



International Cooperation in Arctic Science

Meeting in
Stockholm 24-26 March, 1988

REPORT

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Summary of discussion

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Summary of discussions

Scientists and scholars from the Arctic countries - Canada, Denmark/Greenland, Finland, Iceland, Norway, the Soviet Union, Sweden and the United States, who were assembled at the Royal Swedish Academy of Sciences, Stockholm, 24-26 March 1988, unanimously agreed that an International Arctic Science Committee should be established.

The Committee is intended to meet the increasing need for scientific knowledge from arctic regions that is required for the wise development and management of those regions as well as to ensure that Arctic research contributes fully to world science for the benefit of all mankind. It would serve as a body for international discussion and communication on science matters of international interest having to do with Arctic lands, seas, atmosphere and space and as such be a focal point for cooperation and interaction among Arctic scientists. It would include the natural and human sciences and comprehend both basic and applied research in all fields where international cooperation and coordination is desirable or necessary.

The Committee would seek to determine priorities for arctic research, increase the efficiency and effectiveness with which scientific resources and facilities are used, improve the cooperation and exchange between scientists and foster the linkage

between different fields of study in the Arctic. Drawing on the expertise of scientists from throughout the world the Committee would aim at obtaining the scientific knowledge needed to develop and implement Arctic science policies and at assisting scientists engaged in Arctic research to carry out studies that are of benefit to the Arctic regions and to the world as a whole. Particular attention will be paid to the encouragement and co-ordination of international studies that are of benefit to northern residents and the indigenous Arctic people.

DRAFT VERSION

International Cooperation in Arctic Science

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AGREEMENTS

The participants discussed the organization of IASC. It was decided to form a working group with five members to prepare a proposal for the next meeting. Dr Rogne was appointed chairman of the working group and the other members will be dr Corell, dr Dzubenko, prof Karlqvist and a participant from Canada.

It was agreed that a secretariat to be established to serve the proposed committee and that this secretariat be located in one of the Nordic countries. A joint proposal on the location of the secretariat will be made by the Nordic countries to the next meeting preparing for the establishment of International Arctic Science Committee (IASC).

An invitation from the participants of the USSR to hold a conference on Arctic Science Cooperation in the Soviet Union at the end of 1988 was gratefully received. At that conference, this group will seek to finalize the proposal for the establishment of an International Arctic Science Committee (IASC). The opportunity will also be used to proceed with discussions to identify possible scientific projects for international coordination and cooperation in Arctic research.

DRAFT
VERSION

THEMES and TOPICS for ARCTIC RESEARCH.

**An overview based on discussions at the meeting on Arctic
Research in Stockholm 24-26 march 1988**

Prepared by prof Bert Bolin, chairman

To pursue the intentions to develop collaborative research in the Arctic a number of particularly important research tasks that could be initiated as a beginning of such a collaboration were suggested. The summary of these proposals as is given below, should in no way be considered as an outcome of careful consideration of priorities and feasibility, but rather be seen as examples of activities that might be of interest. The meeting considered it important, however, that a scientific program be developed. It would be valuable if outlines of national contributions to such a program were available at the next meeting to serve as a basis for more thorough discussions. The following principle considerations might serve as guide lines for such preparatory work.

- It is important to seize on the new opportunities that will be provided by an agreement of collaboration in Arctic research of the kind that was considered. It is of particular interest to tie together the observational efforts in the various countries that so far have been developed without detailed and thorough knowledge about what is being attempted and pursued elsewhere in the Arctic region. Comparison of methodologies used and careful intercalibration of methods is central for circumpolar mapping of key features of the environment.

- There are several research efforts that concern the Arctic region itself without much interdependence with conditions and processes outside the region, while similarities or differences as observed within the Arctic are of great interest. Not the least are problems concerning the dependence of human settlement on the environmental conditions in the region of interest as well as the reverse problem i.e. the way man interferes with and modifies the environment when activities increase not the least in the context of exploitation of natural resources. It seems essential that comparative research of this kind will be part of a joint research program.

- On the other hand the polar regions, the Arctic as well as the Antarctic, are of fundamental importance in a global context. In a number of global programs, perhaps particularly in the World Climate Research Program (WCRP), Man and the Biosphere (MAB) and the International Geosphere Biosphere Program (IGBP), special efforts in the Arctic are necessary to make progress with regard to the central global issues. It is important to analyze carefully what new opportunities might appear for specific joint projects as a result of establishing collaboration and coordination in Arctic research as considered.

- It is important to aim for early decisions on a few well defined research projects as an initial phase of joint research activities, and simultaneously develop a more comprehensive program that can serve as a basis for continuing research collaboration in the Arctic region.

In the light of the remarks made above and the list below of more specific projects suggested at the meeting the following four research themes are of particular interest.

- (i) Studies of deglaciation and the development of the Arctic terrestrial ecosystems during

holocene and the role of the Arctic in the carbon cycle both with regard to carbon dioxide and methane

- (ii) Atmospheric pollution in the Arctic region
- (iii) The circulation of the Arctic Sea, its ecosystem and its role for the heat budget of the northern hemisphere
- (iv) Man and his environment in the Arctic region.

It should also be recalled that important bilateral and multinational research projects are presently being pursued in the Arctic region. It is understood that such research will be continued by concerned parties. In a longer time perspective it will obviously be important to find ways and means for best possible interaction between different projects.

Suggestions for joint research projects

The terrestrial system

- Glaciation in the past and its impact on geomorphology
- Land restoration in Arctic regions
- Large-scale terrestrial ecosystem development and change
- Genetic mapping
- Preservation of wild life

- Genetic mapping
- Heavy metals in the food chain
- Air-sea exchange of carbon dioxide

Upper atmosphere and near space

- The response of the Arctic ionosphere to space disturbances
- Ozone and the middle atmosphere
- Magnetic and ionospheric variations and aurora
- Remote sensing of land, the atmosphere and the sea in the Arctic

Man and the Arctic environment

- Adaption of man in the Arctic
- Polar medicine and health
- Cold climate and technology
- Socio-economic problems in the Arctic
- The cultural history of the Arctic
- The indigenous people of the Arctic
 - impact of technology
 - protection and health
 - education
 - cultural and ethnic groups

The participants agreed to release the following information to
the press

PRESS RELEASE

Stockholm 26 March 1988

Arctic cooperation

Scholars and scientists from the Arctic countries today
concluded a three-day meeting hosted by the Royal Swedish Academy
of Sciences in Stockholm. It was unanimously agreed that an
international Arctic Science Committee should be established to
promote international cooperation and coordination of scientific
research in the Arctic for the benefit of the peoples of the
region and for the advancement of world scientific knowledge.

29 scientists and scholars from Canada, Denmark/Greenland,
Finland, Iceland, Norway, the Soviet Union, Sweden and the United
States participated in the meeting.

The Royal Swedish Academy of Sciences
The Polar Research Committee

Chairman of the meeting
prof Bert Biolin

phone etc

- Adaption of animals to environmental change
- Sources and sinks for atmospheric trace gases
- Climatic change as recorded in sediments and soils.

The atmosphere

- Recording of ongoing climatic change
- Atmospheric trace gases including stratospheric ozone
- Past concentrations of atmospheric trace gases as recorded in land ice
- Atmospheric chemistry of the Arctic troposphere
- Pollution due to sources outside the Arctic.

The marine system

- Air-sea heat exchange and the role of the Arctic Sea for the heat balance of the northern hemisphere
- Water circulation in the Arctic sea
- Paleoceanography as recorded in sediments
- Sea ice formation and sea ice dynamics
- Characteristics of the marine eco-systems, particularly those at the ice-edge
- The arctic marine fauna



**International Cooperation
in Arctic Science**

DRAFT

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Stockholm 24-26 March, 1988

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INTERNATIONAL ARCTIC SCIENCE COMMITTEE

A short survey of the needs, goals, terms of reference and organizational structure.

by Odd Rogne, Director of Norsk Polarinstitut

Dear Friends,

The Working Group report is a rather long and detailed document. The chairman has therefore asked me to give a short presentation of the main points.

The Working Group felt there was a need to get rather deep into the present situation and to give a survey of status and needs for an arctic science organization.

It may be useful to repeat the headlines in this chapter together with some short comments or key words:

1. Arctic countries have similar problems

- environment
- natural conditions
- native people
- arctic similarities vs. non-arctic parts of a country

2. New developments - new problems

- protection of environment, long-range transport of pollutants
- the greenhouse effect/changing climate
- changing in population and in way of living
- new industries (oil, tourism etc.), new technologies

3. Need for new and shared scientific knowledge

- basically same scientific knowledge needed in all arctic
- share it or "invent the wheel" (doubling research)

4. Arctic research is important to world science

- ozone
- changing climate
- "weather machine"

5. Need for liason and exchange between arctic scientists

- good contact in some areas, but not in general
- east-west relation

6. Need for information from the whole circumpolar arctic

- only parts of an entity studied today
- a circumpolar network of monitoring stations for over-national phenomena (ozon, climate, pollution etc.)

7. Arctic science priorities of arctic countries vs. arctic science interests of non-arctic countries

- arctic country:
 - domestic arctic priorities
 - solve regional and pressing problems
- non-arctic:
 - concentrate on most fascinating scientific problems
 - take a lead in major arctic science problems

8. Need for interdisciplinary and multidisciplinary approach to arctic science

Example:

- study of environmental problems (biology, geophysics)

9. Existing arctic science organization

- several exist, but none meet all the needs

In the working group, we all realized that there were some "policy needs", i.e. a need to have a meeting place for science administrators, scientists and those responsible for the management of the Arctic. I will not list the various needs of this kind here, as most of the participants are concerned about the scientific side, but I would refer you to pages 12-15.

After reviewing the various needs, we come out with a proposal about how to meet the needs.

We suggest international action in two complementary areas:

1. A non-governmental scientific committee, provisionally called the International Arctic Science Committee.
2. A proposal that representatives of governments of arctic nations should consider to establish a mechanism for regular discussion on arctic science matters. We ended up by calling this mechanism Intergovernmental Forum on Arctic Science Issues.

As this Forum partly would be outside the scope of this meeting, I find it logical just to make a few comments here and then concentrate upon International Arctic Science Committee.

I think we all realize that if an arctic science organization should be founded, we should have the

political blessing from all arctic countries; or in other words there have to be some contacts or consultations on ministerial level between these countries. I understand that some activity already have taken place in this field. These people will set the frame or borders for scientific cooperation. The working group points out that these informal contacts very well can lead to more regular meetings and we list some topics that could be useful to discuss.

I will stop my comments here, as I think we as a science planning group should concentrate on our business and leave the intergovernmental forum to be considered by the government people.

As to International Arctic Science Committee, we have listed what could be called some

Terms of reference:

- * promote international co-ordination of arctic research
- * focus on interdisciplinary and multi-disciplinary nature of arctic research
- * review opportunities for arctic research and setting priorities based on the needs for knowledge seen from an arctic point of view
- * relate arctic research to world research programs and knowledge bases
- * organize and improve the exchange and accessibility of scientific information

I have listed them here in a very short form. We will go into the terms of reference later in our meeting, so the intention here is just to point to some central issues.

We have also proposed an organizational structure and to some extent used regional and topical committees of the International Council of Scientific Unions, ICSU, as a model. We also believe that there are certain advantages if we could form an organization acceptable for the ICSU-system.

However, let me give a short presentation of the proposed organizational structure:

ORGANIZATIONAL STRUCTURE

- a. board
 - five to seven persons, representatives of nations with arctic territory
 - elected from and by the council
 - members of the board elect the chairman for a fixed term

- b. council
 - one national representative of each country
 - chairman of the working groups
 - policy decision body
 - define qualification of membership

- c. working groups
 - to be established in all major subject areas important to arctic science
 - leading scientists, one from each member country (?)
 - main forum for scientific discussions

- spesialist groups
 - ad hoc group of specialists to deal with particular topics or problems

- d. secretariate
 - a standing small secretariate, headed by a professional director or secretary
 - responsible to the chairman
 - located in and provided by an arctic country

Next steps

On p. 22-23 we have listed what we regard as the logical next steps. I only refer to these pages as I have an impression that we need to have some thorough discussions on issues as membership and terms of reference before we can make any further progress.

The working group report gives you a lot of background information etc. However, I would like to give you some private opinion on what is realistic to achieve during the first years, i.e. some short range goals:

1. Exchange of scientific information

Compared with the present situation, a mechanism or system of exchange of scientific information would be a considerable achievement, especially if you observe all duplicating research - and all those resources now more or less wasted.

It would be useful to analyze the whole information-gathering process and look at the possibility of standardization and compatability of data to various forms of exchange.

2. Arctic science policy forum

An organization providing the possibility for Arctic scientists to meet, exchange scientific results etc. will create the fundament for future cooperation and could be a separate goal.

In addition, Arctic science administrators would also have a role in the organization and could achieve interesting results (even if there should be less interest in creating a separate intergovernmental forum).

3. Stimulate coordinated research on major scientific topics

Some have compared the situation in the Arctic with that in Antarctica. This comparison is misleading and could be dangerous for future discussions.

We have to realize that in the Arctic we have national territories and partially "national" seas (coastal waters), and it is a very sensitive military area.

I think it is vital that we identify these constraints, accept them as facts and look for forms of cooperation that could be acceptable on this basis.

I have one solution called "coordinated research", which we have used in the bilateral Norwegian-Soviet agreement. In short:

- a. We defined a scientific program of mutual interest
- b. We agreed upon standard instrumentation and data collection in the field
- c. Each nations scientists will do the field work in their own territory
- d. Joint publications of results

The important part here is to find a solution which gives each country full control of what is going on in its own territory.

Another form of cooperation can be developed from the need for monitoring data. It should be possible to agree upon a network of monitoring stations around the Arctic, collecting data on for instance ozon, pollution, climatic variables etc. and operated on the same basis as mentioned for coordinated research.

I think it is important to identify acceptable forms of cooperation, otherwise the people giving the political or governmental blessing for the development of an International Arctic Science Committee would be very restrictive, especially on the question of participation from non-Arctic countries.