



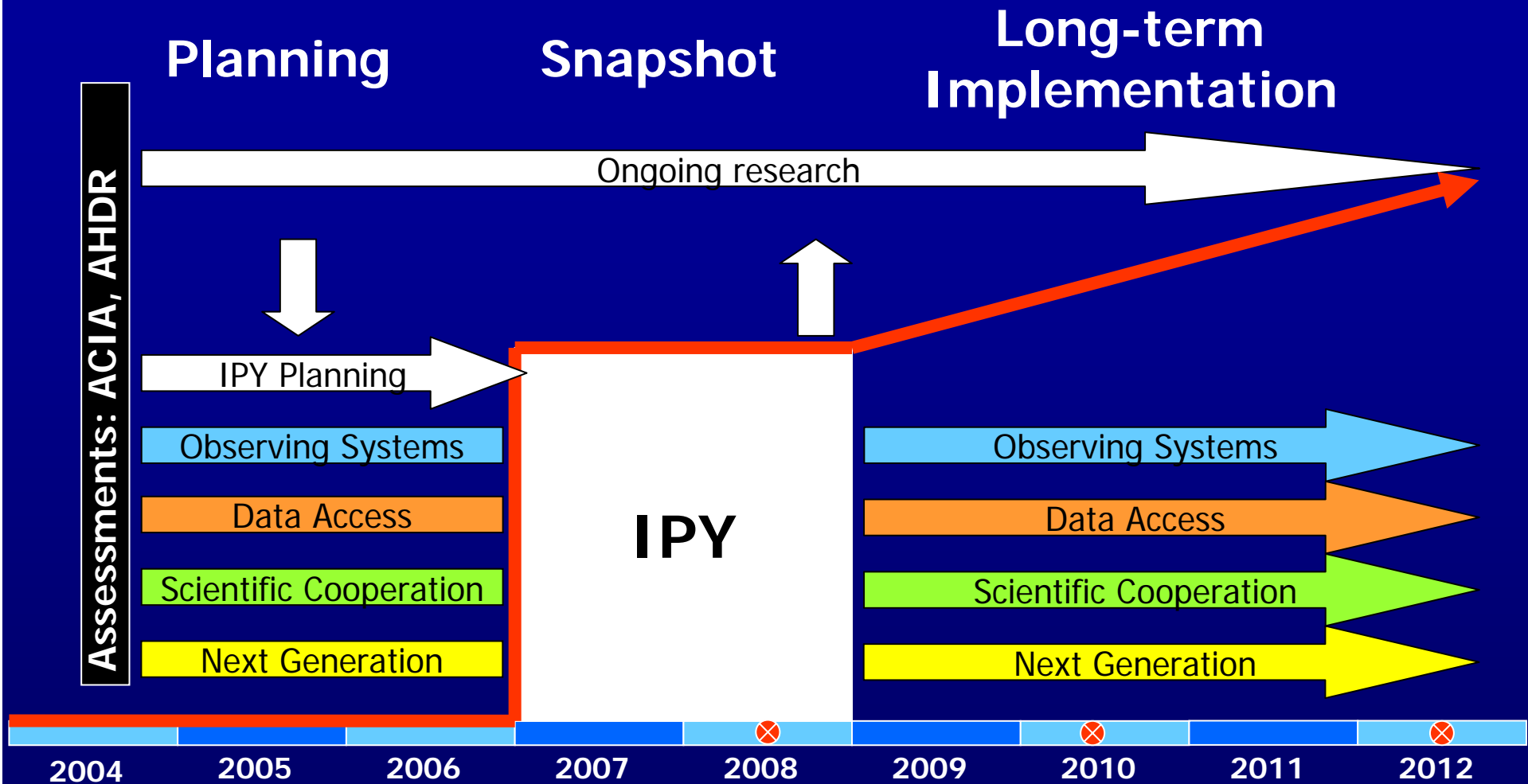
Post-IPY Scientific Cooperation

Ongoing and Planned Joint SCAR/IASC Bipolar Activities

Jörn Thiede (Scientific Committee on Antarctic Research) and
Volker Rachold (International Arctic Science Committee)



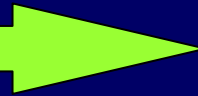
The IPY and its Legacy



⊗ Major IPY Conference



Scientific Cooperation



Mid-Term IPY Conference



SCAR/IASC Open Science Conference

St. Petersburg (Russia), 8-11 July 2008

www.scar-iasc-ipy2008.org

Polar Research - Arctic and Antarctic Perspectives in the International Polar Year

Abstract deadline March 1; Early Bird Registration April 20

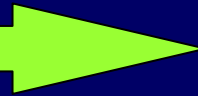
www.iasc.se



www.scar.org



Scientific Cooperation



Mid-Term IPY Conference Keynote Lectures



WEYPRECHT LECTURE

The Gamburtsev Mountains - an unexplored frontier

Robin Bell (USA)

Subglacial Lake Vostok: a new great challenge to the Antarctic Sciences

Vladimir Lipenkov (Russia)

The record of past climate change - ice core climate records from the poles

Jerome Chappellaz (France)

Present and future Arctic and Antarctic climate change - a comparison

John Walsh (USA)

The changing Arctic Ocean – ocean warming and sea ice extent

Jean-Claude Gascard (France)

The effects of climate change in the poles - permafrost, geology, and geomorphology

Wayne Pollard (Canada)

Polar societies and cultures in a changing world

Yvon Csonka (Greenland)

Ice sheet mass balance and sea level

Ian Allison (Australia)

Polar ocean ecosystems and changing climate

Ulrich Bathmann (Germany)

Space Weather – fascinating science and auroral displays

Eigil Friis-Christensen (Denmark)



Scientific Cooperation

Mid-Term IPY Conference Science Sessions



1.0 STATUS AND CHANGE

- 1.1 Earth Structure and Geodynamics at the Poles
- 1.2 Polar Ocean Processes – Status and Change
- 1.3 Evolving Coastal, Nearshore and Shelf Processes in the Polar Regions
- 1.4 Shrinking Snow and Ice: Rapid Change in the Polar Regions
- 1.5 Past, Present and Future Polar Climate Change
- 1.6 Meteorological Processes in the Polar Regions
- 1.7 Polar Terrestrial and Freshwater Ecosystems: Status and Change
- 1.8 Polar Marine Ecosystems: Status and Change
- 1.9 Status and Change in Cultural Heritage Sites in Polar Regions
- 1.10 Status and Change in the Polar Regions – General Session

2.0 POLAR/GLOBAL LINKAGES

- 2.1 Coupled Cryosphere/Ocean/Atmosphere Systems
- 2.2 Polar/Global Biological Connections
- 2.3 The Sun's Interactions with the Earth's Atmosphere and Electromagnetic Environment
- 2.4 Human Linkages: The History of Non-indigenous Peoples in Polar Regions - Impacts and Interactions
- 2.5 Polar/Global Linkages: General Session

3.0 A SENSE OF DISCOVERY

- 3.1 Deep Sub-ice Water, Hydrological Systems and Ice Sheet Interactions
- 3.2 Frontiers in Polar Biology

- 3.2 Frontiers in Polar Biology
- 3.3 Polar Microbes, Genetics, and Molecular Biology
- 3.4 Technological Advances and Polar Exploration
- 3.5 Polar Weather and Climate Forecasting
- 3.6 Frontiers in Polar Scientific Drilling
- 3.7 A Sense of Discovery – General Session

4.0 THE POLES AS A VANTAGE POINT FOR OBSERVATIONS

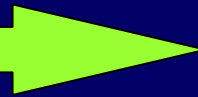
- 4.1 Polar Observing Systems
- 4.2 Astronomy and Astrophysics
- 4.3 New Ways of Looking at the Polar World
- 4.4 Earth's Magnetic Field: A View from the Poles
- 4.5 Accessing and Preserving Data as an IPY 2007/2008 Legacy
- 4.6 The Poles as a Vantage Point for Observations

5.0 PEOPLE AND RESOURCES AT THE POLES

- 5.1 People and Change
- 5.2 Harvesting and Exploitation of Polar Biological Resources
- 5.3 Conservation, Tourism, and Visitor Management
- 5.4 The Role of Native Knowledge in Modern Polar Science
- 5.5 Arctic and Antarctic Archaeology
- 5.6 Polar Bridges: Social Scientists and Natural Scientists Working Together
- 5.7 Polar History and Institutionalization of Polar Research: The International Polar Years
- 5.8 People and Resources at the Poles– General Session



Scientific Cooperation



WCRP-SCAR-IASC MoU on
the sponsorship of CliC



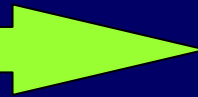
**Memorandum of Understanding (MoU) between the
World Climate Research Programme (WCRP), the
International Arctic Science Committee (IASC) and
the Scientific Committee on Antarctic Research (SCAR)
on co-sponsorship of the
Climate and Cryosphere (CliC) Project**

presented by Vladimir Ryabinin (WCRP)





Scientific Cooperation



WCRP-SCAR-IASC MoU on
the sponsorship of CliC



1980->

Goals:

- To determine the predictability of climate
- To determine the effect of human activities on climate

Targets:

- Develop seasonal, inter-annual, decadal predictions
- Predict global and regional sea-level rise
- Learn how to predict monsoons
- Predict abrupt climate change
- Predict extreme manifestations of changing climate
- Improve predictions for IPCC and Ozone assessments
- Provide science for optimal adaptation to climate change
- Provide science for review of responsible mitigation solutions

WCRP works to develop:

- Earth System observations
- Process understanding
- Models and downscaling techniques
- Climate system data assimilation and reanalysis



Scientific Cooperation

WCRP-SCAR-IASC MoU on the sponsorship of CliC

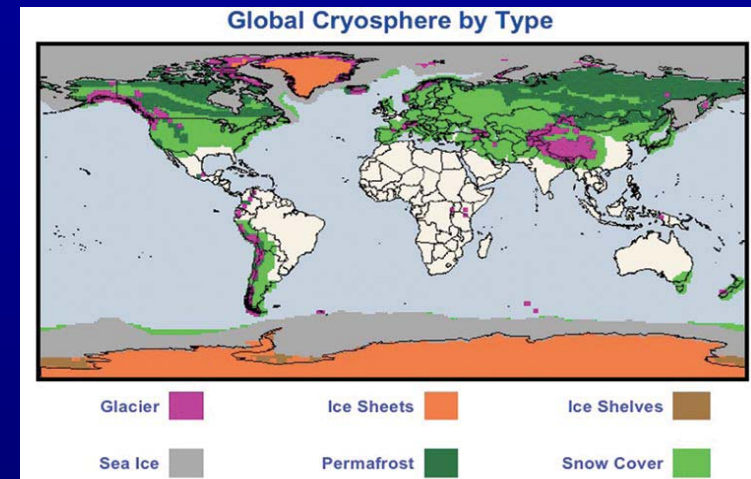
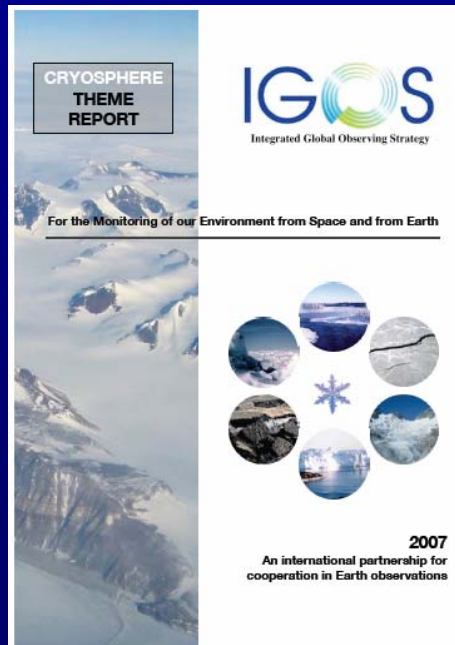


2000->



CliC Themes:

- The Terrestrial Cryosphere and Hydroclimatology of Cold Regions
- Ice Masses and Sea Level
- The Marine Cryosphere and Climate
- Global Predictions and/of the Cryosphere

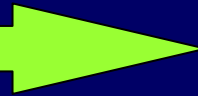


Example of CliC deliverables:

WCRP / SCAR IGOS Theme on Cryosphere, a framework for and plan for development of cryospheric observations - already achieved impact on satellite programs and other activities



Scientific Cooperation



WCRP-SCAR-IASC MoU on
the sponsorship of CliC



WCRP/IASC/SCAR 2008 MoU on CliC

Scope: extension of 2004 MoU between WCRP and SCAR to include IASC

Rationale: coordinated establishment, development and maintenance of long-term climate observations in the Arctic and Antarctic, on land and in the ocean, modelling efforts to synthesise observations, enhance the representation of the polar regions and cryosphere in climate models and studies of impact of climate change on the polar regions

Advantages. SCAR and IASC: increased global relevance through cooperation with the prime corporate contributor to IPCC;
WCRP: strengthened links to most authoritative polar research coordinators

Substance: WCRP/SCAR CliC -> WCRP/IASC/SCAR CliC

Implications: change in CliC governance (CliC Scientific Steering Group), activities are considered joint (shared), financial implications to be agreed by representatives



Scientific Cooperation

Workshop on Recent High Latitude Climate Change



Sponsored by **IASC**, **SCAR**, **CliC** and the **International Commission on Polar Meteorology (ICPM)** and held at the **National Oceanic and Atmospheric Administration (NOAA)** in Seattle (USA), **22-24 October 2007**. Report available as **SCAR Report 32**, at www.scar.org/publications/reports.

The two polar regions have experienced some of the largest climatic changes on Earth in recent decades and this workshop attempted to advance our understanding of the mechanisms behind these events. Specific topics covered included:

- a review of recent observed climate change;
- separation of natural climate variability and anthropogenic change;
- model simulation of recent changes;
- the role of the oceans;
- how can data from the IPY 2007/2008 be utilized;
- what is causing the Arctic sea ice to decrease so rapidly;
- why do we have such contrasting changes in the Arctic and Antarctic;
- the role of atmospheric circulation changes;
- is the atmosphere or the ocean leading the changes;
- the role of the annular modes in recent changes;
- future research priorities.

Workshop Convener:

John Turner

British Antarctic Survey, Cambridge (UK)





Scientific Cooperation

Workshop on Improving Ice Sheet Models



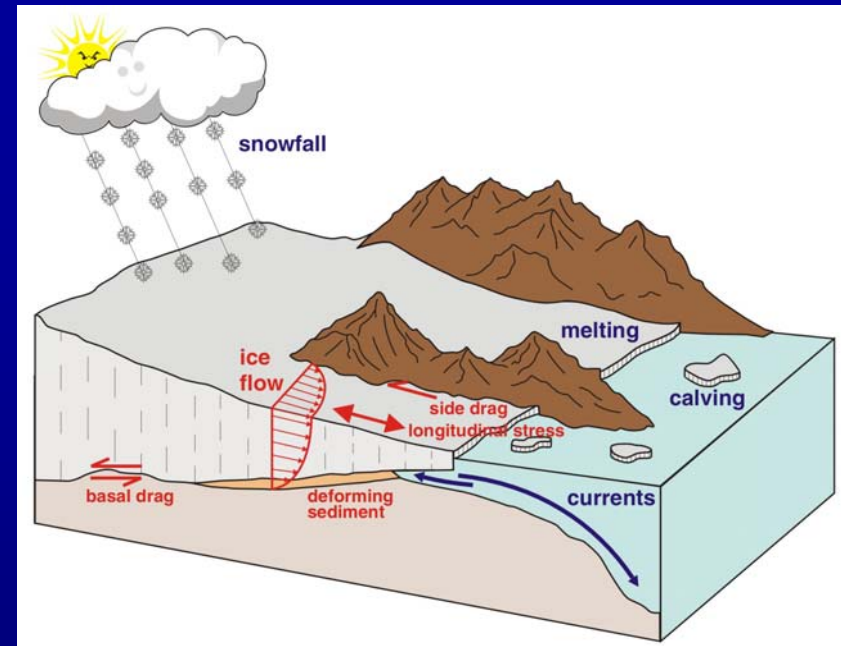
Sponsored by **IASC**, **SCAR**, **ClIC** and the **Center for Remote Sensing of Ice Sheets (CReSIS)** to be held **5-7 July 2008** prior to the SCAR/IASC Open Science Conference in St. Petersburg (Russia).

Objectives

- improve the physical understanding of ice sheet processes responsible for rapid change
- incorporate improved physical understanding into numerical models
- assimilate appropriate data into the models for calibration and validation
- develop prognostic whole ice-sheet models that better incorporate non-linear ice-sheet response to environmental forcings

End Product

- Science Plan for a joint SCAR/IASC/ClIC program outlining research and observational strategies over the next 5 years (July 2008-2013)



Workshop Conveners
Jon Ove Hagen
Victoria Lytle
Konrad Steffen
Cornelis van der Veen



Workshop Website
www.scar.org/researchgroups/physicalscience/icesheets.html



Observing Systems

Data Access

SAON and PAntOS



Sustaining Arctic Observing Networks (SAON)

1st Workshop held in Stockholm (Sweden), 12-14 November 2007

Are current Arctic observing and data and information management activities sufficient to meet users' needs?

2nd Workshop to be held in Edmonton (Canada), 8-11 April 2008

How will Arctic observing and data and information management activities be coordinated and sustained over the long-term?

3rd Workshop to be held in Helsinki (Finland), 15-17 October 2008

Develop a final set of recommendations.



www.arcticobserving.org



Observing Systems

Data Access

SAON and PAntOS



Pan-Antarctic Observing System Network (PAntOS)

Goal: to be able accurately to describe current environmental conditions and evaluate their response to change, including global change.

SCAR's PAntOS Action Group will

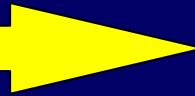
- **Evaluate existing observational infrastructure;**
- **Recommend improvements to deliver a coherent set of Pan-Antarctic, long-term, multidisciplinary observations on environments from Geospace to the Earth's surface;**
- **Advise on integration of in situ and satellite observations;**
- **Determine scope of possible PAntOS Network, and devise implementation plan to achieve it.**

Available: Cryosphere Observing Plan (CryOS)

Developing: Southern Ocean Observing System (SOOS) plan



Next Generation



Support for early career
scientists



- Association of Polar Early Career Scientists (APECS)
 - Permafrost Young Researchers Network (PYRN)
 - Support for Early Career Scientists to attend the SCAR/IASC Open Science Conference
 - APECS July 7 meeting in St Petersburg
 - Fellowship Grants
 - ICSU Grants
- > SCAR/IASC Mentoring
- > IASC Travel Grants
- > SCAR financial support
- > SCAR Fellowship Program
- > e.g. SCAR/IASC Ice sheet Summer School 2009



SCAR/IASC Bipolar Action Group (BipAG)



BipAG Membership

Heinz Miller (Chairman)

Alfred Wegener Institute, Bremerhaven, Germany

Elena Andreeva

Institute for System Analysis RAS, Moscow, Russia

Sue Moore

NOAA, USA

Fridtjof Mehlum

University of Oslo Natural History Museum, Norway

Nick Owens

British Antarctic Survey, Cambridge, UK

Wayne Pollard

McGill University, Montreal, Canada

Bryan C. Storey

University of Canterbury, New Zealand

Huigen Yang

Polar Research Institute of China, Shanghai, China

BipAG Terms of Reference

- to advise the SCAR and IASC Executive Committees on the development of instruments such as workshops, programs and networks to address bipolar issues
- to advise the SCAR and IASC Executive Committees on the development of mechanisms to nurture the IPY 2007/2008 legacy, with a special focus on the roles of IASC and SCAR



SCAR and IASC's Role in Post-IPY Scientific Cooperation



SCAR/IASC Bipolar Action Group - BipAG;

WCRP/IASC/SCAR co-sponsorship of CliC project;

POSSIBLE DEVELOPMENTS -

Draft SCAR/IASC Letter of Agreement with International Association of Cryosphere Sciences (IACS of IUGG);

Likely SCAR co-sponsorship of International Partnership in Ice Core Science (IPICS) - what role for IASC?;

Possible IASC co-sponsorship of SCAR's ICESTAR (solar-terrestrial linkages) program?;

Possible linkage of SCAR's Antarctic Climate Evolution (ACE) program With IASC's APEX (Arctic Paleoclimate and its Extremes)?;

Possible linkages in permafrost and polar ocean activities?

???

...working together
for the IPY and its legacy...

