

YOPP-SH Online Sessions 20-21 Oct 2020

Session 1 - 21 UTC 20 Oct. via Zoom

Present: David Bromwich, Jeff Wilson, Adriana Guilisano, Penny Rowe, Jorge Carrasco, Irina Gorodetskaya, Yanina Garcia Skabar, Stefanie Arndt, Hiroyuki Enomoto, Raul Cordero, Martin Radenz, Daniela Liggett, Victoria Heinrich, Scott Carpentier, Matthew Mazloff, Michelle Hollister, Ignatius Rigor, Vito Vitale

Session 2 - 13 UTC 21 October via Webex

Present: David Bromwich, Kirstin Werner, Eric Bazile, Daniel Butkaitis, Steve Colwell, Raul Cordero, Clare Eyars, Tore Hattermann, Laura Hüßner, Seong-Joong Kim, Matthew Lazzara, Torge Martin, Tammy Morris, Sang-Jong Park, Denis Pishniak, Marie-Laure Roussel, Holger Schmithüsen, Jonathan Wille

Apologies:

Inga Smith, Bob Grumbine.

Francois Massonnet: ***Coming soon: Another call for contributions to SIPN-South to forecast summer sea ice extent in Antarctica for the 2020-2021 austral summer.***

See Action Items at the End of the Minutes

Agenda: Targeted Observing Periods (TOPs) During Winter Special Observing Period, mid-April to mid-July 2022.

Session 1

Dave talked to the circulated discussion word document (attached):

- TOP approach: Antarctica as a whole or a regional approach?
- What are events? - Big cyclones affecting coastal Antarctica. Also atmospheric rivers.
- Daniela – Do we need to take into account regional COVID impacts?
- Vito - Deciding go/no-go 8 days in advance will be very challenging.
- Scott suggests that the 5-day notice for the Australian BoM for a TOP is not so restrictive as it appears, so giving good advanced notice of a TOP possibility is the approach needed. This helps with planning at the station for rosters. Scott also asked if these events would include major warm moist intrusions into the coast (atmospheric rivers).
- Irina responds – cyclones vs atmospheric river frequency. She has a map showing frequency of atmospheric rivers and they are less frequent than typical cyclonic systems. Highest frequency is in autumn and winter around Antarctic Peninsula and Dumont D'Urville. Even if we miss the most intense period of an atmospheric river it is not so important as the lead up and wind down phases are also important as they show the transition.
- Vito – Can we do some extra sondes routinely during the whole SOP and then increase frequency during particular events (TOPs)?
- Irina – agreed with Vito and liked the concept of supersites that do more frequent regular obs. **Irina spoke with a French colleague and Dave asked her to provide further details.**

- Dave- the Peninsula would definitely be one focus area due to the interest expressed by many countries.
- Raul – The Chilean base (Escudero on King George Island) is usually closed over winter but they are hoping to keep Escudero open using monthly aircraft flights to replenish the personnel. They are planning to launch up to 100 balloons and they can vary the launch times to suit the need regarding TOPs. They are planning to keep staff there from the summer start in November 2021 to the end of April 2022.
- Jorge – the Chileans will only be there for one month so we will be okay if the event is in the month they are there.
- Penny – will the Korean station near the Chilean station Escudero also be launching balloons (both on King George Island). Dave – it seems that they are planning to do at least one launch/day
Penny to contact Seong-joong Kim to see what they are doing for the TOP, not needed now.
See session 2 for details.
- Dave – Would there be an interest for the Australian Bureau to take a stronger lead in coordinating development of a grouping for East Antarctica? Scott – can't commit but will have further discussions internally to see what is possible.
- Scott – With the SOCRATES experiment that was run out of Hobart they had four or five science targets and they adjusted what they were doing each day dependent upon the situation. We may need to adopt a similar approach for the TOP(s)
- Vito – we may need to focus on two or three targets and define what sort of measurements are required so we push participants to do a little extra. That is, this is a TOP down approach rather than the bottom up approach used for the summer Special Observing Period. Who will decide go or no-go?
- Dave – We seem to be heading towards a regional model for the TOP planning and the go/no-go decision will be decided by a regionally based committee.
- Vito – this seems very complicated and will require many people. Vito would prefer just one committee.
- Irina – we need to be science driven and base our work around this.
- Dave – next steps – get the input from the second call and then we need to decide upon the science questions. It will probably require two or three people to help flesh out the science questions for each region of interest.
- Scott – there is an argument for an Antarctic wide approach that allows for regional focus.
- Irina – one sonde a day plus at supersites, is it possible?
- Irina – For the Summer SOP we had a few missing sondes during the atmospheric river events due to the associated bad weather. Chances of failures during atmospheric rivers increases dramatically so we need to be mindful of this in our planning. IE we may correctly pick the situation and timing but not get the additional sonde flights etc as some stations may not allow launches in winter in really bad weather

Meeting closed 2220 UTC 20 Oct 2020

Session 2

Following up from the discussion yesterday about the Antarctic winter 2022 TOPs:

- David Bromwich (DB): We are planning to have 3 to 4 Targeted Observing Periods during the Special Observing Period. If Antarctic-wide focus is adopted and we declare a TOP for an interesting event, say atmospheric river on the Antarctic Peninsula, we get at most 1 TOP

per region, very limiting. A regional approach is much more effective but requires more effort for the planning. We are talking about the Ross Sea, the Antarctic Peninsula, and East Antarctica. If there are thoughts about East Antarctica – please contact David. Do we have to fix the regions? There are predictions of what is going to happen but we don't know if that's true... Any thoughts from anybody about pan-Antarctic vs. regions of interest/emphasis?

- Seong-Joong Kim (SJK): Before we decide, it would be good know at what scientific topics we are focusing upon. Most of us will do radiosonde observations to improve weather forecasts. Regional seems to be even larger than the weather scale. As we are based on the station, our scale is very small. To find some Antarctic/regional feature, data should be combined from different stations.
- Jonathan Wille (JW) gives a brief summary of atmospheric rivers: Atmospheric rivers (AR) are distinct meteorological features that have primarily been studied in the mid-latitudes. In the cyclone's cold-front region in the warm conveyor belt, there is very intense moisture transport often from the subtropics that sometimes reaches Antarctica. Only in Antarctica when there is very intense blocking high or ridge around the coastline of Antarctica, which results in atmospheric rivers. 3-4 times /year with dramatic effects (landfall, high precipitation events, responsible for a lot of the melting in West Antarctica, ice shelf collapse, 20–30% contribution to annual snowfall). Not very well studied yet. Interest high in further study.
- DB: Lots of people interested in the AR, e.g. Irina Gorodetskaya. AR are smaller scale features in width. People seem to be more interested in describing what AR characteristics than a forecasting emphasis. Two different foci: AR events and forecasting of big events. Particular interest from people working in the Peninsula area in AR. Regions need to be broad, at least oceanic-cyclone scale and probably bigger than that.
- SJK: AR seems like a big-scale event. Peninsula stations should collaborate for AR. Not sure if the timing for AR will be good but seems to be good regional divide. And Ross Sea with Jang Bogo station and others can contribute collaboratively.
- DB: What about the two Korean station on Peninsula (King Sejong station) and on Terra Nova Bay (Jang Bogo station). What is the current planning? Will there be radiosondes from these sites? How frequent?
- Sang-Jong Park (SJP): From both stations, at least 1 launch per day. If TOPs shorter than three months, even 2/d possible for short periods. Depending on length of TOP. If extended period, then reduced radiosonde coverage.
- DB: What about the Peninsula: Any routine soundings from Antarctic Peninsula during winter?
- SJP: There are no routine winter soundings from King George Island.
- Steve Colwell: At Rothera, we launch 5 days a week. Sometimes they launch from Marambio station, currently technical issues but usually once a week or every ten days. From Rothera, 2 launches/d could be done during TOPs for short periods. For three months, maybe daily launch possible. If we have 3 or 4 TOPs of a few days' durations: possible from Rothera to go to 2/d during TOP and rest of SOP 1/d.
- DB: Issue about forecasting of events vs. description of AR events. Any comments about East Antarctica? Australian stations, Casey, Mawson, Davis? How to handle? Bunch of stations. No comments.
- DB: Yesterday was discussed: How to make the decision to initiate a TOP? Committee made up of a limited number of interested individuals. If goals in science questions are similar for each region: one committee would be enough. However, if there are divergent interests in

different regions: Might make sense to have a committee for each region. Could be a small number of people.

- Eric Bazile (EB): Would be easier to have only one committee. With several committees, they could become competitive. Coordination is needed to decide which events are more useful or interesting.
- DB: We should not forget Antarctica is a big continent with big cyclones coming in at different places, so for sure we will get these events covered by the TOPs. The Atmospheric Rivers might be more challenging. It seems there is a preference for one committee, but this needs to be large enough to make sure all range of interests is represented.
- SJK: What about subcommittees for Antarctic Peninsula and Ross Sea? Maybe also for East Antarctica.
- DB: would be good to have regional emphasis. Limits discussion and don't have a vast number of people then to consult in order to make a decision for each region.
- DB: What should the scientific questions be? Some number of people who are willing to work on that for Peninsula. Who is keen to help shape the Peninsula Science questions?
- JW: up for Atmospheric Rivers. The foehn effect on the east side and how is AR translating into the foehn effect could be a scientific focus.
- DB: OK. Is anybody willing to take the lead on Peninsula? Not to be decided now but somebody should take responsibility.
- SJK: on King George Island we are focusing on strong wind and low-pressure events.
- SJP: with regard to AR, Irina or Jonathan would be good to coordinate. KOPRI team has been doing researches regarding polar low system and strong wind cases. The Antarctic Peninsula is located in the storm track. We could study the life cycle of storms/polar low system. SJK can lead the coordination.
- DB: suggests discussion of three regions: Antarctic Peninsula, Ross Sea, East Antarctica.
- DB: As a new aspect, the lower latitude sites came in: What about Tammy Morris from South Africa? Radiosondes?
- Tammy Morris (TM): At Marion and Gough Island we do 2/d launches and could increase for the TOPs. The question is whether we are looking at 4/d instead of 2? 4 per day for both islands for entire 3 months would be a funding issue.
- DB: any additional observations on TOPs would be good. If SAWS is able to go to 4/d for TOPs (3–4 of a few days duration), that would be great.
- TM: It might be easier to find funding for these shorter periods with 4/d at 5 days maximum (20 radiosondes per TOP). Another question: Do we only focus on upper air sondes? We could also do ozone sondes.
- DB: We would like to include the oceanographic observations such as drifting buoys. If there will be extra ozone sondes – could be useful but not specifically needed for TOPs.
- DB: How about additional RS from Dumont D'Urville? What happens with the two French stations in the Southern Ocean, Kerguelen and Amsterdam Island?
- EB: There is no plan at the moment. EB has asked to increase frequency for Dumont D'Urville to have 2/d RS for 5 days TOP (70 total). He can also ask for the other French stations. One step at a time. Currently, there are 1/d routine soundings from the two French Southern Ocean stations.
- DB: would be great to increase RS from there.
- EB: These will also help to improve the models. EB suggests to look at the data and can try do more specific comparisons to show efficiency of the forecast system.

- Raul Cordero (RC): What about additional radiosondes from Punta Arenas? He will liaise with ask Jorge Carrasco. Could be easily done from Punta Arenas. Even for the atmospheric rivers that would be interesting. There are certain instruments, e.g. a LIDAR available in Punta Arenas. Tracking clouds from on King George Island and Punta Arenas could be interesting.
- DB: There most likely will be a South African campaign around the Greenwich meridian where they will study the interaction between the atmosphere and sea-ice cover. Upstream information for cyclone development would be very useful. This could be useful for operations. So, it is a good time to start to ask for extra radiosondes from lower latitudes. Any releases from Ushuaia? No reply.
- Denis Pishniak (DP): asks about data denial studies to see whether the extra weather observations were useful in the end and how these influenced the weather forecast? Vernadsky station has never launched RS previously. So interesting to see the contrast.
- DB: Yes, data denial can be done: Run forecast with certain set of observations, run it again with other set of observations. However, funding is needed to do that, and will be sought for AMPS. But yes can be done.

Meeting closed ca 1420 UTC 21 Oct 2020

Comment in chat by Jonathan Wille: 1407 UTC

Just one final comment, in regards to the atmospheric rivers, Irina had previously discussed with me about helping out with the prediction of the rivers during the observation period. So we can continue this coordination over following emails and chats.

Comment in chat by Torge Martin: 1411 UTC

Sorry, have to leave for another meeting. I am glad, I listened in. Very interesting stuff with the atmospheric rivers. What is happening over the (coastal) ocean? Heavy snowfall over sea ice has impact on this ice as well.

Comment via email from Matthew Lazzara:

I notice that we can now add the McMurdo radiosondes as a contribution to the TOPs on this spreadsheet....see attached. I'm not sure who is the Point of Contact.

In thinking about the TOPs, I wasn't sure if the telecon got to discussing the science criteria to call for a TOP (had to leave early). What is needed? Forecast of a large synoptic scale storm to form in the Ross Sea to move into McMurdo? Large atmospheric river forecasted to develop into the Antarctic Peninsula? (Can the models get a river captured in advance? I guess that is the point!) Having some determination of this sort of criteria would help. Sure would guide the committee(s)....if even a general outline.

I like the idea of one committee –each region covered, and forecasters and research scientists included.

Action Items:

1. Arrange online sessions for each of the three regions to explore the science questions involved in TOPs and the logistics associated with conducting them. **This will be done soon and organized by DB.**
2. Next group session in about a month to keep the momentum going. Kirstin will send out a Doodle poll.