

CLIVAR/CliC/SCAR Southern Ocean Region Panel SORP-11: Sept. 17-18, 2016

National activities report

Country Finland

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Date 12 September 2016

Receipt of material prior to Sept. 5, 2016 will ensure inclusion in meeting discussion. Receipt of material prior to Oct. 10, 2016 will ensure inclusion in meeting report and contribute to future SORP discussions, as well as input to the SOOS and other CLIVAR/CliC/SCAR activities.

Purpose of material gathered for the SORP: To build an overview of
- observational, modeling, state estimation initiatives relevant to the SORP

(This can include a list of activities, maps showing where work has been done, major international project involvement, etc.)

A. Recent and ongoing activities

Does your country have a national committee tasked with oversight of Southern Ocean climate science?

No.

What major activities have been carried out in the last several years or are in progress now? Contact information for the projects would be useful.

1. Observational?

- a. ANTLOAD project funded by the Academy of Finland. Contact Mikko Lensu, FMI <mikko.[lensu@fmi.fi](mailto:mikko.lensu@fmi.fi)>. EM ice thickness observations from SA Agulhas II.
- b. AMICO project funded by the Academy of Finland. Contact Timo Vihma, FMI <timo.vihma@fmi.fi>. These are mostly addressing atmosphere – sea ice interaction and marine meteorology in the Antarctic. Recent publications:
 - Hole, L. R., Bello, A., Roberts, T., Voss, P., and Vihma, T. (2016), Atmospheric Measurements by Controlled Meteorological Balloons in Coastal Areas of Antarctica, *Antarctic Science*, doi:10.1017/S0954102016000213.
 - Jonassen, M. O., P. Tisler, B. Altstädter, A. Scholtz, T. Vihma, A. Lampert, G. König-Langlo, C. Lüpkes (2015). Application of remotely piloted aircraft systems in observing the atmospheric boundary layer over Antarctic sea ice in winter. *Polar Res.*, 34, 25651, <http://dx.doi.org/10.3402/polar.v34.25651>.

2. Modeling?

- a. ANTLOAD project funded by the Academy of Finland. Contact Petteri Uotila, FMI <petteri.uotila@fmi.fi>. Relevant publications:
 - Lecomte, O., H. Goosse, T. Fichelet, P.R. Holland, P. Uotila, V. Zunz and N. Kimura, Contribution of surface wind biases to the wrong Antarctic sea ice concentration budget in climate models, *Ocean Modelling*, doi:10.1016/j.ocemod.2016.08.001, 2016.
 - Uotila, P., Iovino, D., Vancoppenolle, M., Lensu, M., and Rousset, C., On the influence of sea-ice physics in multi-decadal ocean-ice hindcasts, *Geosci. Model Dev. Discuss.*, doi:10.5194/gmd-2016-187, in review, 2016.
 - Bennetts, L., S. O'Farrell, P. Uotila, and V. Squire, An idealised wave-ice interaction model without subgrid spatial and temporal discretisations, *Annals Glaciol.*, 56(69), doi:10.3189/2015AoG69A599, 2015.
- b. AMICO project funded by the Academy of Finland. Contact Timo Vihma, FMI <timo.vihma@fmi.fi>. These are mostly addressing atmosphere – sea ice interaction and marine meteorology in the Antarctic. Recent publications:
 - Nygård, T., T. Vihma, G. Birnbaum, J. Hartmann, J. C. King, T. Lachlan-Cope, R. Ladkin, C. Lüpkes, and A. Weiss. Validation of eight atmospheric reanalyses in the Antarctic Peninsula region (2016). *Quart. J. Roy. Meteorol. Soc.*, 142: 684–692, January 2016 B DOI:10.1002/qj.2691.
 - Pezza, A., K. Sandler, P. Uotila, T. Vihma, M. Mesquita, and P. Reid (2016). Southern Hemisphere polar mesocyclones and explosive cyclones in high-resolution datasets. *Clim. Dyn.*, published online, DOI 10.1007/s00382-015-2925-2.
 - Zhang, Z., T. Vihma, A. Stössel, and P. Uotila (2015). The role of wind forcing from operational analyses for the model representation of Antarctic coastal sea ice. *Ocean Modelling*, 94, 95-111, <http://dx.doi.org/10.1016/j.ocemod.2015.07.019>.
 - Uotila, P., P. R. Holland, T. Vihma, S. J. Marsland, and N. Kimura (2014), Is realistic Antarctic sea ice extent in climate models the result of excessive ice drift?, *Ocean Modell.*, 79, 33-42, <http://dx.doi.org/10.1016/j.ocemod.2014.04.004>.
 - Valkonen, T., T. Vihma, M. Johansson, and J. Launiainen (2014). Atmosphere - sea ice interaction in early summer in the Antarctic: evaluation and challenges of a regional atmospheric model. *Q. J. R. Meteorol. Soc.*, 140: 1536–1551, DOI:10.1002/qj.2237.

3. State estimation? Participation in the CORE-II activities including the following publications:

- Downes, S.M., R. Farneti, P. Uotila, S.J. Marsland, S.M. Griffies, and all associated modellers, The evolution of Southern Ocean water masses in Coordinated Ocean-ice Reference Experiments phase II (CORE-II), *Ocean Modelling*, 94, 67-94, doi:10.1016/j.ocemod.2015.07.022, 2015.

- Farneti, R., P. Uotila and others, An assessment of Antarctic Circumpolar Current and Southern Ocean Meridional Overturning Circulation sensitivity during 1958-2007 in a suite of interannual CORE-II simulations, *Ocean Modelling*, 93, 84-120, doi:10.1016/j.ocemod.2015.07.009, 2015.

B. Planned activities

What major activities are planned or likely to occur during the next several years? Contact information for the projects would be useful.

1. Observational? Extensions for ANTLOAD, as ANTMODEL, and AMICO project funding periods have been applied from the Academy of Finland for 2017-2020.
2. Modeling? Extensions for ANTLOAD, as ANTMODEL, and AMICO project funding periods have been applied from the Academy of Finland for 2017-2020.
3. State estimation? Generation of a small set JRA based hindcast simulations with NEMO3.6 ocean-ice model at FMI.

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.