measurements; the dynamics of the Antarctic boundary layer; and the Gondwana super-continental break-up. The central reason in the criticism of the research quality is the slow scientific reporting of research results and the modest number of publications in leading international scientific journals that carry a significant impact factor. International cooperation is vital to a small programme of a small country. The evaluators recommended a review of the purpose and terms of reference of the Coordination Committee for Antarctic Research. FINNARP received good marks for its efficiency and cooperation with Nordic partners.

The practice of evaluation of applications to the Academy of Finland remained somewhat unclear to the evaluation group. Antarctic research applications submitted to the Academy are evaluated by panels consisting of external experts. The panel writes a general statement for each of the applications to be evaluated. If this is not possible for some application, it is sent for evaluation to at least two separate experts. The experts are mainly foreigners and respected experts in their own field. In addition to the evaluation arguments concerning the general quality of research plans and groups, attention is paid in funding decisions to science policy goals adopted by the Academy. Weighting is given to proposals that are bold, new, multi-disciplinary and emphasize international collaboration. The careers of young,

gifted researchers are to be encouraged. A separate section appointed by the Academy's administration decides the funding of the Antarctic Research Call for applications. The Academy is trying to continue to take account of the evaluation group's recommendation to concentrate funding to fewer, larger groups. Likewise an effort is made to give preference to long-term, successful research. Publishing research results in international peer-reviewed journals and publicising them is to be encouraged. Means of funding researcher mobility, as well as working or studying abroad exist in the Academy, which was cited in the evaluation group's recommendations. The Academy will attempt on its part to inform researchers of these opportunities, and to encourage international mobility on the part of Antarctic researchers with the help of the above-mentioned funding. The Academy of Finland plays an active role in the clarification of the science policy goals and the scientific emphasis of Finland's Antarctic research strategy.

Finland's Antarctic research strategy is responding to the criticism presented in the evaluation. An effort is being made to achieve a more unified strategy. National and international collaboration is to be required and to be furthered. Similarly interaction between the Ministry of Education's Coordination Committee for Antarctic Research (CCAR) and researchers is being increased. Finland will continue to take better note of SCAR's recommendations and research focal points.

Coordination Committee for Antarctic Research 2007–2010

Chairman

Senior Adviser Petteri Kauppinen, Ministry of Education

Members

Counsellor Kirsti Kivelä, Ministry for Foreign Affairs

Senior Adviser Outi Mähönen, Ministry of the Environment

Science Adviser Eija Kanto, Academy of Finland (leave of absence 29.9.2007–11.8.2008)

Science Adviser Samuli Hemming, Academy of Finland (29.9.2007–11.8.2008)

Docent Annakaisa Korja, University of Helsinki

Vice Rector Paula Kankaanpää, University of Lapland

Director Kari Laine, University of Oulu

Research Director Keijo Nenonen, Geological Survey of Finland

Deputy Director General Mikko Alestalo, Finnish Meteorological Institute

Researcher Alf Norkko, Finnish Institute of Marine Research

Professor Markku Poutanen, Finish Geodetic Institute/

Finnish National Committee on Arctic and Antarctic Research

Standing experts

Chief Logistician Henrik Sandler, Finnish Institute of Marine Research,

Finnish Antarctic Research Programme (FINNARP)

Senior Adviser Martti Mäkelä, Ministry of Transport and Communications (from 25.10.2007)

Secretary

Senior Adviser Eeva Kaunismaa, Ministry of Education



OPETUSMINISTERIÖ

Undervisningsministeriet

MINISTRY OF EDUCATION

Ministère de l'Éducation

ISBN 978-952-485-484-9 (PDF)

ISSN 1458-8102

Bookstore

Helsinki University Print

P.O. Box 4 (Vuorikatu 3)

FI-00014 University of Helsinki

tel.+358 9 7010 2363

Fax+358 9 7010 2374

books@yopaino.helsinki.fi

www.yliopistopaino.helsinki.fi/en