

Notes from YOPP-SH Telecon from 28 February 2018

1. Update from SOCRATES campaign (Greg McFarquhar)

- [SOCRATES](#) stands for Southern Ocean Clouds Radiation Aerosol Transport Experimental Study. It is a YOPP-endorsed project (<http://apps3.awi.de/YPP/pdf/stream/24>) which just had run its six week aircraft programme as funded by NSF from Hobart, Australia. The NCAR/NSF G-V aircraft was used to study the interaction of clouds, aerosols, precipitation and radiation in the Southern Ocean where climate and numerical weather prediction models still do a rather poor job, in particular when it comes to solar radiation.
- The campaign was successfully completed three days ago (25 February) and involved 15 flights with 117 hours of data. It reached out as far as 62°S (about 400 miles from the Antarctic Coast)
- Together with another programme ([CAPRICORN](#)), co-located measurements were carried out with multiple passes of the G-V aircraft (e.g., three times over R.V. Investigator and twice over Macquarie Island) so that there will be data available from multiple perspectives
- Conditions were very good for the work as there was no big air traffic over the Southern Ocean

First findings

- Very clean atmosphere above clouds with mostly small, few larger aerosol particles
- 500 ft over the ocean surface, lots of sea salt could be detected when wind speeds were high
- Frequent supercooled liquid water was sampled down to -33°C
- liquid water was typically in multiple, very thin layers (not seen in the models)
- Small-scale generators of ice crystals (?) seen at cloud top. Few ice nucleating particles (INP) were detected.

Next steps and questions/comments

- Quality control of data (will likely be available in a year from now)
- the variance of cloud droplet concentration needs to be better understood (sometimes low, sometimes high, seems to be somewhat correlated to wind speed but probably more complicated story)
- high-resolution models are being used (WRF and fine-scale models)
- AMPS should be covering entire campaign area (DB comment)
- **Action item Greg McFarquhar: Provide Jordan Powers and other people interested with the link to the SOCRATES archive**
- Biogenic material produce aerosols? not clear yet but data will be available at some point to have a better idea
- There will be special sessions at EGU with regards to these campaigns
- should also be coordinated with [AWARE](#) project (also YOPP-endorsed) from Antarctic

Additional

- Parallel to SOCRATES, four voyages from Hobart to the Australian Antarctic bases by the YOPP-endorsed [MARCUS](#) (Measurements of Aerosols Radiation and CloUds over

the Southern Oceans) experiments were carried out with the installation of the DOE ARM mobile facility aboard Aurora Australis. The data looks good.

2. Observational Commitments for YOPP-SH SOP, primarily additional radiosondes. Need an updated list.

- Some emails in advance to the telco gave updates
- Attached to this email is a list of current planning on extra radiosondes.
- **Action Item ALL:** Please have a look and add your plans (both confirmed and under discussion) to that list (then get back to David and Kirstin).
- This information will eventually be shared via the YOPP Observations Layer (kml file to be opened with e.g. Google Earth, download [here](#)). This kml file contains all extra measurements currently known by ICO with regards to
 - extra radiosonde launches
 - buoy deployments
 - automatic weather stations
 - aircraft campaigns
 - still missing: measurements on vessels
 - **Action ICO:** For a better overview also on additional measurements not listed above, the ICO can offer to implement another category entitled 'Miscellaneous' to the YOPP Observations Layer.
 - **Action ALL:** In order to do so, please provide the ICO with additional measurements to be carried out during the Antarctic SOP.
- Vito Vitale mentioned they will try to find additional resources for extra measurements from the Italian stations. They'll know more around Easter. Italian extra radiosondes will be launched for the entire duration of the Special Observing Period (SOP) in the Southern Hemisphere. Many other things are still unsure.

Reporting to other groups:

- David Bromwich is going to report on YOPP-SH extra measurements during SOP-SH at two [COMNAP](#) meetings in summer where he will need to present details on planned SOP activities. The more complete information is available for the discussion with COMNAP, the greater is the chance for logistical support.

3. Modeling commitments for YOPP-SH SOP

- Jordan Powers and David Bromwich (DB) recently submitted a proposal to NSF with a focus on the YOPP-SH SOP. In that project, observations from the SOP will be used to evaluate their forecast impact in the Antarctic Mesoscale Prediction System (AMPS). This will be done by two data assimilation techniques in order to see which approach results in the greatest forecast improvement as a result of the extra observations during the SOP. A decision by NSF will hopefully be available by summer (June-August). The work will not only include data denial experiments but also will have a lasting value for AMPS and the PPP/YOPP community with implementation of a more advanced Data Assimilation approach.

- Question Helge Goessling (HG): Are there any discussion with regard to data denial studies ongoing with operational centers such as ECMWF? DB response: So far, focus has been on submitting the proposal but next steps should involve discussions with ECMWF but also NCEP etc.
- Comment Bob Grumbine (from NCEP, BG): There is no chance of running the entire operation in parallel but it will rather be reduced-resolution paired data-denial experiments. It has to be elaborated how much the resolution can be reduced but will still be useful for people to examine the effects.
- Comment DB: Most of the work within the AMPS proposal will be done, retrospectively, as there is no need to do it in real time.
- Comment BG: NCEP likes to rather do real time as retrospective analysis would be harder to do.
- Comment HG: What is the global context when running AMPS as a limited area?
- Comment Jordan Powers: Special techniques will be used with AMPS data assimilation experiments to minimize the impact of SOP observations assimilated into the NCEP GFS global that provides the lateral boundary and initial conditions for AMPS.
- Comment DB: The French colleagues might do some kind of data denial experiments with their stretched grid global model. This is something to follow up as now is really the time to talk about data denial experiments.
- **Action Kirstin:** Make a note to discuss ‘coordination of YOPP-SH data denial experiments’ at the PPP-SG#09 meeting in March in Iceland

4. Update on drifting buoy deployments for YOPP-SH

Report from Ignatius Rigor (IR)

- a ppt is available from Ignatius Rigor [here](#)
 - Here is rough PPT of drifting buoy deployments planned for 2017/2018 by collaborators in the International Programme for Antarctic Buoys. Slide 1 has most of the details. Slide 2 shows most of what is out there on the WMO/IOC GTS right now. Some of the buoys deployed by the Polarstern are not showing up on the GTS yet, but we will fix that. We are hoping to be able to deploy a similar spread of buoys during YOPP-SH, but may not be able to get many more deployments between the upcoming close of the deployment season and Nov. 2018.
- Another 20 buoys are probably in the water during the next week or two, most of these will probably drift northwards from the Amundsen Sea (?)
- the small buoys transmit their data (pressure, temperature from an uncertain location, might be ice, water, or air depending on location and circumstances) to GTS
- Hopefully during the SOP, we’ll do something similar with getting another 100 buoys deployed.
- RV Agulhas does not have any buoys currently, so it is unclear whether there will be deployments from these vessels.
- From RV Aurora Australis, there will probably be 10 to 12 buoys deployed.

- IR: RV Palmer will likely have a similar track next year and deploy buoys in the Amundsen Sea. Typically, they deploy around 20 buoys in December and another 20 buoys around now (February/March) when heading towards Punta Arenas.
- How quick do buoys move away from the coast? Once these buoys are in the Ross Sea they get out quickly, within ca 6 to 9 months.
- HG: Will many of these buoys be crushed by ice? Ca 50 % of the buoys are surviving. However, because drogues must be attached more will be lost in sea ice.

5. Update on oceanographic investigations/cruise for YOPP-SH (Lynne Talley, LT)

OOISO Mooring

- Good News!: the OOI (Ocean Observatories Initiative) Southern Ocean air-sea flux mooring is in place.
- two reasons
 - they had difficulties to recover the mooring so had to abandon it so that it sent out air-sea-flux data through last December
 - There was an opportunity of Woods Hole WHOI who deploy and recover moorings to join with UK NERC so the instrument can further stay in the water.
- It was probably also the YOPP group who had pushed some more pressure on that. Thanks go to Bob Weller and NSF.
- Another contact who knows what instrumentation will stay during the SOP is Sarah Gille.
- Matt Mazzloff confirms that the OOISO flux data is now on the GTS.

Argo floats

- LT shows map of current Argo floats (deployed from September to March) from those many are already in the water but 15 more under-ice Argos are going to be deployed in the Ross Sea to profile under ice conditions. The system works as the Argos (indicated by the dots in the map) go down for sampling, come back up to surface and then transmit data to satellites.
- Another map shown by Lynne indicate Argos on a global JCOMMOPS map
- **Action Lynne: Please send plots to Dave and Kirstin.**

6. Miscellaneous

- **Action ICO: to look into the upper data limit to be sent through the newly established YOPP-SH mailing list:** Done. We increased the limit and are now allowed to send emails with up to 1 MB. Emails with larger content won't be sent through. Therefore, we would like to ask everyone to keep you email short and/or share files via dropbox (or similar) and send a link to the file. In case, you do not have dropbox, please send me the file via office@polarprediction.net and we are happy to save it under dropbox and share the link with everyone.
- For the next online meetings, please see also Kirstin's earlier email. We'll have another telecon on March 27, 3-4 pm (UTC+2) and are currently trying to find a time the same day but later to accommodate meeting with people from NZ/AUS/Asia.

- **Action ALL:** Please use the doodle link at <https://doodle.com/poll/79t5udyruX6hd6yi> for finding 2nd time to accommodate colleagues from NZ/AUS/Asia for a telecon on March 27/28 (Europeans are probably out here)

- On March 27, we'll have
 - update by SiriJodha Khalsa who just joined the PPP Steering Group on the YOPP Data Portal
 - François Massonnet will provide an update on SIPN South
 - Unfortunately, Daniela Liggett won't be able to join to talk about PPP-SERA (but she is coming to the YOPP-SH#03 meeting in Madison)

- Please do not forget to register for the YOPP-SH#03 meeting in Madison, Wisconsin, USA, that will be held on July 19th. Here is the link for more information:
<http://www.polarprediction.net/news/#c14375> (meeting website can be found at <http://amrc.ssec.wisc.edu/meetings/meeting2018/>)