

CliC: Climate and Cryosphere

Report for WCRP Joint Science Committee

G. Krinner, G. Flato, J. Baeseman



www.climate-cryosphere.org

Project
Office
Hosted by:



CliC Structure

Scientific Steering Group

G. Flato and G. Krinner,
Co-Chairs

Int'l CliC Project Office

J. Baeseman, Director
Gwen Hamon, Exec. Officer
Hosted by Norwegian Polar Institute

Limited Lifetime Targeted Activities

Core

- Arctic Freshwater Synthesis (*Almost Done*)
- Marine Ice Sheet/Ocean Model Intercomparison
- Polar CORDEX Analysis / Arctic Regional Climate Scenarios
- Polar Jet Stream Variability and Extremes
- Permafrost Research Priorities (with IPA)
- Southern Ocean Satellite Requirements

Cryosphere GC: Melting Ice – Global Consequences

- Carbon cycle feedbacks in a changing Arctic
- Sea-ice, Snow, and Ice Sheets in CMIP6
- Global Glacier Mass Balance

ASPeCt

Joint with SCAR

Arctic Sea Ice Working Group

ISMASS *

*Joint with SCAR
and IASC*

Permafrost Carbon Network

Joint with IASC

Sea Ice and Climate Modelling Forum

Polar Climate Predictability Initiative (PCPI)

Joint with SPARC

Permafrost and Climate Modelling Forum



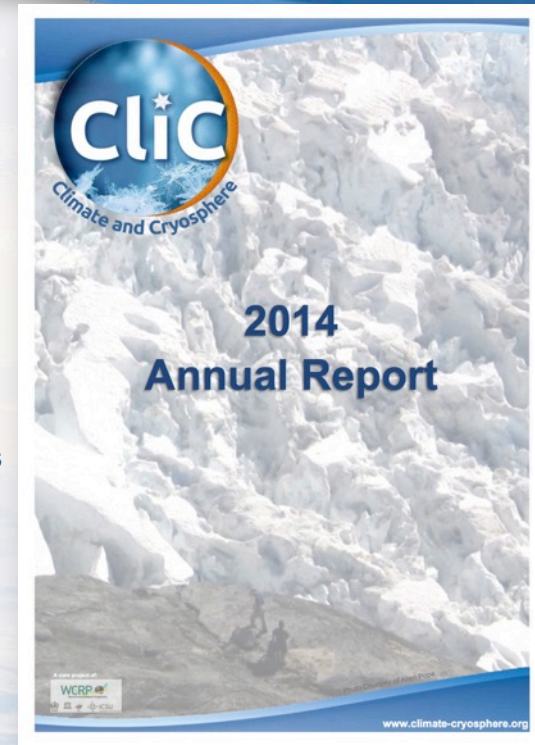
Achievements ...

2014 CliC Activity Report

- * Arctic Freshwater Synthesis
- * Arctic Sea Ice Working Group
- * Antarctic Sea Ice Processes and Climate (ASPeCt)
- * Technical Committee on Sea Ice Observations
- * Interactions Between Cryosphere Elements
- * ESM Snow Model Intercomparison (ESM-SnowMIP)
- * SCAR/IASC/CliC Ice Sheet Mass Balance and Sea Level (ISMASS)
- * Ice Sheet Modelling Intercomparison Project 6 (ISMIP6)
- * Polar Coordinated Regional Downscaling Experiment (Polar CORDEX)
- * Linkage Between Arctic Climate Change and Mid-Latitude Weather Extremes
- * Permafrost Carbon Network
- * Permafrost Research Priorities
- * Sea Ice and Climate Modelling Forum (SIMIP)
- * CLIVAR/CliC/SCAR Southern Ocean Regional Panel
- * Southern Ocean Satellite Data Requirements
- * Submarine Permafrost Mapping Action Group
- * West Antarctic Glacier-Ocean Modelling Activity

WCRP Grand Challenge Contributions

- * Cryosphere in a Changing Climate – implementation plan: *Melting Ice – Global Consequences*
 - o WCRP Polar Climate Predictability Initiative (PCPI)
- * Ice sheet mass balance work package for Regional Sea Level Grand Challenge



Full details in the Annual Report!



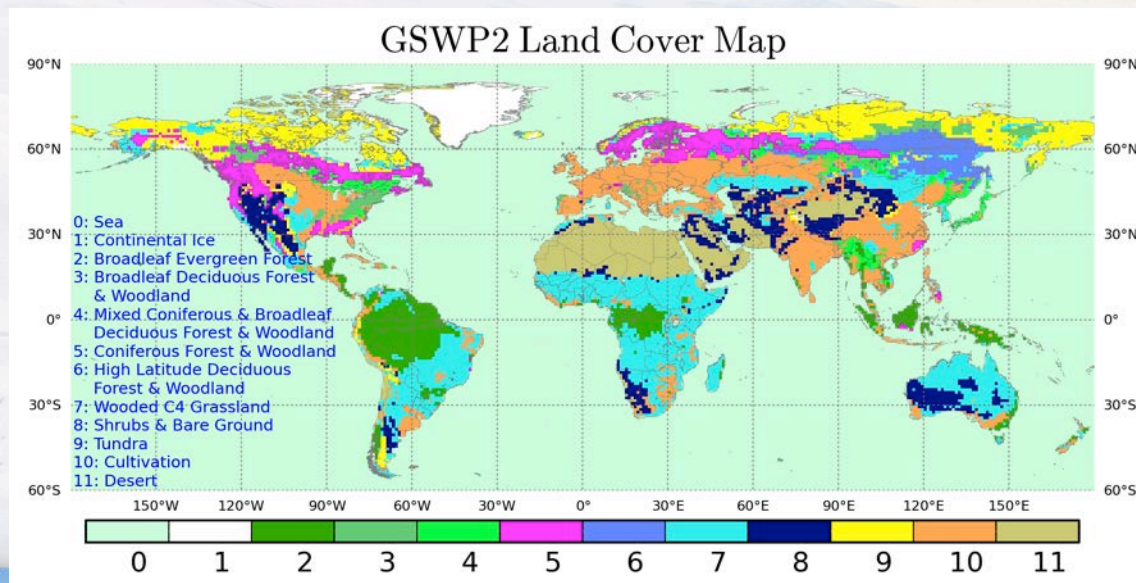
Modelling Issues/Progress

Addressed past JSC request to engage more strongly with the climate modelling community

- 3 new activities connected to CMIP6 under the Grand Challenge banner
 - Ice Sheet MIP (ISMIP6)
 - Snow in ESMs (integrated into LS3MIP)
 - Diagnostic Sea Ice MIP (SIMIP)

Aims

- Focused analyses of model performance
- Improved representation of cold processes
- New couplings



Modelling Progress, Cont'd

- Polar CORDEX: promote analysis of both Arctic and Antarctic simulations
- Sea-ice and permafrost modeling fora
- Marine Ice sheet – Ocean coupling: MISOMIP
- Launching Glacier mass balance intercomparison (GlacierMIP)
→ CMIP output to drive global glacier mass balance models
- Discussions underway to engage permafrost modelling community (Core and Grand Challenge)



Observations and process understanding

- Ongoing activities (e.g. sea ice, permafrost and ice sheets groups) are developing communities in which observational and process experts can collaborate
- Complement modelling activities by providing quality, error-quantified observational estimates for use in model evaluation
- CliC activities contribute to ongoing and future climate impact assessments, e.g. Adaptation Actions for a Changing Arctic (AACCA) report being developed now for the Arctic Council
- Much complementarity with WMO Global Cryosphere Watch

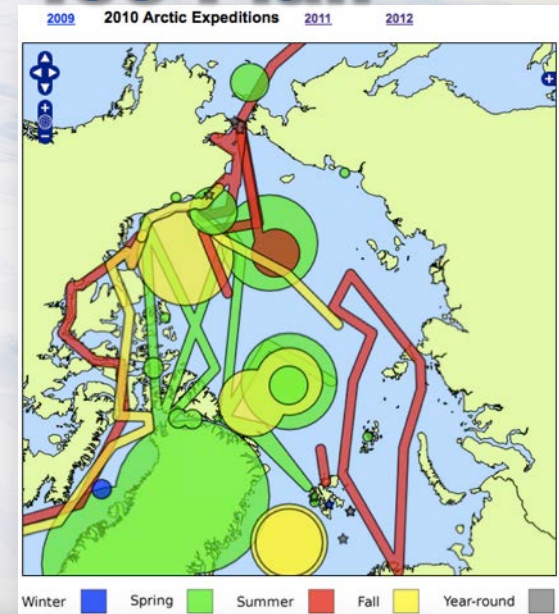


Observations and process understanding

- Sea Ice Groups – Arctic and Antarctic
 - Standardized methods for collecting ship based sea ice observations
- Ice Plan - field expeditions and data
 - Updating to include all cryo components
- Southern Ocean Satellite Requirements
 - Survey, Community Report with SOOS
- Permafrost Carbon
- Arctic Freshwater Synthesis

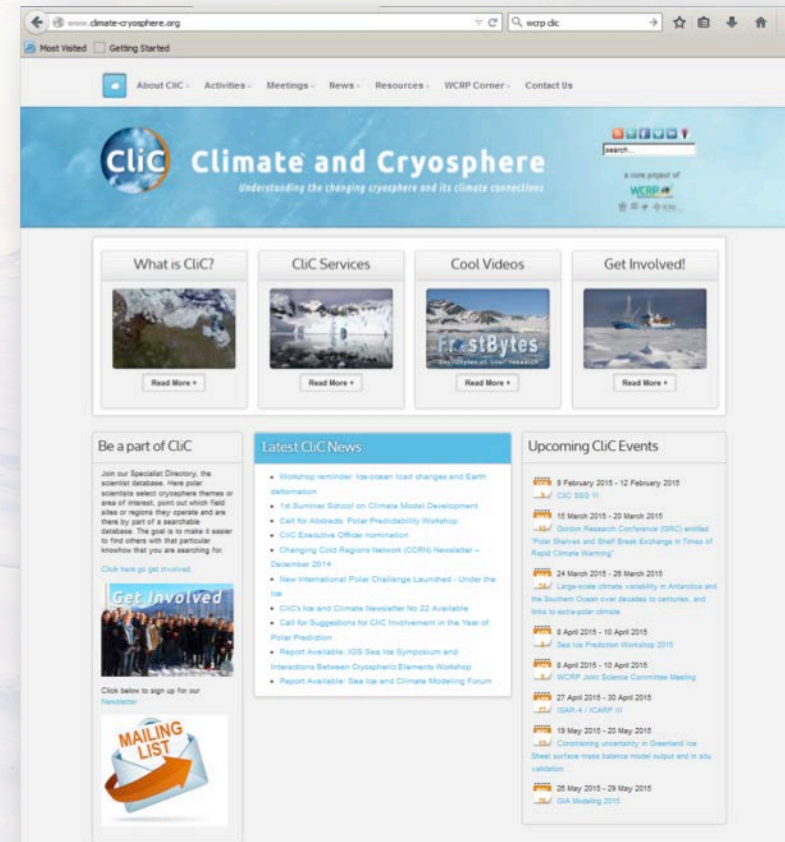


Ice Plan



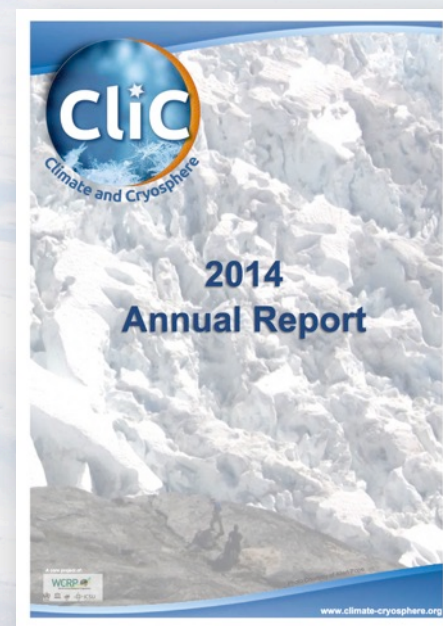
Collaboration and Communication

- Extremely active CliC IPO:
Bringing scientists together and promoting internationally coordinated activities
 - 25 workshops organized, ~100 ppl funded
 - Teleconference + videoconference service
 - Many early career scientists engaged
- Many outreach and community building efforts
 - Where are they now? (joint with APECS)
 - Up-to-date web page, social media, etc.
 - Frostbytes
 - **NEW CliC Fellows Programme**



Reporting

- CliC 2014 Annual Report
 - Sincere thanks to all of the Leadership group for providing activity reports
 - And of course to Jenny and Gwen for pulling it all together!
- Practice to be continued. Convey clearly and convincingly what we have accomplished and why it is important (in the face of budget pressure)
- CliC Action Plan (2015-2020)
 - Convey to others what CliC is about
 - Guiding and prioritizing our current and future activities



Summary (1)

- It has been a year of challenges, marked by the sad loss of Heidi Isaksen, the CliC project executive officer
- CliC has made very visible progress and is building momentum on a number of fronts
- Continued effort to augment budget, and optimize its use, through strategic partnerships and other funding opportunities
- A warm welcome to Gwen Hamon who has recently joined the Project Office in Tromsø
- Sincere thanks to the Norwegian Polar Institute for their ongoing support (until 2018, staffing uncertain as contracts are up this year)



Summary (2): Model and data urgencies

Most urgent model development

Better integrate cryosphere in climate models!

1. High latitude surface processes (permafrost – physics and biogeochemistry)
2. Basal ice sheet processes (interactions with ground & ocean)
3. Sea-ice physics (mechanics, snow on sea ice)

Most urgent observational or data deficiencies:

1. Snowfall rates (seasonal and permanent snow cover)
2. Glacier & ice sheet mass balance series coupled with displacement rates on regional scales
3. State of permafrost (thermal and carbon balance)





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CliC SSG membership

Retiring

T. Ohata, P. Lemke, L. Hinzman, N. Koc

Extensions

- G. Flato: Extend for one year, stepping down at the end of 2016
- D. Dahl-Jensen: Extend for one year, stepping down at the end of 2016
- R. Massom: Extend for two-year term
- G. Krinner: Extend for two-year term as co-chair

Proposed new members

- Lars Henrik Smedsrud (U Bergen, Bjerknes Centre for Climate Research): Polar oceanographer. **JSC-35 action item, homework done!**
- Dario Trombotta (IANIGLA - CONICET, Mendoza): Geocryology
- Hiroyuko Enomoto (Vice-Director General , NIPR): Atmosphere, ice sheets
- *(Kim Holmen (International Director, NPI) : atmospheric chemistry / cryosphere interactions)*





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News

CliC News

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Cryosphere in the Media

CliC Newsletter Archive

Workshop Announcement: CliC Sea ice and Climate Modeling Forum Workshop on large-scale sea-ice simulations

Published on Thursday, 12 June 2014 07:05

Sea ice and Climate Modeling Forum Workshop on large-scale sea-ice simulations September 26th, University of Reading, UK

This one-day workshop brings together users and developers of sea-ice models to start a joint effort for improving sea-ice models. We will discuss the analysis of sea-ice biases in CMIP5 models, determine the most pressing needs for model development, identify the most helpful observational data, and compile a list of the most useful sea ice variables to be saved for CMIP6. The workshop is the first in a series of planned activities from the Sea ice and Climate Modeling Forum, which is a WCRP-CliC initiative that aims at improving and better understanding large-scale sea-ice simulations by coordinating a joint effort of the international sea ice modeling community. Following a few short plenary talks, the workshop will consist of breakout group and discussion sessions. For further information about the workshop and to register for it (by June 30th 2014), please go to:

<http://www.climate-cryosphere.org/activities/groups/seaicemodelling>.

This workshop is the final one in a series of related sea ice workshops around that time in central Europe, including

16+17 Sep: 6th IICWG/ICE-ARC workshop on sea ice modeling and data assimilation Toulouse

<http://www.ice-arc.eu/2014/04/16/toulouse-modelling-workshop/>

18+19 Sep: International Sea ice concentration and thickness inter-comparison and evaluation workshop, Hamburg

<http://www.climate-cryosphere.org/meetings/seaice-conc-2014>

22+23 Sep: Arctic sea ice reduction: the evidence, models, and global impacts, Royal Society, London

<https://royalsociety.org/events/2014/arctic-sea-ice/>

24+25 Sep: Arctic sea ice reduction: the evidence, models, and global impacts - further discussion, The Royal Society at Chicheley Hall

<https://royalsociety.org/events/2014/sea-ice-reduction-satellite/>

Please email [Alexandra Jahn](#), NCAR or [Dirk Notz](#), MPI for Meteorology, if you have any questions.





You are here: [Home](#) » [Meetings](#) » Ice Sheet Modeling for CMIP6 Meeting

Meetings and Events

↳ Cryosphere Community Calendar

↳ 2014 SOOS SSC

↳ **Ice Sheet Modeling for CMIP6 Meeting**

↳ Sea Ice Concentration and Thickness 2014

↳ Rising Coastal Seas On A Warming Earth

↳ Large-Scale Sea-Ice Simulations Workshop

↳ Past cliC Meetings

Ice Sheet Modeling for CMIP6 Meeting



Ice Sheet MIP for CMIP6 Meeting

Venue: NASA GSFC, Greenbelt, MD, USA

Dates: 16-18th July, 2014

Meeting Organizers: [Sophie Nowicki](#) (GSFC), [Tony Payne](#) (University of Bristol), and [Eric Larour](#) (JPL).

The sea-level projections made by the glaciological community as part of the IPCC process have often been out of phase with the projections considered by the wider CMIP community. For instance in AR5, the ice2sea and SeaRISE ice sheet projects predominantly worked with AR4 scenarios, while the CMIP5 community used new RCP scenarios. A primary focus of this meeting is therefore to develop a plan that will allow ice sheet and glacier models to be better integrated in the CMIP6 initiative, in order to improve both sea level projections due to changes in the cryosphere and our understanding of the cryosphere in a changing climate. These goals map into the Cryosphere Grand Challenge and the Sea-Level Rise Grand Challenge relevant to cliC and the WCRP. Participation is by invitation only, and will primarily include ice sheet and Earth system model development and analysis leaders, representatives of MIPs that are relevant to the cryosphere and observation data set providers. If you would like to be invited to the meeting, please email [Sophie Nowicki](#).

The meeting goal is to develop an Ice Sheet MIP proposal for participation in the CMIP6 initiative.

↳ [Meeting Objectives](#)

↳ [Agenda](#)

↳ [Participants](#)

↳ [Local information](#)