



Climate and Cryosphere GC on Melting Ice & Global Consequences

41st Session of the WCRP Joint
Scientific Committee

James Renwick

May 2020

Online



International
Science Council



Progress and achievements

CliC in 2019:

- 16 funded workshops , 57 funded participants from 24 countries including 26 ECRs
- Sponsor of/Input to conferences and schools:



- 60+ online meetings on GoToMeeting,  >2100 likes,  >3100 followers

4 Highlights:

- **High profile review paper, result of CliC sponsored ISMASS workshops:** Hanna, E et al, (2020) Mass balance of the ice sheets and glaciers—progress since AR5 and challenges. Earth-Science Reviews
- **Polar CORDEX meeting:** 1) Surface mass balance of Greenland & Antarctic ice sheets, 2) Coupled modeling, challenges & benefits, 3) Model evaluation, 4) Challenges of high resolution downscaling
- **GlacierMIP contribution to IPCC SROCC:** intercomparisons of global-scale glacier projections from six modeling groups
- **ISMIP6 special issue in The Cryosphere:** 16 papers looking at improvements in ice sheet modeling, ice-climate interactions, or external forcings, as well as studies expounding on the ISMIP6 experimental protocol.



International
Science Council



Future plans

Overall plans:

- Update 2017-2021 Action Plan to 2021-2025
- Identify sources of funding
- Communicate results to broader audience / link to policy-making, social science, indigenous knowledge orgs
- Identify research gaps – New activities

Highlights – specific plans:

- **ISMIP7**: Focus on coupled models (Greenland and Antarctica), prepare for and start ISMIP7
- **GlacierMIP2**: expand the framework for a coordinated intercomparison of global-scale glacier mass change models, reduce uncertainties in global glacier projections, model improvements.
- **MISOMIP2**: Coupled ice-ocean experiments
- Number of **CMIP6-SIMIP** publications to be published 2020
- **BEPSII**: Continue model intercomparisons, Ecosystem Services synthesis paper, Field School (Cambridge Bay, Canada, Spring 2021), BEPSII cruise
- **ISMAS**: explores improvements in understanding and quantification of past, present and future ice sheet and sea-level change
- Commitment to engage in and endorsement of Snow and Ice Mass Balance from Earth Observations project



Links to the WCRP Strategic and Implementation Plans

1. Fundamental understanding

- a. Strong need for underlying observations: Glacier mass balance, sea ice thickness, snow cover,...
- b. Understanding linkages between cryosphere components and between cryosphere and other climate system components (including biosphere)
- c. Modelling: interactive ice sheets in ESMs, sea ice prediction; MIPs

2. Near-term prediction

- a. Seasonal sea ice, snow cover, glacier mass balance...

3. Future evolution (longer term)

- a. Ice sheet behaviour and future sea level
- b. Cryospheric tipping points

4. Bridging climate science and society

- a. Regional variability & change - CORDEX
- b. Impacts & vulnerability: Glaciers and water availability, ice sheets and sea level rise
- c. Changing cryosphere and social impacts: traditional lifestyles, sense of place,...
- d. Strengthen links to regional policy needs e.g. Arctic Council and Antarctic Treaty requirements



International
Science Council



Emerging issues

Infrastructure issues

- Cryosphere community has expanded rapidly → CliC's network has expanded across
 - All cryosphere domains
 - Geographically throughout the Polar Regions and high mountain areas
- Important that CliC continues to partner and work with wider community
 - Many complementary research activities led in other organisations
 - Need to broaden audience and reach out to policy-making, social science, and indigenous knowledge orgs
- CliC to stay focused on leading climate and cryosphere research
 - Find synergies with other related programs, both within and outside of WCRP
 - Avoid duplicating efforts of others
- Grand Challenges: what is the next step? Melting Ice GC activities will carry on.

Project Office

- Challenging to plan due to uncertainty of project office location and support.



International
Science Council

