

YOPP-SH Online Sessions, May 27, 2021. Session 1: 1 pm UTC (9am EDT). Session 2: 9 pm UTC (5 pm EDT)

Session 1

Attendees: *David Bromwich, Anastasiia Chyhareva, Tom Lachlan-Cope, Sang-Jong Park, Adriana Maria Gulisano, Vicki Heinrich, Patrick Hansen, Raul Cordero, Steve Colwell, Clare Eayrs, Denis Pishniak, Eric Bazile, Yanina Garcia Skabar, Yonghan Choi, Bob Grumbine, Jun Inoue, Stefanie Arndt, Jordan Powers, Sergi Gonzalez, Duran-Aarcon Claudio, Irina Gorodetskaya, Paola Imazio*

Updates:

July 8: Request from BAMS for follow-up to our electronic version of the YOPP-SH paper. This will be a shortened version that will appear in hard copy. Many of you provided valuable input. Thanks! Publication is expected very soon. Good publicity for the YOPP-SH effort.

Social Science Research for the TOPs. Vicki Heinrich.

Rough plan at the moment, last meeting, Dave mentioned possibility to do social science project for Antarctic winter SOP. Vicki was interested. Naturally stick with decision making, go no-go decisions whether to go ahead with extra balloon flights. Look at how they make their decisions. Depends also on research question. Survey, interview, focus group at beginning and end, not clear at the moment.

Bob Grumbine is extremely interested in the results, not so much to do interviewing. Working with NOAA Arctic Group with intent of collecting decisions of people. Developing a matrix that allow modellers to represent user decisions. Bob interested in go no-go decisions. Considerations on Arctic resupply timelines, lead time can be long, keep lead time on the table. If forecast good for three or four months, what will your decision be?

Vicki not sure that lead times in Antarctica are as great as in the Arctic (actually 5-7 days max.) but definitely lead time is to something look at. Also, look at buoys released at the same time.

Bob: Where do we want to freeze ship in the ice during MOSAiC was one question but another question: when and where do we want to purchase satellite imagery? Time scale for the latter was days.

Vicki agrees, that could also be the kind of information to collect.

Dave: Seems Bob and Vicki are willing to work together. Sure, Vicki can use encouragement and assistance where needed. Bob happy to provide assistance. Vicki, this is a very challenging thing to do, decision making will be important part of this exercise. Not many events to be targeted.

Vicki: look at how confident are people in making decisions.

Kirstin suggests to also get into contact with Scott Carpentier from the Bureau of Meteorology.

Preparations for the online YOPP-SH meeting in late June.

Deadline extended to 7 June 2021. Mon 31st is the Memorial Day holiday in the U.S. Plus, the AMS Polar Meteorology and Oceanography conference online next week maybe too much of a conflict. Please register by 7 June. People who want to submit extended abstracts, similar to conference paper, we are going to accommodate, deadline 14 May. Will send instructions around. Merge everything hopefully shortly after the meeting.

YOPP-SH 24-25 June online. Not very many abstracts submitted so far. Morning US session (11 am-1:30 pm EDT), evening (5-7:30 pm EDT), one is Friday evening that will probably not be used.

Suggestion by Steve to discuss results from summer Antarctic SOP.

Eric: sent abstract for YOPP-SH meeting, Experiments on impact of increased sounding data. Hopes to show impact of the sea ice model, not sure if enough time to prepare the results.

David's group has submitted abstracts. How about the atmospheric river group?

Irina: abstracts from YOPP meeting will be submitted on summer SOP results. Are there plans for presentations for winter plans?

David: waiting until May 31st to decide on content, but now deadline extended to June 7th. Will send around a draft program then for comment. When send abstract, specify preference session for presentation.

Irina: Question on specific session on YOPP Winter Planning.

David: Good idea to have a session on that. With people across the world there is a challenge, we have 2 sessions a day and it might not be convenient for everybody to meet at one time.

Irina: helpful for planning to go back to nation's presentations in Boulder meeting.

David: good idea to put presentations online with author(s) consent.

Tom Lachlan-Cope: Do you want us to submit an abstract on that?

David: Yes, that would be very helpful. If there is a delay in your abstract submission, we can incorporate these abstracts later.

Paolo Imazio from Argentina has sent abstract already concerning polar low simulations in comparison to soundings from Marambio.

Dave: two different things: results from what you have been doing and one about the future plans.

Eric: Plans for FSO?

David: Yes let's plan to talk about FSO. Also, are you able to do this?

Eric: Think for operational system, we have this kind of output but afraid there is no specific output for the Southern Hemisphere. Can ask if it's difficult. Eric knows the people to ask.

Eric about forecasts: Can provide 10-days forecasts from Arpege (their global model) in grib format on an ftp site. Will include precipitable water. Might be able to include FSO depending on what inquiries reveal.

Discussion of midlatitude radiosondes for TOPs

Additional information from mid latitudes: any of the Southern Ocean islands, Punta Arenas area. To see development, you really need upstream information as well as Antarctic information. Would include drifting buoys. If possible, for additional observations from the oceans/ship/buoys, they would be useful to enhance forecasts. Can countries contribute to this? Punta Arenas is an important site for the Antarctic Peninsula and Weddell Sea region.

Update on Forecasting Teams

Irina: prepared several slides for discussion on forecast capabilities. Slides with some ideas and get feedback from you. Slide 1 is reminder of what is happening. Just to show you that based on recent publications, trends of temperature and relevant regions. Warming at Vernadsky shows the strongest change.

Slide 2: winter YOPP TOP stations shown, is that useful? Common points of collaboration? Limited amount of extra radiosondes. Help coordinate for forecast on peninsula but not all covered here. Contact Irina if your station is missing. Still good coverage, especially for peninsula. Neumayer and Esperanza unclear, maybe added later.

Slide 3 overview how stations can be involved. Impact on four stations, showing radiosondes during winter YOPP.

Slide 4, plot showing PA and KGI; hoping that during YOPP workshop added value will be discussed. More instruments have been added since. Which instruments will be used for winter TOP?

Last slide: how best to address region-wise. Please add information, there is still information missing. Please add to white paper online.

Your opinion: what about a dry run? To simulate a TOP event during 3 days. Work on communication with the stations, what are the lead times, identify gaps etc. focus on Antarctic Peninsula here. We have to start focusing on small region to bring together knowledge and planning.

David: more to say about forecasting plans/capacity?

Irina: this is information we have been gathering. Large scale forecast GFS/IFS, windy.com could be used to choose our own area.

David and Jordan will discuss about the AMPS system offline. David still working to get NSF on board.

Eric: what do you mean by dry run?

Irina: simulation of measurements without measurements. As if you are planning extra radiosondes. No specific measurements. To test how does it work, how it simulates measurements.

David: hopes that everybody can tell about their plans during TOPs.

Irina plans to join second session, so other group sees the slides. Irina asks for everybody to tell whether they like to participate in the dry run, and comments about map, is it useful?

Input from others:

Tom Lachlan Cope: no observations of aerosols next winter, no TOP participation. Could take part in dry run from a planning point of view.

Adriana: working on participation.

Clare: could be interesting what Vicki is producing. Informs YOPP-SH folks there is no Polar Prediction School but at YOPP- Final Summit.

Raul: working with Irina on Chilean contribution to YOPP-SH winter SOP.

Stefanie: nothing to add, just came back from Antarctica in April. AWI field season will be difficult in Weddell Sea next year, not a lot of expeditions.

Yanina: Good idea about a dry run. Working with Adriana and Paola.

Yonghan Choi: working on participation.

Session 2

Attendees: *Jeff Wilson, David Bromwich, Seong-Joong Kim, Vito Vitale, Matthew Lazzara Daniela Liggett, Penny Rowe, Victoria Heinrich, Irina Gorodetskaya, Inga Smith*

Seong-Joong Kim: will double the current radiosonde launches for the SOP and work with the Italians. They are already moving sondes to Antarctica. During the SOP they will also launch sondes from King Sejong. They would like to work with others in the King George Island area,

Penny Rowe: Chile will be launching sondes from King George Island. Irina got funding for atmospheric rivers (AR) impacting King George Island with sondes with total water sensors. Penny still waiting to hear the results from her grant application. They have coordinated with Korea in the past and one group did the mornings and the other the evenings to get two a day.

Vito: You need to upgrade the receiving system of Vaisala to use the total liquid water sensors but the Chileans have a different manufacturer.

David reviews session 1.

BAMS will have a compressed hardcopy write up of the SH article. David will circulate the electronic version of the Hard copy when he gets it.

Social Science research during the TOP

Vicki Heinrich: Outlines her idea for a social science investigation around the TOP about the No-go decisions and shipping etc. Looking at naturalistic decision making, using cognitive task analysis. Looking at how they get to the final decision and how confident they are about the decision. Also then looking back at the decision. Also look at where people get information. Need the researchers and forecasters to opt in as it will take some of their time.

Matthew – what sort of time requirement will it be?

Vicki – perhaps 5 to 10 minutes/event. Will require emails. Could require group meetings before and after the SOP to brief/debrief.

Matthew- great and very supportive

Daniela – she has a PhD student interested in doing something similar for use of Met data for tourism. Daniela to put her student in contact with Vicki.

Vito – what is the main target? Is it the evolution of the process as we go along (refinement of the process) or is it to outline the steps/process itself?

Vicki – both. Whilst the forecasters are trained to do forecasts it will be affirming that training but it also looks at the quality and confidence of the decision. Vicki clarifies the social science part is about the psychological aspect of the decision making.

Daniela – there is a very active social science activity in the Antarctic. SCAR has a team looking at social sciences in the Antarctic. Daniela would be very interested in working with others in Korea if Seong-Jeong has contacts.

Matthew – who will be looking at the ethics considerations?

Vicki – I will be putting this through the University of Tasmania ethics committee. The main issue may be around the identification of people as the teams are small.

Daniela – the lead researcher determines which jurisdiction looks at the ethics.

Irina – I would be interested in finding out more about what the research is looking at. I now understand more about the concept. In her case there will be a mixed group of people from military and scientists. This could look at human behaviour in extreme conditions.

Vicki – we can discuss further offline as this would be getting a much bigger scope that she can deal with at the moment. Vicki's supervisor specializes in this area and may have some MSc students willing to assist.

Vito: This (living in extreme conditions) has been done in other areas before and we should review this literature

David – It seems like this topic has generated a lot of interest and Vicki will continue to work it.

YOPP-SH meeting in late June

David – registration extended to June 7, there is interest in having extended abstracts based on the AMS format. David will circulate an example from Matthew. Deadline of June 14 for abstracts. David will also circulate a list of people who have registered.

David – it will be two five-hour days for the YOPP-SH meeting.

David – Eric Bazile will talk about his experience in analysing data from the summer SOP as will others such as the AMPS group and Iriina. David would like to see the countries make contributions of their plans for the SOP/TOP. David could do the US summary or Matthew could do it. Matthew will talk about the AWS and we would like to formally see the US will launch sondes from McMurdo.

Penny can do the Chile description if Raul cannot do it. Dave will confirm with Raul.

Eric Bazile wants to talk about the FSO's (it is the back tracking of events to see where the sensitive geographic areas are). This will be using ARPEGE and Dave's group will be using AMPS.

Vito – can Dave provide a summary of what will be covered during the YOPP-SH meeting so he can encourage people from Italy to attend? Vito will do a summary of what Italy is

planning to do. He has a very detailed grant application lodged. He is more concerned about how to engage more Italians during the YOPP-SH workshop and so a summary of what will be presented will help him. Getting Italians more involved in this meeting will help in the longer term YOPP-SOP engagement.

David – They have been looking at the Workshop on Antarctic Meteorology and Climate (WAMC) submissions to see what is also relevant for YOPP-SH.

Matt – Can we have a session on the Antarctic Data Centre during the YOPP-SH as US, UK and New Zealand interested? We may be able to give some talks twice at WAMC.

David – the sessions will be in the morning and evening US time, 11:00 AM to 1:30 pm EDT and 5 to 7:30 pm EDT every day for both WAMC and YOPP. (1500-1730 UTC and 2100-2330 UTC). There are many difficulties in doing this virtually due to time zones and using day staff from the Byrd Center. Sessions will be recorded and put online if the authors agree. Vito would like to see the afternoon session is a bit later by an hour.

Seong-Joong – Can we use pre-recorded presentations for the WAMC?

David – Francois Massonnet gave a pre-recorded talk previously which worked out pretty well

YOPP-SOP

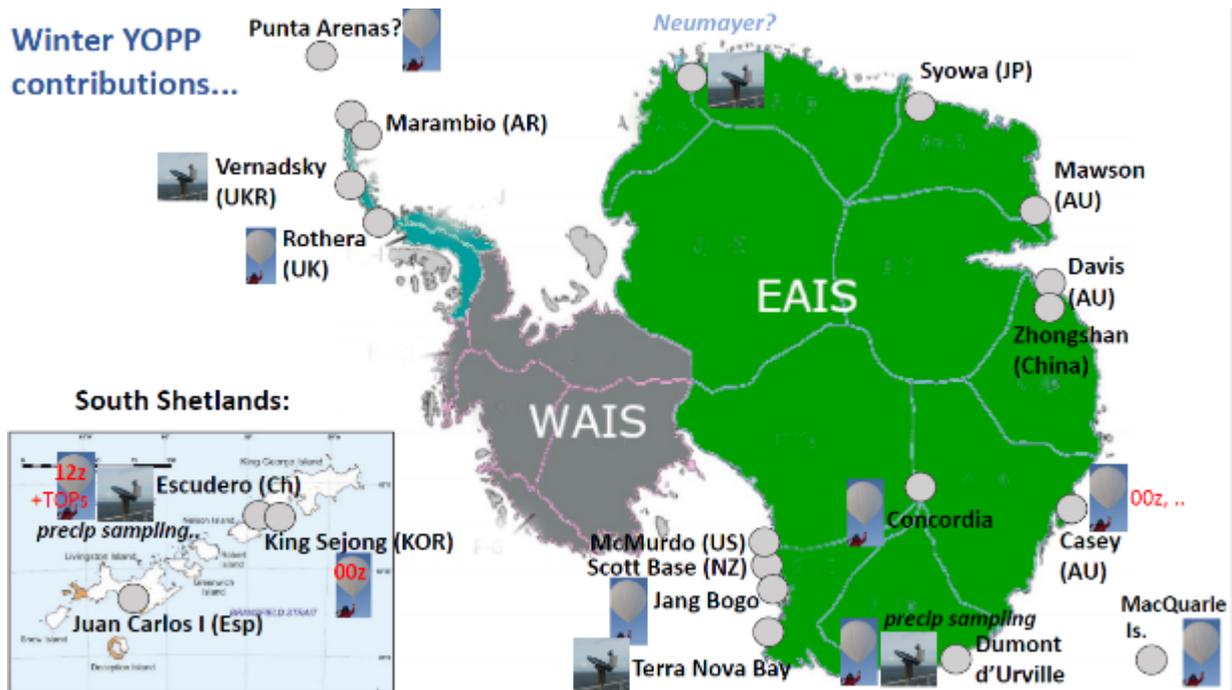
David – we will need extra mid-latitude radiosondes for the SOP from upstream synoptic stations. Would like extra flights from Hobart and Perth and Punta Arenas. Vicki will investigate internally within BoM.

Vicki – will the flights be at off times or will they be standard 00, 06, 12 18 UTC flights? There should be extra flights from Davis for the runway research. Australia data collection locations: <http://www.bom.gov.au/climate/data/acorn-sat/#tabs=Data-and-networks>
The map on this site: <http://slash.dotat.org/atmos/info.html> I think is mostly accurate for Australia. Some locations do only one or two balloons a week, some daily flights. Or http://amrc.ssec.wisc.edu/aws/documents/2020_AWS_Sites_ALL_light_06_26_2020.pdf

David – there is still a lot of flexibility in what we can accept. It may be a total of 12 days of extra flights spaced over the 3 months.

Vito – Would like to see a general WMO letter go out requesting additional midlatitude sondes. Jeff suggested we needed a bit more structure and cohesion before such a letter goes out.

Irina –outlines what is planned for the YOPP-SH TOP based upon the BAMS article but for the TOP that includes more than sondes.



Vito will provide information on what Concordia is offering. He noted microwave radar has been used for some years.

The information has come from the white paper and the spreadsheet that was circulated. So this graphic becomes a check on what has been promised/offered.

Penny – should this include routine as well as special measurements?

Irina – yes if you think it will be a useful contribution for the winter SOP/TOP.

We are trying to target solutions that will allow standardized sonde flights that will allow fine resolution when we have multiple stations in a small area (i.e., offset launches)

An example of coordination was the launch of flights during the summer SOP.

Key approach:

AR measurements and international collaboration

Bromwich et al 2020, BAMS

AR affecting Punta Arenas (southern Chile) and King George Island (KGI, north of Antarctic Peninsula)

6 Dec 2018, 18UTC

Figure: Vertical profiles at Escudero from radiosondes and reanalyses during the transition from snowfall to rain

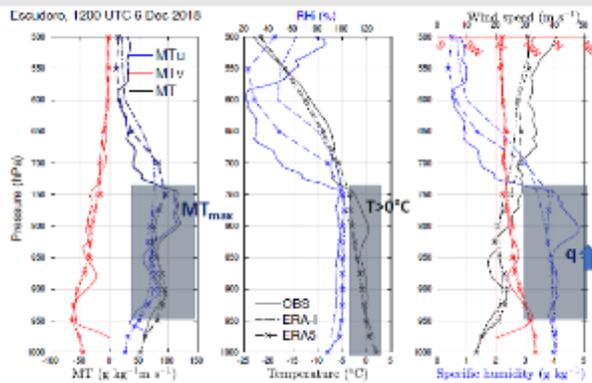


Fig: Gorodetskaya, Rowe

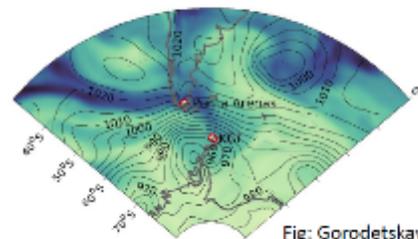


Fig: Gorodetskaya

Integrated water vapor, $\log \mu\text{g m}^{-2}$

- Radiosondes at Escudero and King Sejong
- worked well for AR targeted case observations: planning ahead and collaborations + AR forecast with different lead time (3 to 1 days) + communication with colleagues at the station and decision making together ("wish list" -> real launches)
- ...-> extremely useful observations

The planning is proceeding and below is a snapshot of things so far

Irina's slide 3 as text

Greater Antarctic Peninsula (Bellingshausen-AP-Weddell) with a possible extension to DML+

1) Interested participants: 6 AP stations (Escudero, King Sejong, Juan Carlos I, Marambio, Vernadsky, Rothera). Plus additional measurements from Punta Arenas. And several oceanographic cruises planned in the region.

2) Planned observations on land: (INSTRUMENTATION AVAILABLE/PLANNED) -> White paper

3) Planned ship-based observations: coordination with oceanographic measurements: Argo floats, buoys, ship-based radiosondes, sea ice.. (SHIP-BASED AND OCEANOGRAPHIC MEASUREMENTS) -> White paper

4) Forecasting capacities: FORECASTING CAPACITY/PLANS. Looking for volunteers for a rotating group of 3 meteorologists willing to make an overview of the forecast before the TOP and its adjustment during the TOP period for the Greater AP region and connection to the pan-Antarctic (separate group)

Large-scale forecasts: using open forecast systems - GFS and IFS (ECMWF). Use Windy (GFS/ECMWF/ICON) for temp/wind/precip but need a separate product for Integrated Vapor Transport (IVT, for study of atmospheric rivers), other fields?

Regional: AMPS: regional focus at variable resolution (possibility to include desired variables); ARPEGE (France) - 10-day forecast (GRIBs) + a number of diagnostic variables (eg, IVT)

Local: stations (Spanish AETMET, Argentina - operational forecast for Marambio, Chile - forecasts for Escudero, ...)

BAS: no forecasting capability during the TOP's

5) Dry Run: in JULY! Plan/discuss during YOPP workshop

• a week when we will have maximum availability possible, in order to simulate a TOP event during 3 days.

- to check our ways of communication, also communication with the stations during winter (in real time),
- check forecasting capacity.. lead time....
- plan coordinated measurements at the stations and ships (coordinated radiosonde launches, precipitation sampling,..),
- check other existing instrumentation and identify gaps.

Would like to do a dry run of logistics but no measurements during this June to test things out on how to do the forecasting, how to do the communications.

David – Doing a dry run in June may be a little early and it would be better in July.

Jeff – doing it in July would allow discussion and final planning at the YOPP-SH meeting in June.

Inga – the no forecasting support from BAS most likely due to the Met Office not providing support over winter.

Meeting closed at 2230 UTC on 27 May 2021