

CLIVAR/CliC/SCAR Southern Ocean Region Panel (SORP)

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Panel overview

The Southern Ocean Region Panel (SORP) is co-sponsored by the World Climate Research Programme's core projects the Climate and Ocean: Variability, Predictability and Change (CLIVAR) and the Climate and Cryosphere (CliC), and the Scientific Committee on Antarctic Research (SCAR). The SORP serves as a forum for the discussion and communication of scientific advances in the understanding of climate variability and change in the Southern Ocean. It advises CLIVAR, CliC, and SCAR on progress, achievements, new opportunities and impediments in internationally-coordinated Southern Ocean research.

The panel held its **14th business meeting (SORP-14)** online in October 2021, from which **three task teams emerged**. SORP members were actively involved in **(i)** shaping the initiative for a **Southern Ocean decade** as part of the UN Ocean Decade, **(ii)** contributing to the new **SOOS science plan**, **(iii)** co-organizing a **virtual workshop** on the Future Development of High- Resolution Ocean Modelling lead by OMDP (09/29–10/01/2021), **(iv)** co-editing a **special volume** in Frontiers in Marine Science on interbasin exchange between the Southern Ocean and South Atlantic, and **(v)** successfully submitted a **session** and contributes to the **SO Decade town hall** for the Ocean Sciences Meeting 2022.

Activities during 2021 were largely overshadowed by the COVID-19 pandemic. None of the workshops or meetings panel members originally planned for (incl. those postponed from 2020) took place. The decisions for continued cancellation was out of their hands, often national rules prohibited the prospect of productive meetings or kept panel members on the ground.

Achievements for 2020-2021

- Workshops and meetings
 - The SORP-14 business meeting followed a new online format including open discussion spaces and time for re-evaluation and planning. The meeting was spread over 4 days (October 6 & 7 and 13 & 14) with 2-hour long virtual conferences each at different times to allow members from various time zones to join. The panel intensely discussed its current state as well as future goals and connections to related groups, such as NORP, SOOS, OOPC and OMDP. From the meeting **3 task teams emerged**:
 - i. a group of 10 scientists (current and former SORP members) are creating a protocol and running first exemplary model experiments for a community-wide **Southern Ocean Freshwater** release experiment **Initiative (SOFIA)** focusing on a model intercomparison for the ocean and climate response to enhanced **freshwater release** from Antarctica. The group meets monthly; a draft protocol exists, and the first model experiments are being performed by several members

- ii. another team is working on a proposal for a **CLIVAR Exchanges issue** on Southern Ocean/Antarctic research from less developed programs/nations. The topic is their (lack of) networking opportunities and obstacles they encounter. At present, the abstract and online questionnaire for participation is being drafted.
- iii. members extensively discussed the possible use of unspent travel money during the ongoing pandemic to still **enhance scientific exchange and providing networking opportunities** with a focus on young researchers from countries with less developed Antarctic programs (e.g. “travelling lecturer fund” or network of coordinated, simultaneous but locally held hackatons).
 - o In addition, SORP is meeting every month by telecon for discussing both, business and scientific topics, and so are the newly formed task teams.
 - o Session at vEGU 2021: [OS1.7 Under cover: The Southern Ocean’s connection to sea ice and ice shelves](#)

- Scientific results from activities

SORP members co-edited a **special volume** in Frontiers in Marine Science on interbasin exchange between the Southern Ocean and South Atlantic

- Scientific capacity building and career support

The SOFIA task team includes some early career scientists involved in Southern Ocean modelling. To them, the team is a very active platform to learn about and discuss climate models, joint experiments and the role of freshwater in the Southern Ocean and climate system .

- Knowledge exchange

- o SORP members actively participated in the development of the action plan for the Southern Ocean as part of the United Nations Decade of Ocean Science for Sustainable Development. The Southern Ocean is one of nine ocean basins designated and endorsed by the UN for an individual action plan. As part of this effort coordinated by SCAR the Southern Ocean Task Force was set up to develop the Southern Ocean Action Plan. SORP worked with other members, many from affiliated committees (<https://www.sodecade.org/about/>) to create seven working groups aligned with the seven outcomes of the Ocean Decade (<https://www.sodecade.org/working-groups/>). These working groups identified research challenges, logistical and technical challenges and actions needed to address these challenges. These were presented in a public forum on Antarctica day (Dec 1, 2021). The plan is expected to be finalized by early next year. SORP members will continue to be involved in these activities.
- o Co-organized a **virtual workshop** on the Future Development of High- Resolution Ocean Modelling lead by OMDP (09/29–10/01/2021).
- o Contributed to the new **SOOS science plan**.
- o Co-edited a **special volume** in Frontiers in Marine Science on interbasin exchange between the Southern Ocean and South Atlantic

Plans for 2022 and beyond

- NORP/SORP co-organized workshop on fresh water sources, pathways and

- impacts (see Annex A)
- co-leading townhall meeting on Southern Ocean decade during OSM2022 (see Annex B)
- chairing Southern Ocean freshwater session at OSM2022
- compose a scientific paper reviewing Southern Ocean freshwater-release experiments and introducing SOFIA; apply for SOFIA to become an official CLIVAR task team
- remain involved in UN Ocean Decade efforts.
- run a CLIVAR Exchanges issue on research and diversity from less developed Antarctic programs

Articles published in 2020/21 as part of panel activities (if any)

none

Budget and other needs for 2022 (in CHF)

- **Budget**
We kindly ask for 6000 CHF to support for SORP members to attend the NORP-SORP freshwater workshop (including the expense of traveling, DSA, and registration fee for EGU), and the room and equipment fees for this on-site and hybrid workshop in Vienna (cost to be shared with NORP), and for SORP members to attend the Ocean Science Meeting 2022 (registration).
- **Other needs for 2022:**
 - We continue to appreciate the support of the CLIVAR ICPO. In 2022, we anticipate continuing the same draw on ICPO resources through administration such as minute-taking at teleconferences, use of Go-To-Meeting to host teleconferences, website updates, coordination of CLIVAR matters, and coordination with co-sponsors SCAR and CliC (e.g., for budgets and travel requests).
 - Beyond this helpful support, we learned from both, the recent Southern Ocean decade initiative and SOOS, the absolute central role of a full-time devoted administrative person in maintaining a network (of national reporters), coordinating meetings, populating a Twitter channel (or similar) and state-of-the-art web page and really carry panel actions forward. Supporting initiatives, for instance driven by early career scientists, which are welcome on the panel, going beyond participating in actions of other panels and groups, is beyond the time commitment most panel members are able to contribute. Is there a way forward improving the options of the region panels?

Annex A

Proforma for CLIVAR Panel requests for SSG approval for meetings

1. **Panel name:** Southern Ocean Region Panel / Northern Oceans Region Panel
2. **Title of meeting or workshop:** NORP-SORP workshop on polar fresh water (working title)
3. **Proposed venue (Or indicate if online):** Vienna, Austria (with hybrid option)
4. **Proposed dates:** April 2022
5. **Proposed attendees, including likely number:** 50-100 attendees; interested NORP and SOPR members; 5-10 invited speakers; open call to community incl. application process (if necessary)
6. **Rationale, motivation and justification, including: relevance to CLIVAR science & WCRP Strategic Plan and Lighthouse Activities, and any cross-panel/research foci links and interactions involved:** The workshop will enhance cross-panel activity in CLIVAR and CliC and bring together best knowledge from both polar regions. The anticipated outcome will help to improve our understanding of ice-ocean processes and model-based forecasts and projections on inter-annual to multi-decadal time scales and thus contribute to LHAs “Explaining and Predicting Earth System Change” as well as “Safe Landing Climates”.
7. **Specific objectives and key agenda items:** This workshop reaches out to observational, modeling, remote sensing and assimilation communities to gain a holistic picture of the role of freshwater and future evolution in the high latitudes. A key focus will be the linkage of the regional hydrological cycle, from source to export, and the dynamical impact on global ocean circulation. The discussion aims at making recommendations for critical model improvements to better represent the distribution of salinity and ice-ocean processes while assessing available, necessary and desirable observations.
8. **Anticipated outcomes (deliverables):**
 - Review of freshwater processes in northern and southern high latitudes
 - Recommendation for critical model improvements
 - List of key observations to monitor changes in FW budget
9. **Format:** Workshop, side meeting of EGU general assembly 2022
10. **Science Organizing Committee (if relevant):** Benjamin Rabe, Torge Martin, Karen Assmann, Tore Hattermann, Amy Solomon, Xiangdong Zhang
11. **Local Organizing Committee (if relevant):** t.b.a.
12. **Proposed funding sources and anticipated funding requested from WCRP:** SORP is co-sponsored by CLIVAR, CliC, and SCAR. SCAR supports member travel to meetings, targeted at early career members and members from countries with developing Antarctic research programs in general with USD 7000 until end of 2022. For all additional needs (travel for workshop organizing team to Vienna, room and equipment fees for this on-site and hybrid workshop) we request budget from CLIVAR.

Annex B

Proforma for CLIVAR Panel requests for SSG approval for meetings

1. **Panel name:** Southern Ocean Region Panel
2. **Title of meeting or workshop:** Defining the Future of the Southern Ocean – A Contribution to the United Nations Decade of Ocean Science (Town all at Ocean Science Meeting 2022)
3. **Proposed venue (Or indicate if online):** Online
4. **Proposed dates:** 24 February, 2022
5. **Proposed attendees, including likely number:** >20, including 4 SORP members
6. **Rationale, motivation and justification, including: relevance to CLIVAR science & WCRP Strategic Plan and Lighthouse Activities, and any cross-panel/research foci links and interactions involved:** The **Southern Ocean decade** is one of SORP's main task in 2022. This town hall will enhance the connection between CLIVAR and U.N. Decade of Ocean Science. The desired societal outcome “predicted ocean” is in line with the CLIVAR scientific plan.
7. **Specific objectives and key agenda items:** The objective of this Town Hall is to build on the progress made thus far and to engage scientists and stakeholders in a dialogue about the Southern Ocean Action Plan and to outline the next steps. A focus for the Town Hall will be to begin the process of developing a plan for implementing coordinated multi-national research programs to address the science gaps and questions identified in the Southern Ocean Action Plan. This is critical to designing a Southern Ocean contribution to the UN Decade of Ocean Science that will deliver “the ocean we need for the future we want”.
8. **Anticipated outcomes (deliverables):**
A report submitted to CLIVAR
9. **Format:** town hall of Ocean Science Meeting 2022
10. **Science Organizing Committee (if relevant):** Elisabeth Sikes (lead organizer of the town hall)
11. **Local Organizing Committee (if relevant):** nan
12. **Proposed funding sources and anticipated funding requested from WCRP:** Most of the members can use their own budget to pay for the registration fee of OSM. However, some members especially those from the developing countries don't have the budget. We would like to apply for 2380 (595\$*4) CHF for the members to attend the OSM, especially this town hall and the Southern Ocean freshwater session.

Note, in addition to the town hall meeting there is also a session at OSM2022 organized by SORP members on the SO freshwater budget including activities of the SO freshwater task team and initiative SOFIA.