

**YOPP-SH, Session 1, July 28, 2021, 1500-1600 UTC, 9-10 am Eastern Daylight Time (EDT) in U.S. via Webex.**

**Present:** Anatasiia Chyhareva, Katharina Kirchhoff, Nadine Hillenbrand, Thomas Hasiweder, Eric Bazile, Sergi Gonzalez, Sang-Jong Park, Jun Inoue, Jorge Carrasco, Raul Cordero, Jordan Powers, David Bromwich

**Apologies:** Kirstin Werner, Naohiko Hirasawa, Clare Eayrs, Matthew Lazzara.

**Overarching Topic: Forecast Teams for the Targeted Observing Periods (TOPs) in winter 2022.**

Discussed the draft figure showing the distribution of proposed radiosondes during TOPs based on the online YOPP-SH meeting in June 2021. **See at end of the minutes.**

**Anatasiia:** advised that contrary to the draft figure Vernadsky plans to conduct 1 regular radiosonde release per day (launch time still to be decided) and one additional during the TOPs.

**David:** noted that the spatial distribution suggests three areas of emphasis, the Antarctic Peninsula, East Antarctica (perhaps Neumayer to Casey), and the greater Ross Sea. He noted that there is no plan yet to get additional radiosondes from South America, such as Punta Arenas although a proposal has been submitted to obtain the necessary funds. That is, there is no additional upstream information for the Antarctic Peninsula so far.

David also noted that it might be desirable to see whether our Australian colleagues could go to 4 times per day at Macquarie Island and Hobart to get a greater forecast impact. The greater Ross Sea has the best chance to see forecast improvement because of the additional midlatitude observations

**Eric:** He noted that there were two broad topics: forecast improvement and forecast validation.

Forecast sensitivity (based on singular vectors) should be established for broad areas. Can then see for which upstream areas would be most valuable to have additional radiosonde observations and perhaps motivate those stations to collect those data. (Macquarie and Hobart for example). MeteoFrance already has this capability available for the Southern Hemisphere and will make the output available to the YOPP-SH community.

**Sergi:** Talked about spread of forecasts (from ensembles) as another way to gauge the uncertainty of the forecasts. Spain has already established a high-resolution limited area ensemble prediction system for the Antarctic Peninsula. This would be challenging to establish such a capability for other regions or for all of Antarctica based on the global model forecasts.

ECMWF has limited arrangements for research use of their real-time forecasts. As a place to start, the spread for ERA5 (reanalysis) forecasts would be straightforward to obtain although they may only be for short periods.

The YOPP project already has a relationship with ECMWF and this might be leveraged for YOPP-SH. Spain already has access to ECMWF forecasts and a dashboard display for meteograms with ensemble spread information added.

**David:** noted that windy.com was a good open access site to get forecasts from ECMWF, NCEP, and ICON for anywhere on the globe including Antarctica. There are some interesting differences between ECMWF and NCEP regarding the simulated katabatic wind behavior over the Ross Ice Shelf and Ross Sea. ECMWF looks much more realistic. Must be related to the differing planetary boundary layer schemes. AMPS produces realistic katabatic winds.

**Forecasting Team for the greater Ross Sea:** Just getting spun up now. Hope to stage a dry run for TOPs over the weeks of August 2, 9, and 16 to coincide with the Windfly effort at McMurdo station where 4 C-17 flights are scheduled for the early opening of the U.S. Antarctic Program field season. The focus will be on major cyclones and atmospheric rivers. The AMPS system will be in back-up mode week of August 2, unfortunately. For the atmospheric river application, AMPS does have an integrated water vapor transport product on the 24-km grid.

**Irina Gorodetskaya** will be joining the second session to talk about forecast team for the Antarctic Peninsula and the dry run for the TOPs now scheduled for September.

**Jorge:** Wondered how the national weather services, especially for the Antarctic Peninsula, could be involved in the TOPs. They issue regular forecasts for many sites including for aircraft operations and will be the beneficiary of improved forecasts results from the TOPs. In a positive way, can it be determined how good their forecasts are and provide suggestions how to improve them? Jorge thinks he might be able to get the forecasts directly from the Chile and Argentina Weather Services. He will look into the feasibility of this.

**David:** Hope to hold monthly meetings to continue advancing the forecast teams and will be sending out minutes to keep everyone informed.

**YOPP-SH, Session 2, July 28, 2021, 2100- 2230 UTC nominally, 5-6:30 pm EDT via Zoom.**

**Present:** David Bromwich, Jeff Wilson, Adriana Gulisano, Yanaina Garcia Skabar, Penny Rowe, Anatasiiia Chyhareva, Irina Gorodetskaya, Victoria Heinrich, Seong-Joong Kim, Vito Vitale, Simon Alexander, Matthew Mazloff, Paolo Rodriguez, Dave Mikolajczyk, Denis Pishniak, Raul Cordero.

**Apologies** – Daniela Liggett

**Thanks to Jeff Wilson for these minutes. He was backed up by Jerry Zou.**

**After a brief round of introductions by everyone present, the focus was on:**

**Plans for Forecasting Team for the Peninsula – led by Irina.**

Follow-on from discussions at the Antarctic Workshop in June. Irina is running a little late in sending details out on the dry run, now planned for September. We will look at the past season for Atmospheric River events to identify number, precipitation intensity and transition from rain to snow. Use the ERA5 reanalysis. Everyone expected to look at their fields of interest on the same event. In doing so we can then test the forecast systems and see how the interests of the various parties overlap. IG to send around a Doodle poll. Will use AMPS and Spanish EPS at the regional scale and ERA5/IFS at the global scale.

**David:** there is an IVT product on 24km resolution grid from AMPS and the forecasts go out for 5 days.

**Irina:** Yes, we have some experience with this product and expect to use it.

**Vito:** Will there be separate forecast teams for the Peninsula and Ross Sea-East Antarctica?

**David** -yes

**Vito:** Would like to make a list of potential contributors who could be involved in activities around the Peninsula for the trial. This will help identify the list of products, etc., as per Irina's suggestion

**Irina:** We already have a list of participants for the peninsula

**Simon Alexander:** Offers to provide help from the East Antarctic side

**Irina:** In the email to come out I am going to ask participants to be really specific on their own interests and to review the past season to identify the events that they would have been interested in. So out of this they wish to know when people would have launched sondes, etc., for their events so we can see if it will help out other activities. By September we should know whether funds have been allocated for sondes and observation programs in 2022. This is different to a dry run as it attempts to tease out the various interests people have. The Doodle will help get a date for the first half of September

**Anatasiia:** Will we also be trying to sort out forecasting issues, i.e., is it just about analysis or can we look at other contributions?

**Irina:** The dry run is to work out whether we would want to launch sondes etc based upon the forecasts and then see whether others would want to have sondes for the same times etc. Also how frequent are the various phenomena in the last season. We can then select some specific events and review them in detail and look at the coordination across the different sites. What protocols will we use for each event?

**Paola Imazio:** There will be some conditions in which we cannot launch sondes due to OH&S issues. Happy to do the analysis but as we are chasing tropopause folding which is rare we need to do many launches to capture.

**Adriana:** We need to watch the surface conditions for the launches, we can try to assist with all but the safety of the observers is paramount. Three days forecast into the future are not great for the Antarctic Peninsula.

**David:** Shows map of the Antarctic with the potential radiosonde launch sites (at end of the minutes). Due to the low number of sites, he thinks we may need to try to launch from most sites for all events to get the wider coverage, being cognizant of the safety issues. David anticipates that all possible radiosondes may be needed for the AR events

**Penny:** Most of our observations (lidar, for example) run all the time so it does not matter

**David:** Agreed, but we need to make the most of the additional sondes as they are limited.

**Penny:** We may need to do some horse trading of events to ensure that we get the details on at least one event that we need.

**Irina:** By looking at one or two events in detail we should be able to look at what we can trade between us. It is also about trying to determine if there is a small number of events that could address everyone's concern and priorities. Pick one or events, how to measure them inside and out from different aspects. Upstream, downstream, from different locations. Then we can get a full profile. The goal is the same, improve the forecasts, especially for extreme events.

**Vito:** We need to determine which are the most important processes or conditions that we are all interested in. Vito wants the list first and then looking at the past season whilst Irina wants to do it the other way around.

**David:** Irina to circulate her document first but it seems that a teleconference of those interested could occur in the near term to look at how to proceed.

### **East Antarctica / Ross Sea plans**

**David:** Provides a briefing of the plans for the Ross Sea /East Antarctica based on the radiosonde flights. A test will occur starting on Monday August 2 based around the WindFly flights that go into McMurdo from New Zealand for a few weeks to kick start activities for the coming summer. Dave, Matt Lazzarra, and the AMPS team under Jordan Powers will be working on this in conjunction with Art Cayette and colleagues from NIWC (Forecasters responsible for U.S. Antarctic Program weather forecasts). Eric Bazile from MeteoFrance has a tool that shows the impact of forecast uncertainty as a function of lead time. Vito will engage some Italian colleagues in this exercise, and he will advise David of their names and contact details. The focus will be on the forecast discussion and how to best use the available tools. It is about whether would we call a TOP and when would it start, and end based upon the forecast information to hand. The focus will be on the eastern side of the East Antarctica and the Ross Sea. It is anticipated there will be something similar on the Australian side of East Antarctica when all key personnel are available.

Here is the video recording of the lively second session if anyone is interested in the details. We believe this is open access.

[https://osu.zoom.us/rec/share/j-DL3lx8hOmSiRM0w0gc9y1lSj4AxyXhrytPP8Mkv0QFq1bctuaUxNCUYmK7y7ck.ih9w9a\\_3mPOZ8MF](https://osu.zoom.us/rec/share/j-DL3lx8hOmSiRM0w0gc9y1lSj4AxyXhrytPP8Mkv0QFq1bctuaUxNCUYmK7y7ck.ih9w9a_3mPOZ8MF)

**Next YOPP-SH session in about 1 month from now.**

# YOPP-SH Radiosonde Sites (Winter TOPs)

