



21ST MEETING OF THE

CliC Scientific Steering Group

FINAL REPORT



8 February 2026



Wellington, New Zealand



Climate and Cryosphere (CliC)
Core Project of the World Climate
Research Programme (WCRP)
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21st Meeting of the CliC Scientific Steering Group

The 21st CliC Scientific Steering Group Meeting was held Sunday, February 8th at Rutherford House, Wellington, New Zealand. The meeting was hybrid with various members and guests participating via Zoom.

Members Attending In Person

Edward Hanna (co-chair), Amy Lovecraft (co-chair), Sandra Barreira (Argentina), Chris Burn (Canada), Sergi Gonzalez-Herrero (Switzerland), Juan Höfer (Chile), Miriam Jackson (Norway), Thamban Meloth (India), Ramiro Saurral (Spain), Ted Scambos (USA), Lauren Vargo (New Zealand), Ray Bradley (ex-officio, USA), Rob Deconto (ex-officio, USA), Narelle van der Wel (Head, WMO Cryosphere Monitoring, Predictions and Services Unit [on behalf of Mike Sparrow, WMO ex-officio])

Members Attending Remotely

Emila Kyung-Jin (Korea)

Member Regrets

Ben Galton-Fenzi (Australia), Mine Islar (Sweden), Ruth Mottram (Denmark), Yao Tandong (China)

IPO Staff Present

Keith Alverson, Meghan Taylor

Guests Attending

Shawn Marshall (IASC and Global Cryosphere Watch), Tim Naish (WCRP), Allen Pope (IGS), Samar Minallah (IC-MontC)

Guest Regrets

Letizia Tedesco (BEPSII), Carolina Adler (MRI), Alex Aves (APECS), Petra Heil (ASPeCt), Marilyn Rafael (ASPeCt), Jeremy Ely (ACCORD, IC-MontC)

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Executive Summary

The CliC Scientific Steering Group held its 21st in-person meeting in Wellington, NZ alongside the 1st CliC Open Science Conference, which was attended by over 400 members of the CliC community from around the world. Discussion focused on the funding situation at the International Project Office, the draft Strategic Plan, and future CliC priorities. The group reiterated the importance of CliC's engagement in, and support for, the UN Decade for Cryosphere Science (2025-34) and International Polar Year (2032-33), as well as ongoing and potential future CliC synthesis papers and assessments. The Steering Committee looked forward to participating in the inaugural CliC Open Science Conference, noting they had agreed to organize it at their last in-person meeting. An archive of CliC Scientific Steering Meeting reports is available on our website: climate-cryosphere.org/clic-scientific-steering-meetings

Summary of Actions

Action 21-1: All to consider possible opportunities for funding for the IPO and CliC Working Group led activities, and inform the IPO. Host Institution Scientists and the IPO to continue ongoing efforts to secure funding from additional countries and foundations.

Action 21-2: Co-chairs to finalize the strategic plan by March 15 [done]. If time permits, IPO to send this 'final' version to SSG for comment, otherwise IPO to submit to JSC for their consideration by April 1, 2026.

Action 21-3: IPO to get expressions of interest from our community to join the WCRP task team soon (in response to a letter to be received "soon" from WCRP).

Action 21-4: Strengthen CliC cooperation with ESMO building on the IC-MontC efforts.

Action 21-5: Chris Burn to report back to the 22nd SSG meeting with a proposal for a Working Group with a five year (renewable) mandate.

Action 21-6: Amy Lovecraft to restructure and update the CliC liaison list following the agreed priorities.

Action 21-7: IPO to allocate 2026 Activities budget as far as possible consistent with the above agreed priorities.

Action 21-8: IPO to ask all SSG members to express their willingness to serve as co-chair with a deadline of early March [Done]. IPO to publish a public call for expressions of interest for one month as soon as possible, before 15 March. Based on the results of these efforts, SSG to decide by Zoom or email on one or two candidates and reserve candidates to propose to the WCRP JSC for final decision, ideally at their April 2026 meeting, or if that is not possible, then inter-sessionally later in 2026.

Opening and Welcome

The meeting was opened by the co-chairs, Edward Hanna and Amy Lovecraft, and all members introduced themselves, their areas of expertise and their host institution affiliations. The SSG collectively thanked Tim Naish and Lauren Vargo of the Victoria University of Wellington for hosting the meeting in Rutherford House.

IPO Funding Update and Brainstorming

The International Project Office (IPO) budget situation was introduced by IPO Director, Keith Alverson. The IPO has three sources of funding. WMO, which traditionally provides about 100k/year in support of CliC activities, mostly carried out by our Working Groups, and NSF and NASA who each contribute 250k/year, for the operational costs of maintaining the IPO.

CliC, as with all WCRP core projects, experienced a decrease in WMO support from 85k down to only 40k CHF in 2026, and given the budget situation at WCRP, expect that this may likely fall even further in 2027.

The existing five year NASA grant funding for years 4 and 5 (2025-2027) has been held up, meaning that at present there is no NASA funding available to the IPO. This has led to an extended period of extreme uncertainty and resulted in cancelled activities. [Note Post Meeting:

As of March 2026 informal discussions with NASA indicate that its funding will soon become available as per the original grant.]

NSF funds for all five years of the current grant (2023-2027) appear to be secure.

In light of the above, the most likely scenario is that the IPO will be able to continue operations on existing support grants at least through July 2027. However, almost no funding will be available for CliC activities and Working Groups.

The process for renewing NSF-NASA five year grants for 2027-2032 will begin this calendar year, led by host institution scientists at UMass. This process is unlikely to be 'business as usual' and is certainly not guaranteed. As such, the IPO director has ongoing efforts to obtain IPO support from Korea. The SSG discussed other possible sources of funding to approach including Japan, Canada and Private Foundations.

The UNESCO-led "Decade of Action for Cryosphere Research" and the Fifth International Polar Year are important international scientific efforts around which applications for future CliC support and engagement might be oriented.

Action 21-1: All to consider possible opportunities for funding for the IPO and CliC Working Group led activities, and inform the IPO. Host Institution Scientists and the IPO to continue ongoing efforts to secure funding from additional countries and foundations.

Strategic Plan

Ed Hanna indicated the Plan edits so far have more or less covered the JSC review points. A detailed list of future activities as part of 'implementation' aren't necessary to include as part of a 'strategic' plan but to address these concerns more specific goals have been incorporated. The document should be ready to be submitted one month in advance of the next JSC meeting planned for late April 2026.

The SSG discussed whether CliC should create an accompanying implementation plan in the coming year or so. If so it will need to be much more bottom up built on Working Group level implementation and activities.

There was a brief discussion on the engagement of Russia in CliC activities. It was noted that Russia continues to actively engage in relevant WMO groups, such as the Arctic Regional Climate Forum, as a member of WMO.

The SSG consensus was that CliC has no specific policy regarding engaging with scientists from Russia or any other country.

Action 21-2: Co-chairs to finalize the strategic plan by March 15 [done]. If time permits, IPO to send this 'final' version to SSG for comment, otherwise IPO to submit to JSC for their consideration by April 1, 2026.

CliC Future Priorities

WCRP Sea Level Activity

Tim Naish introduced Sea Level as a WCRP priority, and broadly for the UN as a whole. The subject is a priority for WCRP and a task team is being put together led by Tim. CliC has recently been active in this forum (e.g. [WCRP Status Brief: Current understanding of global sea-level rise](#)) and is encouraged to nominate task team members. Sea-level rise is a key area of interest to CliC and is captured in our strategic plan. Uncertainties in future sea-level rise are dominated by the cryosphere, and in particular the Antarctic cryosphere, thus providing a key potential contribution from CliC to the WCRP effort. This said, an existing sea-level rise of about half a meter is already occurring, so efforts oriented towards local adaptation need to be a priority as well.

It was noted that EC-PHORS seeks to work with CliC on disseminating information to WMO members on the Antarctic role in sea level, including at WMO Executive Council and Congress.

It was noted that the Arctic population is concentrated at coasts and these are highly vulnerable populations with dramatic impact already occurring. Thus CliC is well positioned also for Arctic impacts work. Greenland is an area of great strategic interest where CliC science is of great relevance. Marine heatwaves, tipping points and geoengineering are all relevant topics within the CliC remit.

The SSG consensus was that Sea Level Rise is a CliC priority, to be implemented through participation in the broader WCRP task team.

Action 21-3: IPO to get expressions of interest from our community to join the WCRP task team soon (in response to a letter to be received “soon” from WCRP).

International Decade of Action for Cryospheric Sciences (2025–2034) and Fifth International Polar Year 2032-33

Keith Alverson introduced the decade of action led by UNESCO and the IPY-5, led by IASC and SCAR, as major international initiatives that CliC can contribute to and benefit from in the coming decade. Antarctic InSync was mentioned as another important effort in this regard, in particular in the lead-up to IPY-5. The SSG discussed how CliC can most constructively play a role in bringing these activities together strategically. It was noted that there is plenty of confusion at times about so many polar and cryosphere actions. Particularly in the low funding environment this multitude of relevant actions is challenging, though also perhaps an opportunity for prioritizing and synergy. It was noted that some CliC Working Groups already have engagement with some of these activities, ASPeCt and BEPSII for example are already very engaged in InSync. The visioning document for IPY will be submitted to the IPY planning group soon. The CliC IPO has put in a placeholder Expression of Interest to the IPY leadership to serve, with partner(s) as the IPY-5 Secretariat. *[Update March 2026: CliC’s is one of three Expressions of Interest invited to submit a full bid, with a deadline in June 2026.]* CliC has representation on the overall IPY planning group as well as its four existing task teams. WMO members have already agreed to IPY, but not the Decade of Action, which is being led by UNESCO. CliC also has representation on the ad-hoc steering group for the International Decade of Action.

The SSG consensus was that engagement with both the Decade of Action for Cryospheric Science and IPY-5 is a priority for CliC.

CliC Working Group Activities and Plans

It was noted that since this year's meeting is only one day long, and followed by a major Open Science Conference, only limited Working Group reporting was possible.

IC-MontC (Impacts of Changes in the Mountain Cryosphere)

Samar Minallah, member of the IC-MontC steering group, introduced their recent activities and plans. IC-MontC organized a successful workshop focused on high resolution modeling in mountainous terrain at the International Mountain Congress in Innsbruck in September 2025. A review paper or status report is planned as an output. A session at EGU in Vienna in May 2026 is planned. In the discussion it was mentioned that outputs in high profile public facing journals such as 'The Conversation' were seen as a good vehicle for CliC.

A followup workshop at NCAR in Boulder is planned for the first and second weeks of October 2026. Unfortunately the UCAR support request was not successful, so fundraising will be required. GEWEX, GPEX and CLIVAR have all endorsed the October workshop and offered some limited support for participants.

It was mentioned that cooperation with WCRP-ESMO (Earth System Modeling and Observations) could be improved, particularly in the area of high resolution modeling where the cryosphere is included. SSG member Sandra Barreira is currently the CliC Liaison with ESMO and Samar Minallah is a member of an ESMO modeling group. Samar would like to broaden the cryosphere, and hence CliC, engagement with ESMO modeling work.

Discussion of IC-MontC effort focused on hazards, in particular GLOFS (Glacial Lake Outburst Floods) was a possible way forward - both members from China (Yao Tandong) and India (Thamban Meloth) could show leadership developing such GLOF focused IC-MontC activity. Important partners include MRI and WMO's Global Cryosphere Watch.

The SSG consensus was that the high mountain cryosphere work was a continued high priority for CliC, and should be captured appropriately in the Strategic Plan, with an eye to catalyzing inter/national funding when possible.

Action 21-4: Strengthen CliC cooperation with ESMO building on the IC-MontC efforts.

Possible New Working Group on Permafrost

Chris Burn introduced the possibility of a new Permafrost Working Group. He noted that the current permafrost working group - the Permafrost Carbon Network - is very focused on global climate and greenhouse gasses from permafrost change. A second important permafrost research focus is on the people and structures built on and living in the rapidly changing permafrost landscape, and the need to adapt.

Internationally coordinated monitoring of this permafrost landscape change is not currently globally or systematically being done. CliC could consider assisting in developing a monitoring system, to be available for the IPY. There are a number of oil and gas contaminated sites which used permafrost as the stability for the site. A more tractable project focusing on contaminated sites might be a possibility. A third possibility is the issue of engineering service life and sustainability of infrastructure. Mountain specific permafrost change hazard risks were discussed and it was suggested that NASA has a call for proposals on this topic.

The SSG Consensus was to ask Chris Burn to work towards developing a new working group along the lines of 'Permafrost in the built environment', seeking to engage RiFS, IPA or other relevant groups as a possible co-sponsors and ensuring complementarity and lack of overlap with the Permafrost Carbon Network.

Action 21-5: Chris Burn to report back to the 22nd SSG meeting with a proposal for a Working Group with a five year (renewable) mandate.

ORCAS (Observational Requirements in the Context of AI Prediction Systems)

Sandra Barreira introduced ORCAS, an international working group sponsored by SCOR and PCAPS, focused on enhancing AI-driven sea-ice forecasting by integrating crucial observational data. It addresses the gap between AI training (often limited to reanalysis) and in-situ data, focusing on Arctic/Antarctic monitoring, and addresses the question of how to optimize observations for AI prediction systems.

How AI is and will be used in climate and cryosphere modeling is a potentially important topic for the CliC community. There is much nuance in different AI systems and specific cryosphere elements being modeled. Ruth Mottram, though not present at this meeting, may be a good person to engage with this topic for CliC. Sandra is a member of ORCAS and can be the CliC Liaison with them. It was agreed that these considerations should be included in our strategic plan. Polar CORDEX (one of our working groups) is already working on this topic. ESMO has a working group on this topic, which we could link with. IGS is hosting a symposium on AI in glaciology in June (at Dartmouth College in NH).

The SSG Consensus was that CliC does not need a new working group on AI specifically now, but recognizes the shift to AI is occurring very quickly, so CliC should pay attention to this topic and perhaps engage with existing groups at Polar CORDEX and ESMO, and maybe consider a 'best practice guide' for AI in cryosphere science and climatic interactions in the future.

Partner Project Liaisons

There was a discussion of what the liaison's that CliC nominates do, be it as liaison to different external groups, including other WCRP projects, our own Working Groups. It was agreed that each person on the SSG should be assigned (or volunteer) to be the liaison with one or more of our own Working Groups and that all our WGs should be thereby represented on the SSG. In terms of external groups it was noted that CliC may wish to consider a more formal linkage with Antarctica InSync. The group noted that we invite 'guests' to our SSG meetings from other organizations, and wondered how this practice was different from, or complementary to, appointing liaisons. It was noted that CliC needs to prioritize levels of liaison needs, with liaison to our own Working Groups being the highest priority. We can also encourage other groups -

such as APECS, PSECO, etc - to designate liaisons to CliC. For example, Sergi, as our designated liaison with APECS, can seek to ensure we have an ECR representative, linked to APECS, at all our SSG meetings. We could seek to have an APECS or equivalent representative in each of our working groups, but this may be a bit bureaucratic to enforce since our existing practices are already doing quite well at mainstreaming ECRs in CliC activities.

It was agreed that the first-level need is to ensure we have, or clearly designate, a liaison from our SSG to each of our own WG's. The second-level need is to ensure we have, or clearly designate, a liaison to the most relevant WCRP core projects and lighthouse sister level activities, including for example APARC, CLIVAR, GEWEX, RifS etc. The third-level need is to ensure we have, or clearly designate, a liaison to major external groups, including for example IPY, Decade of Action for Cryospheric Sciences, IASC, SCAR, IACS, WMO-PHOS.

The SSG consensus was to update the CliC liaison list and Amy Lovecraft volunteered to lead a restructuring and updating process.

Action 21-6: Amy Lovecraft to restructure and update the CliC liaison list following the agreed priorities.

IACS Cryospheric Stewardship Working Group

Amy Lovecraft introduced this external group which she will be co-leading for IACS after stepping down as CliC co-chair. The group will assess for example the nature of cryospheric stewardship. It could be preserving certain cryosphere features, it could be about stewardship of a place that is losing its cryosphere, and/or it could be about indigenous knowledge. More information here: cryosphericosciences.org/cryosphere-stewardship

The chairs thanked the SSG guests in attendance and called a brief closed SSG session to order.

Budget

The IPO recalled that our 'Activities Budget' is provided by WMO. This has recently been spent as follows:

2024 - 100k CHF was received and distributed to Working Groups and supported an SSG meeting in Pucon, Chile alongside the SCAR Open Science Conference.

2025 - 40k CHF was received. 30k CHF was used to support the SSG meeting here in Wellington and 10k has been earmarked for an IC-MontC workshop in the fall of 2026.

2026. We don't know our allotment at present, it should be decided by the WCRP JSC at their meeting in April. A plausible figure might be around 30k CHF. It was agreed to prioritize with those funds, once they are received, with three parts equal support for:

(1) preparing a permafrost WG [Chris Burn] - up to 10k CHF

(2) CliC participation in the new WCRP Sea level Rise task team [Nominee as yet undecided] - up to 10k CHF

(3) CliC engagement with the IPY-5 and International Decade of Action for Cryospheric Sciences. - up to 10k CHF - including support for relevant publications.

It was agreed that any further budget decisions that may be required, for example if more than 30k CHF is received, can be decided using zoom or email.

Action 21-7: IPO to allocate 2026 Activities budget as far as possible consistent with the above agreed priorities.

Next In-Person Meeting

The SSG agreed to continue to meet roughly quarterly by zoom. It was agreed that the next in-person SSG should be in 2028 ideally collocated with some other meeting that members might be attending such as EGU 2028 (Vienna), or SCAR OSC 2028 (Bulgaria). Another

possibility, though this further in the future, could be 2029 at a joint IACS/IGS/CliC meeting tentatively planned in Norway.

The SSG consensus was that a final decision on the location and timing of the next in-person SSG meeting can be taken by email or zoom sometime in 2027.

SSG Membership and Leadership

The SSG looked over the existing membership and timelines. It was agreed that Amy Lovecraft is stepping down after this meeting, though remains available to help any new appointee with transition throughout 2026. Edward Hanna expressed his willingness to carry on until the end of his term at the end of 2027.

The SSG consensus was that we should not prioritize new members to present to JSC in 2026, but rather focus on filling the co-chair roles. It was noted that during 2027 there will be several openings to fill.

Action 21-8: IPO to ask all SSG members to express their willingness to serve as co-chair with a deadline of early March [Done]. IPO to publish a public call for expressions of interest for one month as soon as possible, before 15 March. Based on the results of these efforts, SSG to decide by Zoom or email on one or two candidates and reserve candidates to propose to the WCRP JSC for final decision, ideally at their April 2026 meeting, or if that is not possible, then inter-sessionally later in 2026.

Upcoming Meeting Calendar

- 25-27 Feb, 2026 – Monaco Polar Symposium, Monaco [Rob DeConto]
- March 19-20, 2026 “Technical Launch” International Decade UNESCO, Paris, France [Amy Lovecraft]
- March 25 – April 1, 2026 IASC Arctic Science Summit Week, Aarhus, Denmark [Edward Hanna]

- August 8–19, 2026 SCAR Open Science Conference, Oslo, Norway [Thamban Meloth]
- 16-22 July, 2027 IUGG Congress Incheon, Korea [Keith Alverson, Emilia Kyung-Jin]
- 2028 July-August. SCAR Open Science Conference, Sophia, Bulgaria
- 2029 June, IGS/IACS/CliC, Oslo, Norway [Keith Alverson]
- 2030 IASC-SCAR Polar Summit Korea [Emilia Kyung-Jin]

Closing

The co-chairs thanked all participants for spending their Sunday at this meeting and encouraged everyone to contribute to and enjoy CliC's first ever Open Science Conference in Wellington the following week. Rob DeConto thanked Amy for her excellent leadership over the past few years and the SSG applauded soundly.