



THE 1996 IASC MEETING

Report

23 - 26 April, 1996

Bremerhaven, Germany

This report gives a summary of the Annual and Council meetings held 23-26 April at AWI, Bremerhaven, Germany.

The Annual Meeting is an open meeting with a number of invited persons aiming at presenting and discussing a few key issues.

The Council Meeting is a decision-oriented meeting attended by members of Council, and with members of the Regional Board as observers, in addition to a few regular observers.

As there is a significant overlap as to issues, this is a combined report in which you find a summary of presentations and discussions (Annual Meeting) as well as decisions made (Council Meeting).

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EXECUTIVE SUMMARY

The following IASC Meetings were held 23 - 26 April, 1996 in Bremerhaven, Germany:

- 23 April: Meeting of the Regional Board
Meeting of IASC Council to consider Chinese application
- 24-25 April: Annual Meeting (open meeting to address a few key issues)
- 25-26 April: Council Meeting (decision making and policy questions)

Some headlines from the meetings:

- China was unanimously voted in as the 16th member of IASC Council
- In his report, the IASC President gave an account of high IASC activity throughout the year, with regard to science planning, workshops, new groups, publications and also in connection with meetings he had attended as IASC President.
- Outcome of ICARP - the International Conference for Arctic Research Planning: An Executive Summary had been widely distributed and a full report would be printed in May.
- Council agreed to use **maturity**, adopting a *Feasibility/Attractiveness Model* when evaluating project development, and keeping in mind the earlier agreed principles for project selection. The following projects were agreed to be most mature:

FATE: Feedbacks and Terrestrial Ecology
MAGICS: Mass Balance of Arctic glaciers and Ice Sheets
Effects of Increased UV-Radiation in the Arctic

In the next category came:

BASIS: Barents Sea Impact Study
BESIS: Bering Sea Impact Study

and thereafter projects in an earlier stage of development:

LOIRA: Land-Ocean Interactions in the Russian Arctic
(international workshop to be held in September 1996)
Sustainable Use of Living Resources
(including earlier project "Dynamics of Arctic Populations and Ecosystems). Suggested to focus on sustainable use of fish and on caribou/reindeer.

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Environmental and Social Impact of Industrialisation

(including earlier project on “Disturbance and Recovery of Arctic Terrestrial Ecosystems, and with a possible focus on impacts of non-renewable resources)

- A new proposal on “Rapid Cultural Changes in the Circumpolar North” was presented to Council, and an ad hoc group was appointed to work out a scoping report.
- Council-Regional Board relationship: An ad hoc group suggested ways of improving this relationship. Among new activities was a joint session of the Board and the Council, underlining the necessity for countries having members in both fora to express common national position.
- A final version of a MoU with START was agreed upon.
- Arctic Council: IASC should seek an advisory role with the Arctic Council. If not invited to play this role, IASC - as the most representative, circumarctic science organisation - should be proactive and contribute with proposals based on output from IASC activities.
- European Polar Board: IASC has been invited to discuss a close collaboration with EPB, and Council agreed to respond positively.
- COASP - Cooperative Arctic Seismological Project: Council endorsed suggested activities for COASP, and appointed a COASP Planning Group.

For other issues: a number of progress reports, accounts and budgets, and further details you are referred to the report on the following pages.

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PARTICIPANTS

Representatives:

Canada:	Barrie Maxwell, Council Gerald S. H. Lock, Regional Board
China:	Professor Chen Liqi, Leader of Delegation
Denmark:	Jens Peder Hart Hansen, Council Morten Meldgaard, Regional Board
Finland:	Juhani Hassi, alternate for Pennti Mälkki, Council Pirkko Heikinheimo, alternate for Elisabeth Helander, Regional Board
France:	Claude Lorius, Council
Germany:	Dieter Fütterer, Council
Iceland:	Magnús Magnússon, Council and Regional Board
Japan:	Nobuo Ono, Council
The Netherlands:	Louwrens Hacquebord, Council
Norway:	Alf Håkon Hoel, Council Olav Orheim, Regional Board
Poland:	Krzysztof Birkenmajer, Council
Russia:	Igor S. Gramberg, Council (and alternate for Boris Melnikov, Regional Board)
Sweden:	Dick Hedberg (alternate for Bert Bolin) Anders Karlqvist, Regional Board
Switzerland:	Atsumu Ohmura, Council
United Kingdom:	David J. Drewry, Council
USA:	Oran R. Young, Council Louis Brown, alternate for Robert Corell, Regional Board

Observers:

China:	Zhaoqian Dong Dahe Qin Jian Liu
Germany:	Gunter Giermann Max M. Tilzer
The Netherlands:	H. A. Kuperus
Poland:	S. M. Zalewski
Russia:	Garrik G. Grikurov
Switzerland:	Anne-Christine Clottu Vogel
USA:	Thomas Pyle

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European Commission:	Jean Boissonnas
European Science Foundation:	C. A. Williams
IASSA:	Ludger Müller-Wille
Effects of UV:	Edward C. DeFabo
BASIS/BESIS:	Manfred Lange
FATE:	Terry V. Callaghan
MAGICS:	Per Holmlund
AWI:	Brunhilde Kunsch
IASC Secretariat:	Odd Rogne, Executive Secretary

A list of complete names and addresses is included at the end of this report as **Appendix I**.

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CHINESE APPLICATION

A special meeting of IASC Council was called on 23 April in the evening to consider the Chinese application to become a member on IASC Council.

The IASC President, Professor Magnús Magnússon, welcomed the Chinese delegation and briefly explained the application procedure.

Professor Liqi Chen presented the Chinese application in general, and Professor Dahe Qin presented past Chinese scientific activities in the Arctic as well as their future scientific plans.

After a brief discussion in IASC Council, *China was unanimously voted in as the 16th member of IASC Council.*

The Chinese adhering body to IASC is:

The Chinese Advisory Committee on Polar Research.

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1. OPENING SESSION

1.1 WELCOME AND PRACTICAL INFORMATION

The President, Professor Magnús Magnússon, welcomed all participants to these meetings of IASC, including invited observers and project leaders presenting their projects.

Participants were also welcomed to AWI and Bremerhaven by Professor Dr. Max Tilzer, Director of AWI; and by Dr. Gunter Giermann on behalf of Deutsche Forschungsgemeinschaft and the national committee for SCAR/IASC.

It had earlier been agreed in Council that Regional Board members were to be invited to the Council meeting. It was also agreed that they would be regarded as a delegation, i.e. Council member to speak and any national consultations to be held prior to or outside the meeting.

1.2. ADOPTION OF THE AGENDA

The agendas as distributed in advance were agreed upon for both meetings. Some change of sequence was made at the Council Meeting for practical reasons.

1.3 PRESIDENT'S REPORT

The President noted that the activities within IASC had grown, and his intention was not to cover it all, but to mention some examples of activity since last April.

Science Activities:

ICARP, the International Conference for Arctic Research Planning and the *planning process* prior to ICARP had been one of the major science planning activities. A special thanks was extended to leaders and members of the core groups involved in this planning.

Some **workshops** had been held, such as:

- *Disturbance and Recovery of Arctic Terrestrial Ecosystems*, held in Rovaniemi, Finland in September 1995, and
- *Arctic Marine/Coastal/Riverine Systems*, held in St. Petersburg, Russia in November, 1995.

Both workshops could be looked upon as **ISIRA** (International Science Initiative in the Russian Arctic) activities, as they were especially intended to bring together Eastern and Western arctic scientists. Participants were also informed that a first *Guide to Russian Arctic Science* was expected to be published during April this year.

Progress reports on the Russian Arctic Seismic Data project were available at this meeting, as well as other progress reports.

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ADD, the International Arctic Data Directory, had held a workshop in Moscow with a special focus on Russian Arctic environmental data in September, 1995. They had also held their first regular meeting as a group in Moscow, and another meeting prior to ICARP in Hanover, New Hampshire.

Some **publications** had resulted from the planning process within IASC, such as *Effects of Increased Ultraviolet Radiation in the Arctic* and the *ICARP Executive Summary*.

The IASC President had attended and presented IASC at a number of **meetings**, such as:

- Circumarctic governmental meeting discussing the founding of an Arctic Council, held in Washington, DC in September, 1995;
- *European Networking Conference on Research in the North*, held in Svalbard, Norway, 12-16 September, 1995.
- *The Second Conference for Parliamentarians of the Arctic Region*, held in Yellowknife, Canada in March, 1996.
- A meeting of the AEPS Senior Arctic Affairs Officials and the Third AEPS Ministerial Conference held in Inuvik, Canada in March, 1996.

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2. MAIN ISSUES

2.1 OUTCOME OF ICARP

Dr. Oran R. Young, Chairman of the ICARP Program Steering Committee, introduced this item, and concluded that ICARP had successfully:

- brought together active scientists at a genuinely circumpolar level;
- provided an opportunity for a meeting of funders, managers and users, which was the first of its kind;
- demonstrated a sign of IASC maturity in producing a fair number of science plans, with ICARP as a milestone in that process;
- demonstrated the IASC “flavour” (i.e. addressing a priority problem with relevant sciences. See inside front cover of this report, for more details), and
- formed links between natural and social sciences, as well as between the science community and the user community.

On the other hand, ICARP had been a step in a process. Future challenges such as combining related projects, developing them to maturity for implementation, etc. are ahead. IASC should continue its policy of providing quality work in science planning.

An *ICARP Executive Summary* had been distributed to about 2000 persons, and additional copies are available from the IASC Secretariat.

A *full report* from the meeting was ready to be printed, and will be available in May.

In the *discussion*, it was noted that IGBP had started to identify more specific science problems and combine elements of several IGBP core projects. IASC could adopt the same cross-cutting approach.

This strategy, however, should not be the only approach, as some problems do not fit the integration idea, but they are important and can stand on their own.

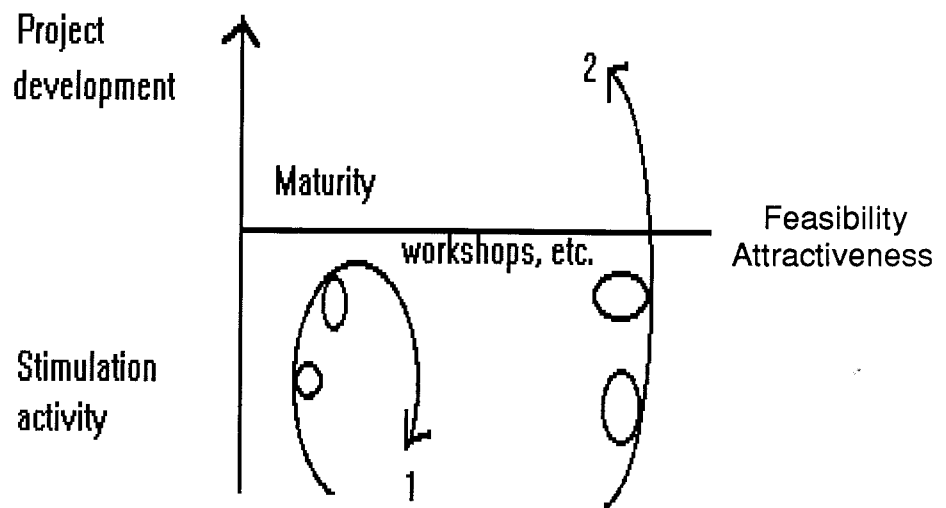
A balanced portfolio of research accepting both specific and integrated projects could be the best solution.

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2.2 PRIORITY PROJECTS PRIORITIES

Council had a general discussion on project development and priorities. It was agreed that *priority* should be replaced by *maturity*, as IASC could develop projects to a maturity level, whereas funding agencies would be the appropriate bodies to set priorities.

Project development could be illustrated by the following diagram:



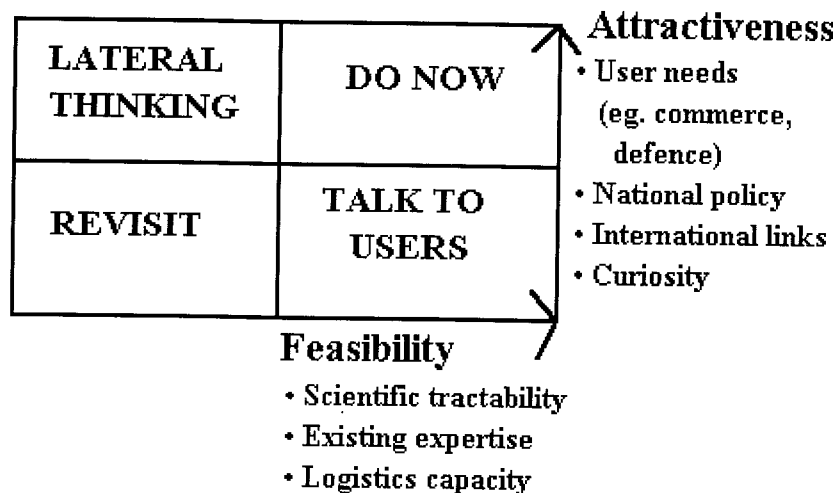
Explanation:

A project idea goes through some stimulation activity such as workshops, advice from Council and others, further planning, etc. Some ideas may not reach a stage of maturity (illustrated by 1), while others pass the maturity line (feasibility, attractiveness) and should be considered by funding agencies (illustrated by 2).

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Feasibility - Attractiveness model could be illustrated as follows:

Feasibility - Attractiveness Model



(Diagrams provided by Dr. David Drewry, UK)

Council agreed to use these diagrams as guidance for their discussion in combination with the earlier agreed principles for selecting projects.

The principles agreed to earlier were mainly:

IASC will give priority to interdisciplinary projects relevant to arctic science issues which require international co-operation.

More precisely, this should be achieved by

- framing issues in *thematic* rather than disciplinary terms;
- bringing together the *physical, biological and social sciences* to address substantive themes;
- strengthening the *dialogue between the science community and the policy community*;
- addressing the *concerns of those who live in and near the Arctic*; and
- basing the science initiatives of IASC as much as possible on *the priorities of the arctic science community in each member country*, and in the context of internationally agreed programmes.

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PROJECT ORGANISATION

Council agreed to the following actions taken earlier by the Executive Committee:

Core groups had been asked to serve up to and including ICARP. The composition of the groups, including leaders, should be reconsidered. A consultative process had been initiated to review these questions. The following procedure had been agreed upon:

- Council members and chairmen of core groups should be asked for advice on best members and chairmanship of groups.
- Final decisions on the core groups to be made at Council meeting in April. The present groups are to continue until Council meeting.

This revision should ensure that:

- Active, highly competent and interested scientists become involved.
- Scientific leadership is strong and of high calibre.
- Groups have a balance between science disciplines and also between regions.

Core group leaders have been asked to advise Council on active persons to serve in the groups.

Council had received information about the outcome of this process both in the regular agenda papers and in a late paper called *Core Group Membership*.

As some projects needed another approach, re-appointment of core groups for those projects was postponed. See report item for each project for specific information.

FUNDING

Mature projects means that those projects are mature for proposal to funding agencies. Applications should be made by participating scientists with endorsement of IASC. IASC could help in organising a meeting with representatives of funding agencies, as suggested by the IASC Group of Funding Specialists.

This approach would also help good circumarctic timing of funding, as some projects are planned as an entity and should be implemented as such.

The question of funding of secretarial expenses for core groups had been raised, and was discussed briefly. Some minor support could be given from the IASC General Fund (minor communication expenses), but national funding should be sought for regular secretariats.

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2.2.1 FATE - Feedbacks and Terrestrial Ecology

This project proposal was regarded as one of the more mature proposals by the Executive Committee, and the chairman of the earlier core group, Professor Terry V. Callaghan, had been invited to give a 30-minute presentation at the Annual Meeting.

Some headlines from his presentation follow:

BACKGROUND

- Arctic terrestrial and freshwater ecosystems are important at regional and global levels (2.5 million habitants in the Arctic, while arctic ecosystem/atmosphere interactions have potential global implication).
- Global change in the Arctic is likely to be greater and occur sooner than elsewhere (climate change 2-3 times the global average).
- Fragile arctic ecosystems are likely to be particularly sensitive to such changes.
- Understanding the major implications of global change-induced responses of arctic ecosystems must encompass local, regional and global concerns.
- Arctic ecosystems and environments must be a key tool in signalling and understanding subsequent global changes in more populated regions (arctic ecosystems are simpler than those in other latitudes).
- Key science questions on the interaction between arctic terrestrial ecosystems and global change have been identified by 150 to 200 arctic scientists in a consultative process initiated by IASC (Reykjavik 1992, Oppdal 1993, Hanover 1995).

KEY SCIENCE QUESTIONS

The overarching goal of FATE is to understand, quantify and predict patterns of response of arctic terrestrial and freshwater ecosystems to the climate system.

We need to know the biological and environmental controls on:

1. Feedbacks from *surface energy and water balances*.
2. Feedbacks, and consequences for ecosystem structure, of *cycling and storage of carbon and nutrients*.
3. Feedbacks from *trace gas fluxes*.
4. *Redistribution of species and ecotones and changes in biodiversity* focusing on causes and consequences of the changes.

SCIENTIFIC APPROACH

- Co-ordinated investigations throughout the Arctic to determine geographically representative patterns in processes at fewer sites to underpin wider patterns
- Detailed mechanistic process-based research (focused on the BASIS and BESIS areas as contrasting regions)

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SUMMARY APPROACHES

- Monitoring (intensive field sites and networks, data management needs)
- Manipulation (field and laboratory, critical selection of dominant species and soils, to predict future responses).
- Retrospective analyses to predict future responses from historical patterns
- Scaling-up (remote sensing/GIS to quantify the extent and distribution of biota and biological processes).
- Modelling (an integrating framework).

PRODUCTS

- Data sets
- Scientific papers and reports
- Proceedings of FATE workshops and conferences
- Special reports addressing overarching issues.

PRODUCTS FOR THE ENVIRONMENTAL AND SCIENCE POLICY USERS

- Early warning of future changes in the Arctic and important experience for understanding slower changes at lower latitudes.
- Assessment of the relative importance of different anthropogenic factors influencing ecosystem responses and definition of the integrated response and feedbacks.
- Quantification of the contribution of Arctic systems to greenhouse gas budgets and carbon stores.
- Identification of changes in energy and water fluxes from arctic land surfaces.
- Provision of ground based data to parameterise and evaluate models and to amplify and evaluate satellite imagery.
- Enhanced use of facilities and networks to improve resource efficiency.
- Assessment of potential change in species of conservation value.
- A long-term monitoring system to meet the requirements of Rio Conventions on Climate Change, Biodiversity and Sustainable Development.
- Establishment of a circum-polar network capable of rapid response to new environmental issues.

PRODUCTS FOR USE OF THE ARCTIC PEOPLES

- Greater understanding of the consequences of vegetation changes on the populations of herbivores and birds on which they depend.

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- Assessment of the consequences of changes in soil erosion (e.g. through permafrost degradation) and leaching on aquatic resources, particularly fish populations.
- Understanding of the effect of changes in vegetation which can be used to infer changes in the fibre, fuel and “medicinal” products of the Arctic.
- Assessment of the likely changes in pollutants and their effects on vegetation, fauna, fisheries and water quality.
- Early warning of future changes in the distribution and abundance of their natural resources.
- Education in environmental sciences and in environmental policy.

Professor Callaghan also gave a survey of likely users and funders of FATE, as well as linkages within IASC and beyond, and a projected timetable. As these surveys are identical or similar to those given in the ICARP Executive Summary, readers should refer to that publication.

POST-ICARP DEVELOPMENTS

1. Establishment of IGBP GCTE Arctic Working Group
 - Committee to be formally established in May 1996.
 - Determine affiliation to both GCTE Core Programme and IASC.
 - Accept responsibility for the FATE initiative.
2. Adoption of the FATE science and implementation plans by ARTERI (European Union-funded Concerted Action: Arctic and Alpine Terrestrial Ecosystem Research Initiative).
3. Letter of intent, through ARTERI, to BASIS call for proposals.

A survey of ARTERI was given, but is not reported here. Information is available from the IASC Secretariat.

DISCUSSION

During the ensuing discussion the following issues were raised:

- *Linkage to PAGES* in order to get history of the PAST. This issue is covered by the FATE document (see ICARP Full Report).
- *Site selection*: They will build on existing sites, but are interested in discussing/joining other sciences in “supersites”.
- *Societal impacts*: Not yet addressed, and there is a need for a meeting/workshop to identify impacts on northern societies. Local knowledge was also brought up, and should be considered.
- *HDP* has land use and climate change (LUCC) as one of their core projects. FATE and LUCC (as one of the societal impacts) give opportunity for co-operation between natural and social scientists.
- *Fauna*: Fauna concerns should be included.

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COUNCIL DECISIONS

Using the maturity/attractiveness/feasibility approach reported earlier, Council agreed that FATE could be classified as a mature project, scoring high on attractiveness and fairly high on feasibility.

The following advice and concerns were expressed:

- *FATE to be a true joint GCTE/IASC project.*
- *Broader approach should be developed, reminding the group about IASC preference for interdisciplinarity, and the opportunity this project has for including fauna and societal impacts. This broader approach would also make the project more attractive for users.*
- *Presenting the project to users should be one of the next steps.*
- *IASC is prepared to assist this project, provided GCTE and the group find our terms acceptable.*
- *Organisation: The Arctic GCTE Working Group to serve as an IASC Working Group Members are:*

<i>Canada</i>	<i>Greg Henry</i>
<i>Denmark</i>	<i>Torben Røjle Christensen</i>
<i>Finland</i>	<i>Kari Laine</i>
<i>Germany</i>	<i>John Douglas Tenhunen</i>
<i>Iceland</i>	<i>Haldor Thorgeirsson</i>
<i>Norway</i>	<i>Jarle Holten</i>
<i>Poland</i>	<i>Barbara Godzik</i>
<i>Russia</i>	<i>Yuri Starikov</i>
<i>Sweden</i>	<i>Ulf Molau</i>
<i>United Kingdom</i>	<i>Terry Callaghan</i>
<i>USA</i>	<i>Walter Oechel (temporary)</i>
- *Funding: Council confirmed the decision by the Executive Committee. If savings are made elsewhere, this project together with the other mature projects should be given preference for additional money.*
- *Progress: An implementation plan is expected by 15 March, 1997.*

ACTION: Rogne

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2.2.2 **MAGICS - Mass Balance of Arctic Glaciers and Ice Sheets**

As the chairman of the group was working in the field, Dr. Per Holmlund, Sweden (secretary to the group) gave the presentation.

BACKGROUND

Arctic ice sheets and glaciers play a critical role in the climate system and thus also have a fundamental impact on society. Glacier variations affect global sea level on time scales as short as decades. The sensitivity of arctic ice caps and glaciers also suggests that they may provide an early warning of climatic shifts.

The continuation of long-time series of mass balance monitoring programmes into the coming years when global circulation models predict a warmer climate will be a special challenge. Until now, glacier mass balance data from selected areas of the Arctic show no signs of increased melting of the glaciers in the Arctic and no significant trend in the existing mass balance series. Therefore, it is essential to improve the knowledge of the Eurasian Arctic ice masses as indicators of climate change. This requires an extensive monitoring program, using in situ and remote sensing measurements, for defining their present state and for evaluation of future behaviour based on the physics of glaciers. At the same time it is important to improve our knowledge of how the Arctic ice masses have been affected by climatic fluctuations in the recent past.

The Greenland ice sheet is by far the most important for sea level change, but the smaller glaciers and ice caps will give the first detectable response. Recent ice cores from Greenland indicate highly unstable climates during interglacial periods. The studies also indicate close links between ice masses, rapid iceberg and meltwater production and the ocean and atmospheric circulation. This has wide implications for future climate evolution and impacts on the environment at different scales.

SCIENTIFIC OBJECTIVES

- To predict the change in ice volume in the Arctic that may occur in the next decades to several centuries, as a result of possible climate change for different climate scenarios.
- To give input to the estimate of future rates of sea level change.
- To validate and provide data to GCM-models.
- To reconstruct the past, Holocene climatic variations in the Arctic.

SCIENTIFIC APPROACH

- To determine the present geometry of the Arctic ice masses and their rates of change (remote sensing techniques).
- To determine mass balance components and their altitudinal and regional variations in relation to climate.

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- To evaluate the physical controls on the dynamics, spatial extent of ice streams and outlet glaciers, and switching between different flow regimes.
- To reconstruct climate variations from ice cores and other sources. ICAPP - Ice Core Circum Arctic Paleoclimate Programme - is a part of this approach. The program has already started under the IGBP-PAGES umbrella.

USERS/FUNDERS

The users are on different levels in the international community:

- IPCC
- Governments
- Other research groups as mentioned above
- Offshore activity
- Water management
- Insurance companies

PROSPECTS

- The topics are not covered by another program
- There is international interest in many countries.
- The infrastructure is already there.
- It is a bipolar approach.
- The time is right and mature to make this an IASC/WCRP cooperative project.

SUGGESTED NEXT STEPS

- Joint IASC/SCAR Workshop, organised in Norway in June 1996.
- State of the Art Report: Initiated at a workshop in Poland, and now ready for printing.
- Establishment of an arctic glaciological data bank.
- Meeting of the Working Group to discuss further implementation (parts of the science plan are being implemented).

For further information such as projected timetable, linkages etc., readers are referred to the ICARP Executive Summary pages 10-11.

DISCUSSION

- *Users:* The group would benefit from more specifically identifying users, and especially users who can sponsor some of the suggested activities.
- *Relationship to WCRP:* IASC as such should establish a relationship to WCRP. The amount of freshwater can be the main source for climatic instability, and this group clearly meets a need that WCRP has. WCRP should be asked to fund workshops and other forms of support.

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- *Permafrost:* The group has not had any formal contact with IPA. There is some co-operation with permafrost groups, but few common interests for this project.
- *Results:* This group and the outcome coming from them is a good example that IASC actually is producing results.

COUNCIL DECISIONS

MAGICS can easily be classified as a mature project, and Council noted that parts of the project are being implemented.

To further develop the implementation plan, links should be developed with WCRP and IGBP/PAGES. The WG is asked to more clearly identify other users, including potential sponsors.

The group should also consider the IASC interdisciplinary approach (see inside cover of this report), as at some stage a broader approach may lead to new avenues both for scientific co-operation and funding.

Organisation: This is a project of the IASC Working Group on Arctic Glaciology and there are no changes.

Funding: Council confirmed the decision by the Executive Committee, noting that this is a mature project which should be given preference if additional money should become available

ACTION: Rogne

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2.2.3 Effects of Increased UV-Radiation in the Arctic

Presentation made by Dr Edward C De Fabo, chairman of the group.

BACKGROUND

- **Stratospheric Ozone Depletion**

Since 1978, there has been a significant decline in stratospheric ozone over most of the globe. The decline in stratospheric ozone is largely attributed to the accumulation of polluting chemicals (primarily CFCs) in the upper atmosphere. The decline in stratospheric ozone leads to increases in UVB radiation and trace level increases of UVA radiation at the earth's surface and in underwater light environments. Global ozone trends indicate a 4-5% decline per decade. Over Northern polar regions UVB climatology is changing significantly on environmentally relevant time scales, with present estimates suggesting ozone levels over some Arctic regions are now at least 20% lower than those estimated in the late 1970s. Data from WMO, TOVS and others show there is a considerable ozone reduction in parts of the Arctic and adjacent areas for parts of the first 3 months of the year. Significant reductions in ozone levels have persisted into the summer. Currently, over Northern polar latitudes, episodic springtime values of ozone depletion are 20-40% greater, and summertime values are 10-20% greater than those estimated for the late 1970s.

- **Effects**

UVB is known to target several biological sites in humans and natural ecosystems. Even small increases in UVB can lead to significant change or alteration of many biological processes, since the spectral absorbance of costical biological molecules, such as DNA, protein and urocanic acid, rises exponentially at shorter UV wavelengths.

The largest ozone reductions over the Arctic occur in late winter and early spring, when the plant growing season and animal breeding season begin, making them highly susceptible to UV change.

ACCOMPLISHMENTS TO DATE

- Planning initiated in 1993
- First international workshop (open), Copenhagen in April 1994
- Workshop on health effects, Greenland, December 1994
- Second international workshop (closed, to draft report), Washington, DC, January 1995
- Publication (IASC Report No. 2) distributed November 1995
- Draft project proposal: Cambridge, UK, June 1995
- ICARP Meeting: Hanover, NH., December 1995

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SCIENTIFIC PRIORITIES (Summary only. See ICARP Report for further details)

- Human Health:
 - Effects of the UVB exposure pattern of the Arctic population on the **immune system**.
 - Effects of UVB on **human skin** in the Arctic.
 - Effects of UVB radiation on the **human eye**.
- Terrestrial Ecosystems:
 - UVB and **plant chemical composition**.
 - Implications of UVB impacts on Arctic terrestrial ecosystems for **human welfare**.
- Aquatic Ecosystems:
 - UV effects on the abundance, distribution, composition and biogeochemical cycling of **particulate and dissolved organic matter** in diverse aquatic ecosystems.
 - UV effects on **carbon flux** in aquatic ecosystems, with a special emphasis on the regulation of **primary production**.
 - Direct and synergetic effects of UV radiation on **higher tropic levels** in Arctic aquatic ecosystems.
- Social science:
 - Integration of results from natural sciences, and their implications for planning purposes, mitigation strategies, effects on humans and biological resources.
 - Social knowledge as a source for detecting changes.

UV INTERNATIONAL RESEARCH CENTRES (UVIRC)

The Group had been asked to propose integrative studies. As research on UV effects in the Arctic is rather limited, the Group felt that integration could best be achieved through a limited number of UVIRCs.

- A UVIRC is a location within the Arctic at which scientific studies can be carried out on effects of UV radiation from phytoplankton inhibition, to impacts on terrestrial plants, to damage to human skin, eyes and the immune system.
- UVIRCs will provide access to existing or future UV monitoring and measuring, which is fundamental to any study on UV climatology and radiation impacts.
- UVIRCs should be located in a diversity of places, e.g. a fishing village, an urban community, a non-populated coastal area or an estuarine area.
- A UVIRC will provide:
 - the opportunity for multi-disciplinary scientific interaction;
 - common facilities for housing and research space for visiting scientists;
 - the opportunity for cross collaboration with other scientists and programmes related to global climate change, science and society, such as increased UV radiation effects on the Arctic biosphere.

Where and how many UVIRCs there should be, will be suggested later. Present arctic research stations which already have UV monitoring would be logical candidates.

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UV MONITORING

Monitoring UV is not without problems. Dr De Fabo dealt with this issue to some extent. For this report we use only text from his more general overhead:

- **Optical requirements include:**
 - accurate dosimetry;
 - biological weighting functions;
 - survival and reciprocity curves;
 - possible synergistic photoeffects;
 - and quantitative knowledge of incident spectral radiation.
- **Satellite observations:**
 - can provide global monitoring of UV radiation, but ground-based instruments are essential for measurements of UV incident at the earth's surface;
 - data will be coupled with the development of adequate models and algorithms to deal with unique Arctic conditions.

AMAP

Much of these efforts to measure and monitor solar radiation at the UVIRC can be coordinated with Arctic Monitoring Assessment Programme (AMAP) goals, as well as other regional and global UV networks which are growing larger and more extensive each passing year.

UVIRC

What UVIRCs will do is solidify the UV network and give it added assurance that long term monitoring goals, essential for global climate predictions, will continue well into the future. UVIRCs will also provide the necessary research environment which will allow for accurate assessment of the *integrative* impacts of increased UVB on human health and welfare.

DISCUSSION

- *Bi-polar*: As ozone depletion occurred earlier in Antarctica, this theme gives an opportunity for bi-polar cooperation. Scientists studying UV effects in Antarctica had been invited to and had participated in IASC workshops.
- *Skin cancer*: Be careful not to create unnecessary fear. UV exposure for people living in the Arctic going on holidays in Mediterranean areas are much higher. However, UVB-immune suppression, a necessary component of skin cancer development, is a function of total dose, i.e. is cumulative. Therefore "low and slow" exposure to UVB may be equally or more harmful in the long run.
- *UVIRCs*: The term *super* site had been used earlier, and is now adopted by FATE. This idea is an excellent way of integrating aspects of several IASC projects. The Group has not yet discussed where UVIRCs should be established, and how many would be needed in a circumarctic network. This issue will be addressed at their next meeting.

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Dr. De Fabo was grateful to Council members suggesting sites. However, best procedure would be that the Group first made some specifications, and also identified what information they would need about potential UVIRC candidates.

- *Chlorine*: Although steps have been taken to reduce such emissions, and we have hopefully reached the peak, it will take 50-100 years before we are back to the 1985 level, as it breaks down very slowly.

COUNCIL DECISION

Council agreed that this project had a high score on the maturity/attractiveness/feasibility approach mentioned earlier.

(see 2.2 Priority Project).

Next step would be to identify the UVIRCs. The following procedure was agreed:

- *The Group to identify specific qualities for a UVIRC, and a minimum number needed for an arctic network..*
- *Council members would thereafter be asked by the IASC Secretariat to suggest stations meeting the requirements.*
- *As AMAP has an interest in this issue (monitoring), they should be contacted.*
- *Progress: An implementation plan is expected by 15 March 1997.*

Organisation:

Human health: Edward C De Fabo (Chairman), USA

Hans Chr. Wulf, Denmark

Terrestrial: Lars Bjørn, Sweden (Terry Callaghan, UK as partner and alternate)

Sergey M Semenov, Russia

Aquatics: Dag Hessen, Norway (freshwater)

Oleg Kopelevich, Russia (sea)

Barbara Prezlin, USA (sea)

Social sciences: to be identified

Information: Claus Frohlich, Switzerland

Betsy Weatherhead, USA (also AMAP)

Funding: Council confirmed the decision made by the Executive Committee. This project together with the other mature projects should be given preference for any additional funds to be distributed.

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As mentioned earlier: FATE, MAGICS and UV Effects were seen as closest to implementation and were given 30 minutes for introduction and 30 minutes for discussion.

The following project presentations were given 30 minutes for presentation and discussion.

2.2.4 BASIS/BESIS

As Dr. Weller was unable to attend, a joint presentation was given by Dr. Manfred A. Lange, leader of the BASIS Group. The scientific approach is the same for BASIS and BESIS. However, the regions are quite different with regard to political organisation and earlier studies of the region as such.

BACKGROUND

The IASC Working Group on Global Change suggested at their meeting in Stockholm in 1994 that impact studies would be their major activity for the years to come. The Mackenzie Basin Impact Study (MBIS) was used as a model, and the Working Group identified the Barents Sea Region (BASIS) and the Bering Sea Region (BESIS) as areas of study.

MAJOR GOAL (BASIS)

Assessing the impact of global changes on cultural, socio-economic systems dependent on renewable and non-renewable resources in the Barents Sea region.

OBJECTIVE

- Assess the likely magnitude of global changes and their sub-regional manifestations for the major bio-geographical components of the Barents Sea Region including an evaluation of past global changes.
- Predict/assess the consequences of these changes for the terrestrial, freshwater and marine environments as well as for the major economic sectors in the region.
- Determine the cumulative impacts of global changes for all relevant components of the Barents System.
- Identify specific environmental threats for the human population posed by global changes in the Barents Sea region.
- Investigate possible policy options for mitigating the most severe cumulative impacts of global changes for the Barents Sea Region. Determine likely predictive scenarios for the overall consequences of global changes for specific sectors of the national regional economies and possible strategies to minimise economic losses.

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INTEGRATION

- **Vertical Integration:**
 - identification of guiding policy issues;
 - integration of physical, biological and societal aspects **across disciplinary levels**;
 - policy issues determined during stakeholders' meetings.
- **Horizontal Integration:**
 - integration of investigations **within disciplinary levels** (physical and/or biological level as well as the societal);
 - interaction between various disciplinary groups;
 - identification of data needs and data providers.

BASIC METHODOLOGY

- **Scenario studies**

Outlining a set of alternative global change processes; given a particular economic sector in the Barents Region and driven by a number of societal questions that are related to the economic sector addressed.
- **Synthesis and integration**
 - of already existing knowledge;
 - identification of gaps to be addressed.
- **Communication structures**
 - between the study participants;
 - between/with the stakeholders.

CURRENT STATUS (AFTER ICARP): BASIS

- **Users:** First users meeting at the meeting of the Environmental Committee of the Northcalotte committee in Kemi, February 1996; slow progress (see below: Reference Committee).
- **Call for Letters of Intent:** Call has been finalised and widely distributed (3 500 copies to about 500 contact persons in 20 countries)
- **Prospectus** ("popular version" of BASIS plans): Work has begun and is expected to be completed by the end of May and a prospectus will be distributed widely.
- **Core group:** "Mini-meetings" in Kemi and Bremerhaven; next full meeting to be held in Murmansk on May 26-28 (tentative).
- **Reference Committee:** A Reference Committee will be formed (currently: 4 representatives of stakeholders, 5 BASIS core group) whose task will be to evaluate the Letters of Intent and in general guide and oversee BASIS once it is operational.

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CURRENT STATUS (AFTER ICARP): BASIS

- **Prospectus** (“popular version” of BASIS plans): Work has been completed and a prospectus is being printed, which will be widely distributed. (Was available at the Annual and Council meetings.)
- **Users:** Slow progress.
- **Russian BASIS office:** A Russian BASIS office has been set up in Vladivostok: contact person: Dr. Igor Semiletov.
- **Chinese interest:** There is considerable interest from the Chinese scientists to participate in BASIS through field work in the Bering Sea.
- **NSF proposal:** The next full BASIS workshop (core group meeting) will be held in Anchorage on September 19-21, 1996 (AAAS’s Arctic Science Conference).

DISCUSSION

- *Global changes vs. other changes:* How to separate the effects of global change from those of other drivers in looking at environmental and social impacts?
- *How to start:* A challenge is finding ways to maintain a holistic approach, even while dividing the work into manageable portions.
The challenge is to devise a sensible, step-by-step plan of action, while avoiding the traditional approach of reductionism.
- *On progress:* The progress plan may be very optimistic. Starting up a large programme on the suggested scale takes a long time.
You will need to “cut out a slice” as a starter.
- *Concluding advice:* Analyse “Letters of Intent” and devise a start up strategy.

COUNCIL DECISION

Council found BASIS and BESIS to be attractive proposals which fit well into the IASC mandate, but there are some concerns as to methodology and feasibility. On methodology, the challenge is to separate effects of global change from those of other drivers in looking at environmental and social impacts. As to feasibility, the challenge is in finding ways to maintain a holistic approach, even while dividing the work into manageable portions (to devise a sensible, step-by-step plan of action, while avoiding the traditional approach of reductionism).

Group leaders are kindly asked to report back after their meeting with principal investigators, including comments on start-up approach.

Social impacts of large scale environmental change: Both projects justify themselves, largely, by an appeal to the need to understand socio-economic impacts. But neither team has the social science expertise to take on this task seriously. Chairmen are asked to consider this dilemma, and suggest candidates to overcome the problem.

The Group should be reminded about the IASC general approach (see text inside front cover of this report).

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Organisation:

BASIS:

<i>Leader</i>	<i>Manfred A Lange</i>
<i>Secretary</i>	<i>Peter Kuhry</i>
<i>MBIS liaison</i>	<i>Barrie Maxwell</i>
<i>Pollution studies</i>	<i>Giennadij G Matishov</i>
<i>Marine Ecology</i>	<i>Egil Sakshaug</i>
<i>Archaeology, social sciences</i>	<i>Louwrens Hacquebord</i>
	<i>Ulf Wiberg</i>
<i>Terrestrial Ecology</i>	<i>Thomas R Palo</i>
<i>Atmospheric Sciences</i>	<i>Roger Colony</i>
<i>Hydrology</i>	<i>Vladimir V Ivanov</i>
<i>Indigenous peoples</i>	<i>to be identified</i>

BESIS:

<i>Chairman</i>	<i>Vera Alexander</i>
<i>Economics (fisheries)</i>	<i>Keith Criddle</i>
<i>Physical Oceanography</i>	<i>Jinping Zhao (China)</i>
<i>MBIS liaison</i>	<i>Stewart Cohen (Canada)</i>
<i>Marine ecosystems</i>	<i>I P Semiletov (Russia)</i>
	<i>Mitsuo Fukachi (Japan)</i>
<i>Native concerns</i>	<i>Caleb Pungowiyi</i>
	<i>Aron Crowell</i>
	<i>Rosa Meehan</i>
<i>Ex-officio</i>	<i>Gunter Weller</i>

Funding: Council confirmed the decision by the Executive Committee.

Progress: Group chairmen to report after they had had a meeting in the group and/or with principal investigators on a start-up strategy.

ACTION: Lange, Weller, Rogne

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2.2.5 LOIRA - Land-Ocean Interactions in the Russian Arctic

As Dr. V. Gordeev, Russia (Chairman of the LOIRA Group) was unable to attend, Mr. Odd Rogne gave a summary of the development of this project.

The **LOIRA project idea** had been conceived at an international workshop in St. Petersburg, Russia 9-10 November 1995. This workshop brought together for the first time scientists working (or planning to work) bilaterally in the Russian Arctic on marine/coastal/riverine systems. One of the major clusters of interest was LOIRA.

A small group was requested to make a draft to ICARP.

At ICARP this proposal was discussed in a larger frame (see Marine/Coastal/Riverine Systems in the ICARP report).

The Executive Committee felt that the outcome from ICARP needed stronger focus, and decided that this project should have a clear LOICZ-profile. As this project was entirely within Russian territory, and as there was a Russian Group which had started to draft a science plan with a LOICZ-profile, they had been requested to make an initial proposal. Based on the proposal received, Mr. Rogne reported:

BACKGROUND

- Why Russian Arctic Coastal Zone?
 - World's largest continental shelf
 - Big arctic rivers - unique discharge systems
 - Heavy industrial activity (onshore and offshore)
 - Indigenous peoples
 - Serious environmental problems
 - Considerable amount of relevant Russian data available, but needs restructuring/translation (for cooperative work).
- *The basic idea:* An arctic component of LOICZ and ELOISE (overhead transparencies showing science objectives of these programmes were shown, but are not reported here).

THE RUSSIAN PROPOSAL

General

- An international and interdisciplinary programme based on Russian priorities.
- Russian arctic shelf-coastal zone natural processes, human activities and their impact on the environment, including sustainable resource management problems.
- Possible links to BASIS, BESIS, and other projects.

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Science Objectives

- Fluxes and Trace Gas Emissions
 - Coastal fluxes;
 - Fluxes of biochemical carbon and other elements cycle;
 - Trace gas emissions;
 - Geocryological impact on the coastal zone.
- Watershed
 - Dynamics of water, sediment, particulate and dissolved substances input from river watersheds into coastal seas;
 - River and sea sediment systems.
- Coastal Biogeomorphology
 - Terrestrial and coastal ecosystems under changing environmental conditions including anthropogenic impacts;
- Economic and Social Impacts
 - Human impact on shelf-coastal zone;
 - Analyse patterns of resource use, and principles for a sustainable resource management strategy.
- Study sites
 - Pechora, Kara and the Barents Sea regions had been suggested as study sites.

Next Steps

An international workshop was under planning for September in Moscow. IASC had been asked to help identify interested scientists.

DISCUSSION

- *Sites*: Having 3 large basins as areas for implementation would be too large for any meaningful integration in the project. The Pechora delta is the largest in the western Russian Arctic, but difficult logistically. Some criteria for site selection should be developed by the group, and based on these criteria (and the science objectives) they should propose one (or two) specific sites of interest to meet both scientific objectives and societal needs. Should the focus be on coastal area only (incl. river), or also include the shelf?
- *Science profile*: Important to have social science (and societal needs) included.
- *Links*: A project recently discussed in AOSB on freshwater balance, and QUEEN could be some additional useful links.

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COUNCIL DECISION

Council found LOIRA to be a highly interesting project idea, and noted that the project as such was in an embryonic stage. Council confirmed the Executive Committee decision to support the international workshop in September. At this workshop the scientific foci, and a draft science plan was expected to emerge. Criterias and proposal for a study site should be developed. Council noted the invitation from the Russian LOIRA group to help identify partners, and a process will be initiated to achieve this.

Organisation: It could be useful to identify a few leading foreign scientists to act as an advisory group to the Russian LOIRA group.

Funding: Council confirmed that the Executive Committee should support an international LOIRA workshop to be held in September 1996 in Moscow.

ACTION: Rogne, Council members

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2.2.6 Sustainable Use of Living Resources

INTRODUCTION

The Executive Committee had previously agreed that the earlier project “Dynamics of Arctic Populations and Ecosystems” should be merged into this “Sustainable Use” project. Further, that this project should be strengthened by active natural scientists, and that they should address issues of circumarctic concern.

With regard to the first project, they had mainly discussed grazing systems (terrestrial). The Sustainable Use group had focused on marine resources. As far as the report from the first group is concerned you are referred to the *ICARP Executive Summary and Report*.

The following is the report from the Sustainable Use Group. As the Chairman of the group was unable to attend, the presentation was made by Dr Alf Håkon Hoel.

The Arctic is important to the world’s marine resources and 10% of these resources are to be found in the region. Although there is a good scientific basis for the management of these resources, mankind has often had problems in managing these resources wisely.

Approach

Use of living marine resources can be studied at several levels, from local to global scale. The group suggested a holistic approach, in a system of resources, peoples (human behaviour) and institutions.

The focus to be on **institutions** as drivers and mediators of environmental change.

Key Questions

The group had identified a list of themes which needed further elaboration. These themes were:

- Nature of sustainable management regimes
- Types of knowledge systems
- Cultural diversity
- Local and non-local interactions
- Rights to resources
- Discourse analysis

Actions by IASC

- Provide for dissemination and discussion in the North
- Consider establishment of an IASC Human/Social Sciences Working Group
- Develop relationships with other organisation.

See also *ICARP Executive Summary* about **Users/Funders, Linkages**.

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Next Steps and Timetable

- *Merger of science plans:* As two groups were to be merged, there was a need to consider how the preliminary science plan could be merged.
- *Further planning:* The group had been through some basic discussions. A small interdisciplinary group should be given some clear planning criteria (relevance, excellence, IASC role). Focus on one or a few themes which the various science disciplines should address. There would be a need to have a consultation process to obtain feedback on relevance and excellence. With a two-year planning period, the process should arrive at an implementation plan.

DISCUSSION

- *Interdisciplinarity:* Active scientists in the group seem mostly to have been social scientists. The group should have biologists as well, and this would then be reflected in the science planning. (See IASC Principles on the inside front cover of this report).
- *Focusing:* The key questions are very broad. There is a need to focus on one or two topics. Difficult to promote this general approach to Northerners and funding agencies.
If one science and one substantial problem are chosen, the choice should be based on which issues are really a problem seen in a sustainable development perspective? Commercial fisheries and reindeer (caribou) herding could be two interesting issues.
- *History:* Reminder that history and historical data should be a part of the group's work.

COUNCIL DECISION

Council confirmed the Executive Committee decision to merge the two groups. The new group should be reminded about IASC's science planning approach (see inside front cover of this report), and there should be a natural science/-social science balance in the group.

Some species which are important in a sustainable management context should be selected (fisheries and caribou/reindeer mentioned), covering both marine and terrestrial resources, and being of circumarctic concern.

A small group consisting of Dr. Milton Freeman (chairman), Mr. Charles Johnson and Dr. Nils Chr. Stenseth was requested to plan a small workshop (about 10 persons) in September, following the guidance given above. The workshop should have a specific focus, and also make use of the planning done so far. The group should be asked to propose a framework for the workshop by July.

ACTION: Hoel, Rogne

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2.2.7 Environmental and Social Impacts of Industrialisation

The project was presented by Dr. Oran Young as the acting group chairman; Dr. Rasmus Ole Rasmussen, was unable to attend.

BACKGROUND

This project was also one of the recent initiatives in the IASC planning process. Further, the Executive Committee had recommended the *Disturbance and Recovery* project to be merged with this group, as the issues discussed were related. The group had discussed a number of possible themes concerning both terrestrial and marine industrial activities, see the *ICARP Executive Summary*, and scientific approach.

KEY SCIENCE QUESTIONS

The group had come up with the following themes:

- General consequence of industrialisation
- Large-scale industrial development
- Industrial use of the marine renewable resources, and
- Long range transport of industrial contaminants.

For each theme, the group had identified a number of key issues (see *ICARP Executive Summary* and *ICARP Report*).

LINKAGES

As mentioned in the *ICARP Executive Summary* these themes have a number of potential linkages, among them AEPS: impacts of contaminants and ASDI (the Arctic Sustainable Development Initiative).

NEXT STEPS

This group has been through a first phase. Next step will be to select one theme and begin drafting a full scale science plan.

QUESTIONS

- *TEK*: The group should be reminded to include traditional ecological knowledge, when appropriate

COUNCIL DECISION

Council found this project high in attractiveness, but immature with regard to scientific status, as the planning was in an early stage. The group should select one theme for their further work. For instance, comparative studies on impacts of non-renewable resources, with chain reactions and cumulative impacts as possible analytic foci.

Council confirmed the suggested integration of the Disturbance and Recovery group with this group. Group membership to be decided when the final theme has been agreed upon, but Council appointed Drs Rasmus Ole Rasmussen and Patrick J Webber as the new leadership team. The new leaders were requested to initiate a process leading to a well focused science plan by 15 March 1997.

ACTION: Rogn:

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2.3 RAPID CULTURAL CHANGES IN THE CIRCUMPOLAR NORTH

BACKGROUND

During ICARP a group of 30-40 scientists met to discuss a new project idea for the IASC science agenda called *Rapid Cultural Changes in the Circumpolar North*. Later the Executive Committee had agreed to the proposal that the IASSA Council should draft a proposal based on the idea and the notes from ICARP.

THE PROPOSAL

As the IASSA Chair, Dr. Jens Dahl, was unable to attend, Dr. Ludger Müller-Wille (former Chair of IASSA) introduced the proposal. The proposal is enclosed to this report as **Appendix II**.

The IASSA group suggested four major scientific questions:

- Indigenous knowledge
- Cultural continuity
- Community viability
- Self-determination.

DISCUSSION

- *On-going projects*: A number of ongoing projects addressed several of the suggested scientific questions. The issue was how this proposal could complement or bring together such projects.
- *Users*: Who are the users, and how to interact with them.
- *Organisation*: Should IASC add this proposal to its current list of projects, or should the IASC general principles (see inside front cover of this report) be adopted.

COUNCIL DECISION

Council found the proposal potentially high as to attractiveness, and embryonic as to scientific status. Substantive focus should be on cultural diversity in the Arctic.

Analytical foci could be: Determinants of cultural change/continuity, and interactions between human cultures and physical/biological environments.

With regard to organisation, Council agreed that it should be an IASC project with IASSA input. Council appointed Drs. Jens Dahl, Noel Broadbent and Boris Chichlo (France) as an ad-hoc group to work out a scoping report by 15 March 1997. Some travel support was agreed to for the ad-hoc group.

ACTION: Rogne

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2.4 PRELIMINARY REPORT FROM THE IASC REVIEW GROUP

Council had last year requested the Executive Committee to identify a small group to review the total activity of IASC and to advise on organisational needs. Dr. David Drewry had been appointed chairman, and members were: Drs. Hart Hansen, Karlqvist, Kotlyakov, Lorius and Maxwell.

The group had been given some **terms of reference**, see **Appendix III**.

The group had started their work, and the intention was to give the group an opportunity to report on their initial work and to interact with Council members.

Dr. Drewry reported on the preliminary work done. Some tasks such as policy, achievements and international interactions had been assigned to special members of the group.

A **questionnaire** had been sent to about 450 recipients and the response rate had been around 30%, but no analysis has yet been done.

During their initial discussion a list of questions had emerged.

- How is the IASC credibility in the science community?
- What has IASC achieved?
- How well has IASC positioned itself on the international scene?
- Does IASC have an efficient procedure for programme development?
- How is the advisory role functioning (responsive/proactive)?
- Is IASC adequately organised to meet its mission.?

The group had developed a timetable for completing its tasks; including a first task of the report by the end of June and a planned meeting in early August to finalise the report contents.

ACTION: The Review Group

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2.5 COUNCIL - REGIONAL BOARD RELATIONSHIP

An ad-hoc group chaired by Professor Anders Karlqvist had been asked to consider ways of improving this relationship, and make the partnership more effective. Other members of the group had been: Birkenmajer, Corell, Hart Hansen, Maxwell, and Melnikov. The ad hoc group had not met, but consulted by correspondence.

Members were reminded about the mandate for the Regional Board, see **Appendix IV** (extracted from the Founding Articles).

The Group had agreed on some conclusions, but there were still some open questions:

CONCLUSIONS

- Council and Regional Board members from each country should be a well integrated national delegation and express common national positions.
- The Board and Council to work jointly or on a complementary basis whenever possible.
- IASC meetings to provide for a "joint session" of the Board and Council.
- The Council should maintain a leadership role with respect to the planning and development of research programmes.
- The Board has the authority to identify issues and work with an agenda of its own within its mandate.
- The Board will normally meet before Council meetings and if necessary also after.
- Observers to be invited to Board Meetings on an ad hoc basis to deal with issues of direct interest to those observers.
- Revision of terms of references and structural changes of IASC should not be initiated until we see the outcome of the Arctic Council process.

OPEN QUESTIONS:

- The role vis-à-vis the Arctic Council.
- The consequences of a possible ICSU affiliation.
- The future role in terms of operational, funding and management activities.

DISCUSSION

During the discussion the following issues were emphasised:

The Regional Board could need clearer terms of reference, but until we know our relationship to the Arctic Council, we should live with it in a pragmatic way and in the spirit of cooperation.

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It is important that members on the Council and the Regional Board consult with the national organisation adhering to IASC and voice the view of the national scientific community and not personal opinions.

Likewise, IASC has to speak with one voice and clearly through Council and the President.

With regard to the question if IASC “meets the common scientific interests of the arctic countries”, members were informed that no member of the Regional Board had disagreed with the present Science Agenda.

COUNCIL DECISION

Council thanked the group for the constructive report, noted the proposals and tasked the Executive Committee to consider if and how any actions can be taken.

ACTION: Rogne

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2.6 MEMORANDUM OF UNDERSTANDING BETWEEN IASC AND START

Representatives of IASC, SCAR and START had discussed and drafted a MoU between IASC, resp. SCAR and START. The basic idea was that the two MoUs should be identical or close to it.

The basic draft had been presented to the Executive Committee, which “agreed to leave out references to present organisation entities (Global Change WG, GCPO etc.) as these bodies would be changed in the (near) future”.

The version circulated as an agenda paper had been corrected according to the recommendations from the Executive Committee.

Chairman of the IASC Working Group on Global Change, Dr Gunter Weller had commented on the suggested changes.

DISCUSSION

Council agreed that the IASC Working Group on Global Change should be put back into the text. (The WG may be reorganised or receive new terms of reference).

There was no final information as to how long the IASC Global Change Programme Office in Rovaniemi would be funded. In this situation, “an IASC Global Change Secretariat” was approved meaning the secretariat having wide arctic global change responsibility, for the time being the secretariat in Rovaniemi, Finland.

With regard to any revision of the WG, it was suggested to look at GLOCHANT (SCAR’s WG) in relation to composition and terms of reference. It was mentioned that START had some funds for support of workshops, and this could also be an opportunity for IASC.

As to more specific comments to the text: It was understood that paragraph 1 (page 2) did not imply any economic commitment.

Further, that the committee mentioned in paragraph 2 (page 2) really meant joint endorsement, and that IASC would identify the members.

DECISION:

Council agreed to this MoU with the changes mentioned.

A final version of the MoU following the changes mentioned above is enclosed as Appendix V.

ACTION: Rogne

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2.7 ARCTIC COUNCIL AND OTHER RELATIONSHIPS

2.7.1 Arctic Council

Present status: There was not yet any final agreed text. One outstanding problem was who should be permanent participants, particularly how should the indigenous peoples of the Arctic be represented. Consultations by Senior Arctic Affairs Officials (SAAO) would continue with a meeting in June. Provided they reached agreement, a Founding Meeting was proposed for July.

IASC Advisory Role: IASC has been an accredited observer to AEPS from the beginning (the only science organisation having that status). IASC had been asked to undertake the AMAP audit (together with ICES), a task handled successfully. Further, IASC had been asked for advice on "Guidelines for the Conduct of Arctic Research".

In the present version of the declaration on establishing an Arctic Council, IASC was not mentioned as an advisor, but had been included in other versions. At present, it was unclear what relationship an Arctic Council wished to have to IASC.

Several speakers voiced a relaxed attitude with regard to being mentioned or not. The fact remains that with 16 countries involved, IASC is the broadest and most representative forum for arctic research, and represents the world community of scientists doing research in the Arctic.

The main issue for IASC is to produce top quality science, having the best network of excellent scientists. The Arctic Council may wish to use their own groups of specialists, and all arctic countries have their agencies and national advisory bodies. However, by a positive proactive attitude, IASC could contribute to the work of the Arctic Council, and also propose key issues of a scientific nature which should be placed on the Arctic Council agenda. Arctic Council can be reminded that IASC is the best knowledge-based advisor they can draw on, and that IASC can provide advice both through all its members, or from arctic countries only (more management related advice).

DECISIONS

It was agreed that IASC should seek an advisory role.

ACTION: Magnússon

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2.7.2 European Polar Board

A European Polar Board concerned with coordinating European polar research had been established last year under the European Science Foundation. Dr. Jens Peder Hart Hansen, vice chairman of the European Polar Board (EPB) informed that EPB had been established 6-7 October 1995 by representatives from 17 European countries. The principle aims of the Board are:

- to develop appropriate European science strategies to make best use of the region's considerable research capacity;
- to ensure that increasingly complex research problems, such as those related to global climate change, can be tackled efficiently and cost-effectively;
- to provide Europe's marine and polar scientists with a more powerful and united voice in discussions with the European Commission and other international bodies, funding agencies and national policy makers.

Their next meeting will be held in Den Haag, The Netherlands 9 - 10 May with a portfolio of:

- national polar programmes which would benefit from (further) European cooperation;
- a European Arctic marginal ice-covered seas initiative, developed to implementation-plan level;
- additional projects which would enhance the extant European Project for Ice Coring in Antarctica (EPICA).

During the implementation of these initiatives, the Board intends to seek means to:

- facilitate the use of major research facilities, such as ships and aircraft;
- enhance/establish European research networks, and wider international connections;
- promote joint activities in the technology research and development of new instrumentation and platforms for research and monitoring the polar environment;
- promote the exchange of information between European organisations;
- foster scientific partnerships with research institutes in countries outside Europe;
- create opportunities for young scientists and technologists, and to enhance the mobility of personnel among European institutions;
- to promote a common approach to environmental, health and safety obligations;
- improve public understanding of polar science.

Council was also reminded that a letter had been received from the European Polar Board inviting IASC to a dialogue for establishing a collaboration.

DECISION

Council agreed that EPB and IASC had common interests (as well as a considerable overlap in representatives), and that the EPB invitation for collaboration should be answered positively.

ACTION: Magnússon, Rogne

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2.7.3 Other International Organisations

During ICARP, a meeting with a number of circumarctic and international organisations had been held. The intention was to discuss both relations and arctic priorities. The report from the meeting had been distributed to all participants at the Bremerhaven meetings.

Professor Bert Bolin, who chaired the meeting and who was also to have introduced the report, unfortunately fell ill and was unable to attend the meetings in Bremerhaven.

Professor Magnús Magnússon reported:

- Main purpose of the meeting had been to:
 - consider mechanisms for cooperation;
 - avoid duplication and overlap, and
 - discuss possible division of labour.
- The discussions had been positive, and several constructive ideas had been suggested, see the report itself enclosed to the agenda papers.

During the discussion, IASC was encouraged to repeat such initiatives from time to time.

Further, developing these relationships at working science level through inviting/sending active scientists to workshops, etc. would be a logical follow-up.

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2.7.4 Relation to Arctic Ocean Sciences Board (AOSB)

This relationship had been discussed earlier. Because the two organisations were differently structured, the conclusion had been to make each other aware of initiatives and forthcoming projects at an early stage.

A letter was tabled from AOSB, which had held its meeting in Helsinki 17-19 April expressing a wish to facilitate and strengthen cooperation between our two organisations, suggesting the following:

- invitation to each other regarding all plenary, planning or expert meetings as appropriate;
- exchanges of copies of all relevant correspondence on policy, planning and technical reports;
- exchange of copies of notices of conference and other pertinent meetings between secretariats; and
- the review of the organisation and relationship between the respective organisations to ensure the continuing appropriateness of these arrangements.

DECISION

As Council members had not had the opportunity to study these proposals properly, the letter was noted.

As the specific proposals were in line with what has been agreed earlier, the Executive Secretary was requested to explore practical ways for implementing them together with the AOSB Secretariat, and to report to the Executive Committee.

ACTION: Rogne

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2.8 IASC GENERAL FUND

2.8.1 Accounts for 1995

Council noted that the total expenses for 1995 were close to those budgeted. The accounts were approved.

2.8.2 Budget for 1996

Council noted that the Executive Committee had committed most of the budget for 1996.

Council set aside \$5000 for "Rapid Cultural Changes" from the contingency.

Council further decided that if any savings were achieved (as compared to budget), any needs from the most mature projects (FATE, MAGICS and UV Effects) should be given priority.

Payments should as far as possible be dependent upon delivery, and all projects should report on progress by 15 March 1997.

When reporting, projects should be listed by name, not under headings like Global Change.

ACTION: Rogné

2.8.3 Budget for 1997

Council had the following comments:

- *Total sum of the budget should be \$150,000, i.e. leaving \$10,000 extra for contingency*
- *Budget to be split into:*
 - *Science Development*
 - *Other Groups*
 - *Contingency*
- *Procedure: The Executive Committee should consider which budget decisions have to be made before Council meeting, and which decisions can be taken during Council meeting. The Executive Committee will make only the necessary commitment. Council should have the opportunity to decide on a considerable part of the budget decisions.*
- *Project funding: The Executive Committee was asked to formulate some guidelines for support to project development, i.e. a standard formula with regard to procedure and funding.*

ACTION: Rogné

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2.9 REPORT FROM THE REGIONAL BOARD

The Chairman of the Regional Board, Dr. Gerald S. H. Lock, reported briefly from the meetings of the Regional Board during ICARP in Hanover, NH, and prior to the Annual Meeting in Bremerhaven.

The main issues discussed had been:

- *Council-Regional Board Relationship:* (see item 2.5 in this report):
The Regional Board had endorsed the report.
- *Arctic Council:* This relationship has yet to be developed.
The Regional Board could be a valuable source for them for advice about arctic management issues.
(See also item 2.7 of this report).
- *Guidelines for Ethical Principles:* The Regional Board had concluded that it was impossible to reach agreement on a set of common principles as a guidance to arctic researchers (see more details under item 3.2. in this report).
- *ICSU affiliation:* No final conclusion in the Regional Board as one country had as yet been unable to give a final answer. (See also item 3.4 in this report.)

Council noted the report.

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2.10 NEXT MEETINGS

2.10.1 Executive Committee

The Executive Committee had agreed to hold their next meeting in Oslo, Norway 28 - 29 October 1996.

2.10.2 1997 Annual and Council Meetings

Our Russian member confirmed their interest in hosting these meetings in St. Petersburg. However, because of the unstable situation, it would be advisable to have an alternative host.

The final answer could be given at the Executive Committee meeting. Suitable dates for Russia could be starting either 20 April or **5 May**, and the latter date was agreed.

As ATCM meetings were also held at the time of the year, the final dates should be decided with the ATCM host.

If our Russian member should be unable to confirm the invitation, several countries (France, The Netherlands, UK) confirmed their interest to act as hosts.

ACTION: Gramberg

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3. OTHER ISSUES (including progress reports)

3.1 COASP - COOPERATIVE ARCTIC SEISMOLOGICAL PROJECT

At the 1994 Council Meeting a proposal for an international high arctic seismic network and data centre was received as a late proposal.

At the Executive Committee Meeting in November, 1994, it was agreed that "*an ad hoc group should be appointed to consider the proposal, the need for such a network, and eventually how it should be organised*".

Followed by a nomination period, the ad hoc group was established and met in November 1995 in Copenhagen. The report from their first meeting was enclosed as an agenda paper.

The group had identified some areas of potential cooperative interest, and agreed on an approach, and also an approach for considering the need for additional seismic stations. Some time will be needed to investigate these issues.

In the short term, they agreed to give support to one proposal:

"To develop a processing system capable of automatic phase association and location of earthquakes in the regional distance range, with special application to Alaska and adjacent sea seismicity".

The group is well aware that IASC has no fund for research, so funding implementation of the project will be sought in the regular funding agencies. A proposal for funding is in progress.

The ad hoc group had decided to recommend the establishment of a permanent committee, composed as follows:

Denmark:	Erik Hjortenberg (Chairman)
Norway:	Frode Ringdal (Scientific Secretary)
Russia:	Elena O Kremenetskaya
USA:	Rhett Butler
USA (Alaska):	Roger A Hansen
Canada:	Bob Wetmiller

Council endorsed their suggested activity.

With regard to the suggested committee: Council agreed that the COASP Planning Group would be the right terminology. Further, Council agreed that the group should be open to any other IASC members.

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3.2 GUIDELINES FOR ETHICAL PRINCIPLES FOR RESEARCH AFFECTING ARCTIC RESIDENTS

Council had earlier asked the Regional Board to discuss such guidelines. The Regional Board had done so at three meetings.

The Regional Board concluded that a set of common principles as a guidance to arctic researchers was not feasible, as the socio-political situation in the arctic countries was too different.

Council noted the report.

3.3 ORGANISATIONAL CHANGES AND INTERACTION

At their last meeting, the Executive Committee discussed some organisational changes, the need for more interaction between groups and also the need for adopting a consistent terminology for various types of groups.

The Executive Secretary had been requested to work out a discussion paper for the Council. This paper was enclosed as an agenda paper covering the following issues:

- Global Change projects - Working Group
- Interaction between IASC groups
- Group terminology (suggested working groups and planning groups)

As the IASC Review Group could consider some of these issues, and as there was a limited amount of time, Council postponed any discussion/decision.

3.4 APPLICATION TO ICSU

A proposal for IASC to become an International Scientific Associate of ICSU had been discussed earlier, and IASC member organisations had been asked for comments.

One member had been unable to respond positively by the deadline given, and the application had been postponed. ICSU had been informed of the situation.

Birkenmajer, Poland, who is a member of the ICSU General Committee, informed that the stipulated deadline was set by the ICSU administration, and a delayed application could be worth trying. The advantage of applying now was that at the next opportunity for application in about 3 years' time, members of the ICSU General Committee would have changed and IASC would have to carry out some promotion work once again.

Academician Gramberg expected to have a clarification of the Russian position by the end of May.

ACTION: Gramberg, Rogne

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3.5 GROUP OF FUNDING SPECIALISTS

An ad hoc group consisting of Hoshiai (Japan), Jivago (Russia), Mayer (UK), Rogne (IASC), Stenbaek (Canada) and Webber (USA) had been requested "to work out advisory documents as a guide to identifying and accessing funds both for planning and for arctic projects".

Rogne reported that the group had worked by correspondence as well as a meeting 11-12 April 1996 in Montreal, Canada.

They planned to deliver their report in early September (in time for the next Executive Committee meeting). Their report would consist of two parts: A guide to funds for arctic research, which could be for distribution; and some specific proposals and answers to questions given to the group by the Executive Committee.

Council noted the progress made by the group.

3.6 ARCTIC GCTE WORKING GROUP

Information received that this group had elected Dr. Torben Christensen, Denmark as chairman and Dr Jarle S. Holten, Norway as secretary. A first regular meeting of the working group will be held 23-25 May 1996. (See also 2.2.1 FATE as to issues IASC will raise at this meeting).

3.7 GEOPHYSICAL COMPILATION AND MAPPING

3.7.1 Working Group Report

A two-page summary report from Ron Macnab, Canada, secretary to this working group had been circulated.

Enclosures mentioned in his report are available from the IASC Secretariat on request.

3.7.2 Russian Arctic Ocean Seismic Data

This IASC project (referred to in the report under 3.7.1. as Seismic catalogue project) received a NATO grant, and Dr. Ruth Jackson, Canada had written an Interim Report on the NATO grant.

Copies of the full report (comprehensive) were available at the meeting.

3.7.3 Geological - Geophysical Atlas of the Arctic Basin

The cooperation mentioned above had stimulated a proposal for this atlas. The proposal is intended for funding agencies and industry, and copies were available at the meeting.

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3.8 THE ADD WORKING GROUP (TO NOTE)

The mission of the ADD cooperation is: *"to provide the user community with a comprehensive compilation of existing sources of arctic environmental data"*. (Arctic environmental data covers physical, biological and cultural resources and environments of the Arctic).

The basic idea is to link together **national directories** having information about such data sets. As only a few countries have such national directories, an important element in this cooperation is to encourage and assist those countries/national institutes initiating national directories (formats, standards, compatibility).

At present, the ADD Working Group consists of:

UNEP/GRID	:	Svein Tveitdal, Chairman
Canada	:	Alan Saunders
Denmark	:	
Finland	:	Manfred A Lange
Germany	:	Manfred Reinke
Iceland	:	David Egilsson
Norway	:	Rasmus Hansson
Russia	:	Olga Novoselova
Sweden	:	Stigbjørn Olavsson
USA	:	Douglas Posson
In addition	:	AMAP, CAFF and SCAR have nominated representatives.

3.9 WORKING GROUP ON ARCTIC MARINE GEOLOGY

This group did not meet between April 1993 and October 1995, and the Executive Committee had previously strongly encouraged them to become active or close down. At the meeting in October 1995, Dr. Ruediger Stein, Germany, was elected chairman.

The Executive Committee had agreed to some financial support for the next meeting of the WG, and advised the new chairman to consult the original terms of reference for the group and to consider a future workplan.

Council noted this development.

3.10 POLAR LIBRARIES COLLOQUY (TO NOTE)

This colloquy is a cooperation between polar librarians and information specialists mostly through semi-annual meetings. A proposal had been received from them expressing a wish to become an IASC Working Group. This proposal was discussed by the Executive Committee, which had agreed on the following:

The Executive Committee appreciated this positive interest, and the need for a good working relationship between scientists and libraries/information specialists.

The Executive Secretary was requested to give an initial positive response, and to mention alternative forms of relationship (standing advisory group, group of specialists, etc.). Further, the Executive Committee suggests that the Polar Libraries Colloquy discuss and propose some terms of reference for such an IASC group, or what the contents could be for such a relationship.

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They have been informed about the Executive Committee decision, and in their response they agreed to discuss issues raised by the Executive Committee at their meeting in June and report back to us.

Council noted this development.

3.11 IASC/SCAR GLOBAL CHANGE SYMPOSIUM IN 1998

A note from Dr Olav Orheim was tabled at the October 1995 meeting of the Executive Committee proposing an "IASC/SCAR Symposium on Global Changes in the Polar Regions - Results and Challenges for Bipolar Science" to be held in August/September 1998 in Tromsø, Norway.

The Executive Committee of SCAR had accepted the proposal.

The Executive Committee of IASC had also accepted the proposal, and Council was asked to confirm their decision and agree on actions to be taken.

DECISION

Council agreed that a letter should be sent from the IASC President to the Chairman of the Working Group on Global Change, Dr. Gunter Weller, asking him, together with Dr. Olav Orheim, to propose the science contents of this symposium and to propose members of a Steering Committee.

The Executive Committee could appoint members of this Steering Committee at their meeting in October, 1996. With regard to the Symposium, this would be a joint undertaking with SCAR; a similar process and identification of Steering Committee members would be undertaken by them.

ACTION: Magnússon, Weller

3.12 CLOSURE

The IASC President thanked the host institute, the Alfred Wegner Institute for Marine and Polar Research, for their excellent service and support to the IASC meetings, and handed over a small gift as a token of appreciation. Further, he expressed thanks to all participants and especially all those making project presentations.

Finally, thanks were extended to Council members leaving IASC: Dr Nubuo Ono, Japan, and Mrs Anne-Christine Clottu Vogel, Switzerland, and wished them well in their future work.