SWIPA Products

December 2009:
A first report on "The Greenland Ice Sheet in a Changing Climate" and two short films are being prepared under the Arctic Council as contributions to the 15th Conference of Parties (COP15) under the United Nations Framework Convention on Climate Change (UNFCCC), to be held in Copenhagen, Denmark.

Spring 2011:
The final SWIPA reports will be presented to the Arctic Council in 2011 and will serve as an Arctic contribution to the Fifth Assessment Report of the UN Intergovernmental Panel on Climate Change (UNIPCC), scheduled for completion in 2013/2014.

SWIPA reports will be subject to a thorough scientific peer review, as well as a national review by Arctic countries, prior to publication.

Organization of SWIPA Work

Overall coordination of the project is conducted by the SWIPA Integration Team (IT), composed of authors and representatives of the sponsoring organizations:

- Arctic Monitoring and Assessment Programme (AMAP)
- International Arctic Science Committee (IASC)
- World Climate Research Programme Climate and Cryosphere Project (WCRP/CliC)
- International Polar Year (IPY) International Programme Office.
- International Arctic Social Sciences Association (IASSA)

The AMAP Secretariat serves as the secretariat for SWIPA, convening meetings and organizing the overall activities. The SWIPA implementation plan, draft list of contents and timetable are available from the SWIPA website at www.amap.no/swipa

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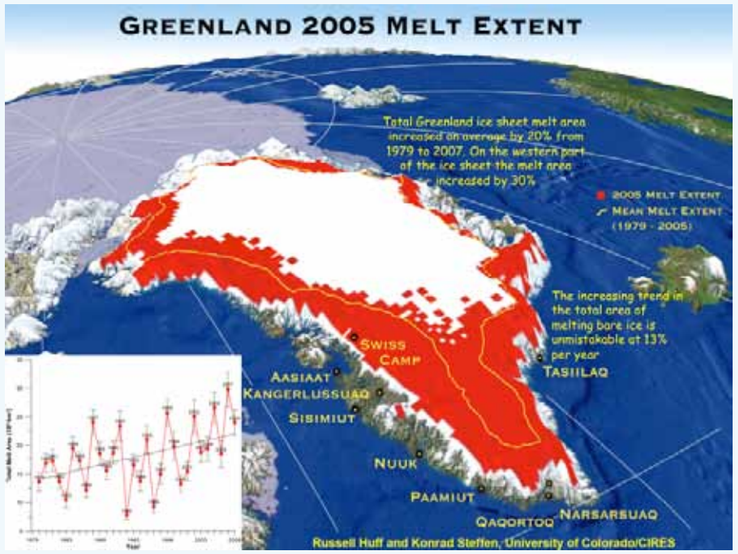
Photo: René Forsberg, DTU/Technical University of Denmark, National Space Institute • Jack Kohler, Norwegian Polar Institute • Hugues Lantuit, International Permafrost Association Secretariat Alfred Wegener Institute for Polar and Marine Research • Lars Timmann • Vladimir Romanovsky, University of Alaska Fairbanks

Climate Change and the Arctic Cryosphere:

Snow Water Ice and Permafrost in the Arctic

SWIPA: An Arctic Council Project coordinated by AMAP • IASC • WCRP/CliC • IPY • IASSA

AMAP: a Working Group of the Arctic Council; a cooperation between the 8 Arctic countries, indigenous peoples and observing countries and international organizations.

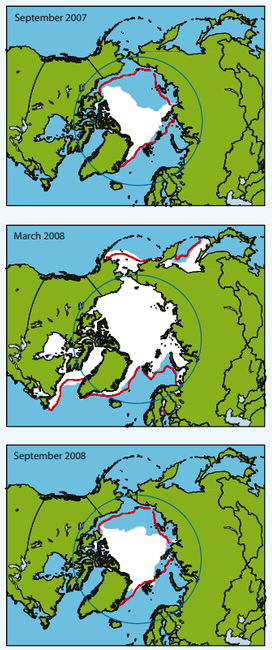


The Project Climate Change and the Arctic Cryosphere:

Snow, Water, Ice and Permafrost in the Arctic (SWIPA)
– established by the Arctic Council in April 2008.
– as a follow-up to the 2004 Arctic Climate Impact Assessment (ACIA).

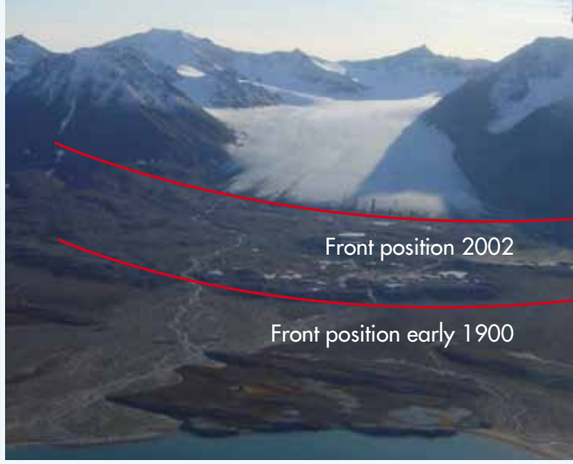
Aims & Objectives

- SWIPA will assess current scientific information on changes in the Arctic cryosphere, including the impacts of climate change on the ice, snow, and permafrost characteristics of the Arctic, which have potentially far-reaching implications for both the Arctic and the Earth as a whole.



- SWIPA will evaluate current climate-related models and select the most useful models for each of the cryosphere components.
- SWIPA will bring together scientific information from recent or on-going projects, Arctic monitoring networks, and international activities including research results from the International Polar Year (IPY), but will not initiate new research.
- SWIPA will integrate information on physical responses and ecosystem effects associated with climate change.
- SWIPA will address the consequences of changes in the cryosphere on socio-economics, health, and lifestyles of people living in the Arctic.
- SWIPA will assess regional and global consequences.

Source: AMAP 2009



Organization of the SWIPA components (lead countries):

Preface
Executive Summary/Key findings
Introduction

Modelling (model capability, uncertainty, guidance on model selection)
Leads: John Walsh, James Overland (USA)
Vladimir Kattsov (Russia)

Component 1: Arctic sea ice in a changing climate (sea ice extent, thickness, feedback processes, biological impacts, effects of change on human society)
Leads: Sebastian Gerland, Mats Granskog, Kim Holmén (Norway)
Jeffrey R. Key, Walt Meier (USA)

Component 2: The Greenland Ice Sheet in a Changing Climate (ice sheet characteristics, ice discharge, surface and total mass balance, impacts of changes)
Lead: Dorthe Dahl-Jensen (Denmark)

Component 3: The Terrestrial Cryosphere in a Changing Climate
Leads: Terry Callaghan (Sweden)
Terry Prowse (Canada)

Module 1: Changing snow cover and its impacts (changes in snow regime and properties, impacts of changes, adaptation strategies)
Lead: Terry Callaghan (Sweden)

Module 2: Changing permafrost characteristics, distribution and extent, and their impacts (states of permafrost, impacts of changes on environment and human society, adaptation strategies)
Lead: Terry Callaghan (Sweden)

Module 3: Glaciers and ice caps (changes in extent, volume, mass balance; ice discharge/iceberg calving, impacts on environment and society)
Leads: Maria Ananicheva (Russia)
Martin Sharp (Canada)
Edward Josberger (USA)
Jon-Ove Hagen (Norway)

Module 4: Changing river and lake ice, and their effects (river flow, ice cover, groundwater and aquifers, impacts of changes on human society)
Leads: Igor Shiklomanov (Russia)
Terry Prowse (Canada)

Integrated synthesis

- **Arctic water budget**
  Leads: Terry Prowse (Canada)
  Igor Shiklomanov (Russia)
- **Cryo-interactions: antagonistic/synergistic effects of the various cryosphere components**
  Leads: Martin Sharp, Ross Brown (Canada)
  Maria Ananicheva (Russia)
- **Feedbacks synthesis** (Greenhouse gases; radiative forcing; thermohaline circulation)
  Leads: Terry Callaghan, Margareta Johansson (Sweden)
  Jeffrey R. Key (USA)
- **Human dimensions of changes in the cryosphere** (Societal impacts; current adaptation; future adaptation)
  Leads: Grete Hovelsrud (Norway)
  Birger Poppel (Greenland)
- **Observations and long-term monitoring**
  Leads: Barry Goodison (WMO)
  Jeffrey R. Key (USA)

Conclusions and recommendations