CLIVAR/CliC/SCAR Southern Ocean Region Panel SORP

National activities report

Country Japan
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Receipt of material prior to 1 February 2019 will ensure inclusion discussions at the first SORP video conference for 2019. The reports contribute to future SORP discussions, as well as input to the SOOS and other CLIVAR/CliC/SCAR activities. All reports will be posted on the SORP website.

- Purpose of material gathered for the SORP:

To build an overview of observational, modeling, national projects and initiatives, ocean reanalysis and state estimation initiatives relevant to the SORP
(This can be detailed as a list of activities; maps showing where instruments have been or will be deployed; examples of modeling developments, experiments and set-ups; major national and international project involvement; etc.)

- Please refer to SORP's terms of reference (also given at the end of this template) for guidance on scope: http://www.clivar.org/clivar-panels/southern

Note: Biological topics such as marine ecology research, for example, are not within the scope of SORP's terms of reference and are therefore not required in these reports. However, SOOS has an interest in such research, so National Representatives are encouraged to include summaries of such research as separate sections.

Note: The Southern Ocean is not explicitly defined in SORP's terms of reference, so please note what the limit used for your national report is (e.g., research on regions only beyond an oceanographic boundary like "south of the Polar Front", or research contained within latitudinal limits like "south of 50 ℃").

Summary of National Activities

(Half page max. This section should include a succinct list of the main annual activities and breakthroughs as well as future plans (including any possible future opportunities for international collaboration)

A. Recent and ongoing activities

If your country has a national committee tasked with oversight of Southern Ocean climate science (e.g., like US CLIVAR), please give the name of the committee here:
None

Describe which major activities have been carried out in the last year or are in progress now. For each activity/project, provide a contact information (e.g., Principal Investigators and Associate Investigators), a website if available and a list of relevant publications.

1. Observational Activities
    a. JARE60 (Japanese Antarctic Research Expedition, https://www.nipr.ac.jp/english/antarctic/jare.html)
    Onboard icebreaker *Shirase* and based in *Showa* Station, the 60th expedition (Nov 2018 to Mar 2019) includes sea ice observation such as thickness measurements and core sampling (PI: Shuki Ushio, National Institute of Polar Research, ushio@nipr.ac.jp), several CTD's and mooring deployment/recovery off Cape Darnley (PI: Yoshiyuki Nakano, JAMSTEC, ynakano@jamstec.go.jp), and ROV experiments (PI: Haruhiko Kashiwase, NIPR, kashiwase.haruhiko@nipr.ac.jp).
    b. KARE22 (Kaiyodai Antarctic Research Expedition, https://ja-jp.facebook.com/KARE.umitaka.nankyoku/)
    Oceanographers mostly from Tokyo University of Marine Science & Technology conducted their 22nd expedition onboard R/V *Umitaka* (Jan 2019 to Feb 2019, PI: Masato Moteki, masato@kaiyodai.ac.jp) along the 110° E meridian of the Southern Ocean, including CTDs, mooring deployement/recovery, drifting buoy deployments.
    c. R/V *Hakuho* (blog at http://kh161mikehara.blogspot.com/)
    This is a collaborative cruise for paleo- and physical oceanography where both sediment sampling and mooring deployment/recovery along with CTDs were conducted (Jan 2019 to Feb 2019, PI: Minoru Ikehara, ikehara@kochi-u.ac.jp) around the coast of Caper Darnley
    d. R/V *Kaiyomaru* (blog at http://soccomatsea.blogspot.com/2018/12/jamstec-s4i-posts-from-dr-ellen-briggs.html)
    This multi-disciplinary cruise occupied the shelf region between 80° E and 150° E in the Indian Ocean sector (Dec 2018 to Mar 2019, PI: Hiroto Murase, National Research Institute of Far Seas Fisheries, muraseh@affrc.ac.jp). The oceanographic component includes more than 100 CTDs and more than 10 float deployments.

2. Modeling Activities

a. The Giant Researvoirs project (see 4b. below) has Climate Modeling Research Group (PI: Ayako Abe-Ouchi, University of Tokyo, abeouchi@aori.u-tokyo.ac.jp).

3. Ocean reanalysis and state estimation Activities

4. National and International Projects/Initiatives
   a. ROBOTICA (Research of Ocean-ice Boundary Interaction and Change around Antarctica, http://www.lowtem.hokudai.ac.jp/en/groups/acros.html) This is a core field programme of the phase IX of the Japanese Antarctic Research Project (2016-2022) and supports many expeditions. (PI: Shigeru Aoki, Hokkaido University, shigeru@lowtem.hokudai.ac.jp)

   b. Giant Reservoirs — Antarctic (http://grantarctic.jp/en)
   The multi-disciplenary project (2017-2021) funded by Grant-in-Aid for Scientific Research on Innovative Areas has Bottom Water Research Group and supports many cruises (PI: Kenji Kawamura, NIPR, kawamura@nipr.ac.jp)

B. Planned activities

List which major activities are planned or likely to occur during the next several years, together with a contact information (e.g., Principal Investigators and Associate Investigators).

1. Observational
    a. JARE 61 (Nov 2019 – Mar 2020)
    The cruise onboard icebreaker Shirase will spend a few weeks at Totten ice shelf to conduct physical oceanographic researches. Mooring recovery off Cape Darnley is also planned. A research expedition at Shirase-Langhovde Glaciers is also planned (PI: Shigeru Aoki, shigeru@lowtem.hokudai.ac.jp).
    b. KARE 23 (Dec 2019 – Feb 2020?)
    c. R/V *Mirai* cruise (http://www.go-ship.org/GO_SHIP_JAMSTEC_calling_MIRAI_I08N_I07S.pdf)
    R/V *Mirai* will conduct a full-depth eddy-resolving CTD observation along 57° E meridian from 28° S to the ice edge (Dec 2019 to Feb 2020, PI: Katsuro Katsumata, JAMSTEC, k.katsumata@jamstec.go.jp).

2. Modeling
    a. Quantifying human influence on ocean melting of the West Antarctic Ice Sheet
    The new UK-Japan collaboration (PI: Paul Holland, British Antarctic Survey and Satoshi Kimura, JAMSTEC, skimura@jamstec.go.jp) investigates the melting of WAIS using a new set of numerical simulations.

3. Ocean reanalysis and state estimation

4. National and International Projects/Initiatives
    a. ROBOTICA (2016-2022) see above A.4.a.
    b. Giant Researvoir — (2017-2021) see above A.4.b.

5. Opportunities for future international collaborations

CLIVAR/CliC/SCAR SORP terms of reference

(http://www.clivar.org/clivar-panels/southern)

"To serve as a forum for the discussion and communication of scientific advances in the understanding of climate variability and change in the Southern Ocean. To advise CLIVAR, CliC, and SCAR on progress, achievements, new opportunities and impediments in internationally-coordinated Southern Ocean research."

Specific Activities:

1. Facilitate progress in the development of tools and methods required to assess climate variability, climate change and climate predictability of the ocean-atmosphere-ice system in the Southern Ocean.
2. Identify opportunities and coordinated strategies to implement these methods, spanning observations, models, experiments, and process studies.
3. Provide scientific and technical input into international research coordination, collaborating as required with other relevant programs, including the Southern Ocean Observing System (SOOS).
4. Monitor and evaluate progress in Southern Ocean research, and identify gaps.
5. Enhance interaction between the meteorology, oceanography, cryosphere, geology, biogeochemistry and paleoclimate communities with an interest in the climate of the Southern Ocean.
6. Work with relevant agencies on the standardization, distribution and archiving of Southern Ocean observations.