

Minutes from YOPP-SH Online Discussions, 19 March 2021.

Session 1: 10 am EDT, 2 pm UTC

Attendees: David Bromwich (DB), Kirstin Werner (KW), Sergi Gonzalez (SG), Sang-Jong Park (SJP), Naohiko Hirasawa (NH), Marcello Vichi (MV), Tammy Morris (TM), Steve Colwell (SC), Raul Cordero (RC), Bob Grumbine (BG), Lynne Talley (LT), Jorge Carrasco (JC), Adriana Gulisano (AG), Penny Rowe (PR). (14)

Session 2: 19 March 2021, 5 pm EDT, 2100 UTC.

Attendees Jeff Wilson (JW), David Bromwich (DB), Inga Smith (IS), Matthew Lazzara (ML), Phil Reid, Thomas Bracegirdle (BAS) (TB), Paolo Imazio (NWS Argentina) (PI), Yanina Garcia Skabar (YGS), Jordan Powers (JP), Victoria Heinrich (VH), Vito Vitale (VV), Matt Mazloff (MM), Penny Rowe (PR), Irina Gorodetskaya (IG). (14)

Apologies: Daniela Liggett, Eric Bazile, Tracy Moffat-Griffin.

Thanks to Kirstin Werner and Jeff Wilson for taking notes.

See end of minutes for the Executive Summary.

Session 1:

Publication and Google Scholar Pages for YOPP-PPP (Kirstin)

KW reminds everybody that all papers relevant to polar prediction in general go to <https://www.polarprediction.net/publications/research-publications/>

While papers that have a clear reference to YOPP and/or PPP (in the text and/or the acknowledgements) will be listed at

https://scholar.google.de/scholar?hl=de&as_sdt=0%2C5&q=Year+of+polar+prediction+&btnG=

For a suggested statement for your acknowledgements, please have a look at <https://www.polarprediction.net/publications/>

David Updates:

Working on YOPP-SH meeting, entirely online. Dates 24 and 25th June. After Workshop on Antarctic Meteorology and Climate (WAMC), established webpage <https://byrd.osu.edu/events/yopp-sh>. Deadline to submit abstracts is 31 May 2021 for oral or poster presentations.

Forecast Teams for YOPP-SH winter TOPs. Desirable Attributes

Members:

Need main topic areas to be represented.

Need a range of career levels. Good representation of countries, diverse capabilities, and women.

Tractable number of participants.

Call for nominations including self-nominations. **Decision made by leaders of TOPP Teams**, hopefully themselves chosen by unanimous consent.

Responsibilities:

Decide on topics to be undertaken with fall back options. Have 3-4 events per region.

Plan and analyze the FSO (Forecast Sensitivity to Observations) of at least one representative event.

Decide decision making procedure for calling a TOP. Under what circumstances should a forecast TOP be cancelled and rescheduled?

Arrange for groups to be contacted. How many days in advance and at what intervals subsequently?

Liaise with the other TOP Team(s).

Regions to be considered:

Greater Ross Sea, extending from west of Dumont D'Urville to Marie Byrd Land including McMurdo and Terra Nova Bay. Includes South Pole and Dome C.

Should there be a separate East Antarctica region?

Antarctic Peninsula and Weddell Sea.

David's suggestions open for discussion:

Irina Gorodetskaya suggests a Peninsula Atmospheric River (AR) TOP group. DB: Antarctic Peninsula TOP Group should include not only Atmospheric Rivers.

SC (Sergi Gonzales): should be coordinated effort, no competition. SG and AG also agree. Lead needed to coordinate all the different research lines.

DB: we would like to have three or four case studies including ARs. But we need a robust discussion how to allocate these events between scientific interests.

SC (Steve Colwell): Do AR coincide with gravity waves? Different questions tackled with one or two events.

DB: Geographically centered groups but with different research topics. To forecast the different things, we do need additional observations ahead of time. Not clear how many obs we need ahead of time. However we cut the Antarctic pie, there are cyclones (etc.) coming

across the boundaries from other regions. For the Pacific Ocean, there will be overlap with events in the Antarctic Peninsula. How to deal with this?

DB: TOP membership: suggests call for nominations. Somebody needs to decide who is on the individual teams. Who would like to lead the Greater Ross Sea effort?

KW (Kirstin): better to ask who is on the team.

DB: Who wants to be on the Weddell Sea/Antarctic Peninsula Group? SC would be involved not lead, represent BAS and UK interest.

SC: Send out a call for nominations, with science background.

SG: would like to participate in Antarctic Peninsula. Met already with Irina about it.

DB: Would Irina like to lead the team which is not only about Atmospheric rivers.

SG: Maybe first identify which are the interests in Antarctic Peninsula. Maybe write into document by Adriana: https://docs.google.com/document/d/1voNQ7Cfb-RWYn_iwiKTZeiJEBXcT5QmzQ4dX5BAI7o/edit#heading=h.5x0d5h95i329

MV (Marcello Vichi): Oceanographic and verification component: aims to have a scientific cruise during the SOP. Radiosondes launched from the Ship will impact East Antarctica. What you are doing for the TOP is very important for us. We intend to verify meteorological conditions, analysis and forecast. How are the two regions working together? No sense to separate between Weddell Sea and East Antarctica.

DB: Is the primary oceanographic field effort. From what I know about your effort, Marcello, it is still in the planning stage. What's really nice about the effort: it is at the sea ice edge near the Greenwich meridian that is a very data sparse area. How long will you be there?

MV: depending on funding. Been successful with proposal. Letter by David was very useful. Now in implementation phase, make sure that money will be available for July Period. Length unknown. Plan to get to ice edge during that period. Would be able to verify some of the forecasts. More likely it will be end of July. Fits well with SOP. Our data goes into the GTS and reanalysis will be improved. Wanted to know... oceanographic part is not directly linked to forecasting. If we send up extra radiosondes, will people be interested?

DB: I imagine the Japanese have a lot of the cyclones that move east to impact Syowa station. Would Hira be interested?

NH (Naohiko Hirasawa): yes of course but hard to say at the moment. I don't have any international collaboration at the moment. We think we can collaborate with other countries.

DB: what about Jun Inoue? He has written papers on storms affecting Syowa. He would be interested, correct?

MV: ship will be doing surface obs. 5 to 7 days in the ice, 10 to 15 days across the marginal ice zone. 50 and 65°S for about ten days.

DB: do you plan to release some radiosondes?

TM (Tammy Morris): not guaranteed at the moment but plan to release 1RS/d. Question what would be helpful for TOP? If so will put this in as a request for the cruise.

DB: Let's say you are there for two weeks and can release 1 RS/day. Would be extremely valuable data set for this period whether or not a TOP is happening.

TM: Will add this to the work so we keep track of it.

DB: might be easier to have a regular schedule.

MV and TM: yes, makes sense. Got endorsement letter from weather service. Would prefer a continuous plan for observations. Covering a larger region.

TM: is there a value doing ozone sondes during that time (instead of radiosondes)?

AG (Adriana Gulisano): The Argentine meteorological service can use this information for regional forecast model. But let me check with them. They are not connected to these meetings. Should be additional information that would help models in principle. But don't know at the moment.

DB: What's the cost difference between regular sondes and ozone sondes?

TM: don't know but ozone sondes require chemical set up but staff is limited to launch these. There is training required to launch. I think it's about 4 times the cost for ozone sondes, need to check again.

DB. Cost always a big factor.

TM: we can look at it.

DB: I would vote four radiosondes rather than one ozone sonde.

SC: Ozone sondes done in the past: attached to RS anyway. Quite a complicated process. Also in terms of training and expertise.

DB: need to be compelling arguments made to do this then.

DB: What about SJP and Peninsula TOPs? Interested for King George Island?

SJP (Sang-Jong Park): Yes. Priority is cyclone activities passing through Antarctic Peninsula which cause strong wind cases. I can assume that in many cases the AR cases may be

coincident with cyclones. My second topic: low level clouds for forecasters. Also interested in AR and willing to participate in AP team. Also, Penny would be interested.

PR (Penny Rowe): would be interested.

SJP: as Irina suggested there are several people interested in Antarctic Peninsula. So we can make a separate meeting.

PR: saw Raul and Jorge online, did you talk about it?

RC (Raul Cordero): Will support Korean station by launching RS. Thinking about ozone sondes, 5 or 6 times higher cost than regular radiosondes. Would be interested. No news about the Chilean Antarctic Institute support. Likely they will but too early to confirm. Chilean Antarctic congress in early September. Would be good if someone could present the project to the Chilean community. First week of September.

DB: Will it be online?

RC: Presentation 30 min, everybody happy and we'll get the support. Letter helps but even better if David shows up there.

AG: can you share link for the meeting in the chat?

RC: not available yet. But **Action for Raul**: please inform this group once you have more information. Proceedings will be mostly in English.

JC (Jorge Carrasco): Interested in Antarctic Peninsula. Synoptic systems including atmospheric rivers became interesting topic; there was an AR event just recently, increased temperature in the area significantly. Very interesting to study. But this group should go beyond ARs. At the moment no decisions on the long term because of Covid-19.

DB: Hopes things are clearing up. Seems there are many people interested in Antarctic Peninsula group. We need to formalize this call for nominations somehow. We need to know who is interested and will discuss this offline with Irina. She might be on second session.

PR: will be on the second session

LT (Lynne Talley): looks for ship opportunities to deploy Argo type floats. Data are available. Group at Scripps would be interested. LT will reach out and see if they like to join discussion. LT can let us know what ships she has found.

DB: We have the three months for the SOP, so it's not perfect; trying to have these Targeted Observing Periods within the SOP, but anything that comes under this umbrella will be useful.

LT: We should get floats in no later than March 2022. Would be interesting to know where we should deploy Argo floats. There will be lots of work next austral summer in the Weddell Sea. Polarstern will be there (Mario Hoppema). We are looking for ships going into the Ross Sea.

RC: There are good opportunities, likes to join some of the experiments. But doesn't have the capacity on the computers.

PR: Irina goes to second call. Sends out doodle for separate call.

DB: thanks to everybody, we do need to continue establishing the forecast groups. Will talk with Irina tonight to make sure it's not just atmospheric rivers on the Antarctic Peninsula. Will email minutes next week.

AG: remind about white paper: please contribute with your line of research and deliverables. https://docs.google.com/document/d/1voNQ7Cfb-RWYn_iwiKtZeiJEBXcT5QmzQ4dX5BAI7o/edit#heading=h.5x0d5h95i329 there are still some gaps in the document.

Session 2:

David takes us through the minutes of session 1, pointing out the Google Scholars and the general website with publications, the planning for the next meeting of YOPP-SH that will be online, and the need to finalize the forecast teams for the Targeted Observing Periods.

DB – Forecast Teams for YOPP-SH winter TOPs

Our events may be more “energetic” than those in the Arctic. I think we need small groups to oversee each of the areas.

See points from the earlier call where DB has laid out details.

FSO is forecast to sensitivity observations and Dave's group hope to have the capability to run these. Essentially trying to work out what obs have the most forecast impact. For a particular event, run the simulation back in time to see which obs (location and timing) have the most impact.

For this session we will discuss the need for a separate group in East Antarctica but we then need a champion for this effort.

Discussion

VV (Vito Vitale): which NWP models will we use for this work or just what is available?

DB: Irina has done some research work on this. It has to be an open forecast system such as the GFS so all fields for all times are there. Global forecasts do a good job for the major features and go out to at least 10 days

IG (Irina Gorodetskaya): Wants to use available GFS and IFS (ECMWF) products. Exploring option being used for the HALO-AC3 campaign in the Arctic and software used to display output. Will advise as it progresses. They have a dry run next week. The software is in python and easy to use and install. We just need to know if we can get the appropriate fields into it for the vertical profiles etc. It has all the standard fields as well as derived fields such as for integrated water vapor, etc.

JP (Jordan Powers): AMPS is already running and producing forecasts now. We can add particular products such as integrated vapor transport

DB: Can AMPS be zoomed into particular regions?

JP: We can provide zoomed regions but doing high resolution runs may be tricky. We already do high res runs for the Peninsula and Ross Sea. It will depend upon the needs of the US Antarctic program.

ML (Matthew Lazzara): How much of the observational data is being used?

JP: the US group use surface obs plus satellite data.

ML: his group can provide digital data to NWP centres from their digital archives in different formats. Matt hopes to have some problems of getting his data out to the wider world resolved by the start of the SOP.

DB: asks Irina if she is happy to lead the Peninsula group looking at Atmospheric rivers. Atmospheric rivers are not the only focus and in fact they need to compare and contrast Atmospheric river (AR) events with the non-atmospheric river events. Aerosols and isotopes will be part of the toolset to see the difference along with the radar data. Extra RS will come from Escudero on the King George Island and Chilean Station at Punta Arenas.

DB: what time period for Escudero station on the Antarctic Peninsula?

IG: summer campaign but they are hoping to get someone from Chile to stay there through the winter. IG may also have someone else from her group ready to stay there.

PR (Penny Rowe): Regarding making sure ARs are not the only focus on the AP – I submitted a proposal to look at Foehn, cloud properties, and radiation over the AP. IG also just submitted a proposal to enhance her work at Escudero. In both (I think) we also budgeted for cloud water content (which can distinguish liquid, supercooled liquid, and ice) probes to launch with radiosondes. Also, we have various radiation instruments and a lidar for profiling clouds at Escudero. I am hoping Raul will be able to keep the lidar running during the winter but that is always a challenge.

DB: Will you take the lead for this IG? We need someone with energy and passion.

TB (Thomas Bracegirdle): Peninsula group is a good idea. Tracy Moffat-Griffin interested in orographic gravity wave launch events and AR for the peninsula area. Tracy is interested in being involved.

DB: one event may have several different components that will be of interest for different people.

DB: is Phil Reid still here to discuss East Antarctica?

JW (Jeff Wilson): No he has left. JW aware that Scott and Michelle are very interested in participating in a forecast team covering East Antarctica.

DB: Considering events around Davis would fit with interest in the proposed runway there.

JW: suggests that DB and JW discuss this offline.

DB: who would like to be involved in the greater Ross Sea?

JP: nominates DB to lead the Ross Sea group. DB agrees.

VV: offers to be involved or identify others who can contribute

DB: asks ML if he would be willing to be involved in the forecasting

ML: long time since he has forecast but happy to help out if required.

JP: NIWC people need to be tasked to do these sorts of forecasts and they need to be formally approached.

IS (Inga Smith): will talk to Daniela and others about what NZ can do.

IG: we would like to know what other obs will be collected, particularly buoys on wave heights and winds would be really helpful.

VV: SUS (??) is a very important source for this sort of data. He will send an update to IG on the datasets of buoys in the Peninsula area. They are working out of Australia??

MM (Matt Mazloff): not much in the Southern Ocean from buoys with wind and waves but there are a lot of satellite derived data.

DB: there is one program from South Africa that hopes to have a cruise into the marginal ice zone around the Greenwich meridian in July 2022. They hope to launch at least one radiosonde/day (50 to 65°S). Dave thinks this has a good chance of success. They are particularly interested in how the sea state interacts with the sea ice.

MM: the only moored buoys in the Southern Ocean are just off Hobart but there is work being done on acoustic signals to get wave heights. Perhaps wave buoys off New Zealand.

There will also be standard buoys with pressure, temperature, etc., from AWI /Stefanie Arndt being the key player. Mainly in the Weddell Sea area.

PM (Paolo Imazio): first time participating. We will have soundings from Marambio. Doing studies on soundings from the Peninsula. Doing work on aircraft campaign from 2019 and looking at stratospheric intrusion associated with a storm over the Peninsula. They are using Polar WRF. A researcher not a forecaster. We can't buy extra radiosondes but we have people to launch them if someone can get us the sondes (Marambio Station)

VV: working to try and get extra sondes for Argentina.

DB: WRF non hydrostatic so should be good for wave motions.

Pi: Polar WRF doing well, we have an event that is well captured by aircraft, obs and models. Will speak with the forecasters about being involved. We have been in contact with the people in Chile running Polar WRF. Was not aware of the Koreans doing work with Polar WRF for events affecting King George Island.

PR: does VV have broadband radiation instruments (pyrgeometer and pyranometer) at Marambio?

VV: the new system will have the ?? instrument

VH (Vicki Heinrich): Interested in the task of looking at the human factors of the decision making around the forecast teams for the TOPs, or examining aims and outcomes, but might not be a part of her PhD due to timing. Will bring it up at the PPP-SERA meeting in April.

YGS (Yanina Garcia Skabar): happy with what Paulina (Pi) said as part of the Argentina weather service.

DB: Steve Colwell advised we need to think of how to organize and collect the additional radiosonde ascents. Don't cancel TOPs unnecessarily.

DB: next session in a month or so. Don't forget the YOPP-SH meeting scheduled online for late June 2021.

Meeting finished at 6:12 pm EDT, 2212 UTC 19 March

Executive Summary of Key points:

Forecast Teams for YOPP-SH winter TOPs.

Antarctic Peninsula and Weddell Sea – includes eastern part of West Antarctica

Lead: Irina Gorodetskaya.

Interested Participants:

Steve Colwell
Sang-Jong Park
Penny Rowe
Jorge Carrasco
Tracy Moffat-Griffin
Raul Codero
Sergi Gonzalez Herrero
Adriana Gulisano
Anastassia Chyhareva/Denis Pishniak
Tom Lachlan-Cope (see below)
Paolo Imazio (see below, also)

Greater Ross Sea – Includes East Antarctica and Marie Byrd Land

Lead: David Bromwich

Interested Participants:

Scott Carpentier
Michelle Hollister
Vito Vitale
Matthew Lazzara
NIWC Personnel?
Jordan Powers

From Tom Lachlan-Cope, March 26: I have a project going on for the next 3 years looking at Southern Ocean clouds. We are putting a hut at Rothera with a set of instruments measuring aerosols (size, composition and whether they will act as INP or CCN) and clouds (with an MPL). We are also measuring aerosols on the ship and on Bird Island (we may move some of the instruments from Rothera to the ship or Bird Island later in the project). As well as the long-term observations we have two special observing periods with aircraft measurements - one of the SOP will have a dedicated ship cruise. And of course, there is a modelling component led by Ian Renfrew and Tom Bracegirdle. I suspect this project might fit quite well into the Antarctic Peninsula group and I am happy to take part and share data if that would be useful.

From Paolo Imazio, March 26: We are exploring the possibility to deliver specific forecasts with our Antarctic forecast team. We expect to have concrete news for the next meeting.

From Irina Gorodetskaya April 9: Progress on Organizing the TOP Forecast Team for the greater Antarctic Peninsula. Details to be presented at next YOPP-SH online session.