

**YOPP-SH Session 1, 28 January 2021, 3 pm CET/2 pm UTC/9 am EST (USA).**

*Attendees:* David Bromwich (DB), Kirstin Werner (KW), Adriana Gulisano (AG), Christophe Genthon (CG), Clare Eayrs, Denis Pishiniak, Eric Bazile (EB), François Massonnet (FM), Irina Gorodetskaya (IG), Jordan Powers (JP), Jun Inoue (JI), Matthew Lazzara (ML), Patric Seifert (PS), Raul Cordero (RC), Sang Jong Park (SJP), Sergi Gonzalez (SG), Steve Colwell (SC), Tracy Moffat-Griffin (TMG)

**YOPP-SH Session2, 28 January 2021, 11 pm CET/10 pm UTC/5 pm EST (USA).**

*Attendees:* David Bromwich (DB), Jeff Wilson (JW), Michelle Hollister (MH), Victoria Heinrich (VH), Inga Smith (IS), Penny Rowe (PR), Adriana Guilsano (AG), Daniela Liggett (DL), Vito Vitale (VV), Irina Gorodetskaya (IG).

*Apologies:* Lynne Talley, Tamryn Morris, Marcello Vichi

*Thanks* to Kirsten Werner and Jeff Wilson for draft minutes.

**Key Points:**

- WMC-YOPP-SH meetings will be online and will be scheduled for late June-early July.
- There is considerable enthusiasm for measuring precipitation during the winter SOP during 2022 and comparing these data with model predictions.

**1. YOPP-SH meeting. Will be virtual. Week of June 14-18? Could this be handled by YOPP ICO? Dry run for WAMC in July?**

DB: Three other meetings are going in June/July 2021. Polar AMS, WAMC, YOPP-SH, IAMAS meeting

ML: IAMAS meeting in South Korea, Busan, BACO meeting cancelled, replaced by 18–23 July virtual meeting.

DB: Do we need to have a YOPP-SH meeting online?

KW: Discussion covered in regular calls. Could have a session on YOPP-SH in one of the scientific meetings.

ML. IAMAS will be invited presentations. Not sure if we get a session there. What is Polar AMS doing?

DB: Not sure. Question of a special session came up in conjunction with another group. Should be possible. There is a deadline of 5 March for abstract submissions. Not sure if there are subsections... probably there haven't been any final decisions.

ML: Considering it's June they already have topic selections. But pretty broad.

DB: Consideration about Polar AMS will be on US time. Not so great for people in Asia. We might not have much influence on the timing.

ML: Could be part of the WAMC meeting.

SC: would be good to be part of the WAMC meeting. Showcase results from summer SOP and review planning for winter SOP coming up in 2022.

DB. No discussion yet with WAMC committee. Only concern: burden on small group in Columbus having to run 4–5 days to accommodate all the time zones. Don't have to follow standard procedure, however. Could spread this out in time.

ML: AMS Annual meeting in 2021. Pre-recorded presentation, but only one summary slide. Other meetings had direct presentations. Depends how we want to engineer times. We could have sessions at different times if people want to do that.

JP: I was on a talk but didn't attend the session. Heard it was interesting. SCAR last summer was real time but had the time zone issue. Risks some level of non-involvement when you do pre-recordings.

DB: if we ran it sequentially for YOPP-SH and think about the time question. Webex or Zoom would be easy to do. Interactive nature in real time is good. Plenty of opportunities for people to present and discuss. We need something definite considering the SOP coming up.

JP: WAMC could be shifted 2 to 3 hours from where we would normally start. So, folks from everywhere could attend. Can allocate sessions for particular regions if needed.

SC: if we move it further away from other meetings, zoom fatigue could be avoided.

**DB Summary of Discussion:** YOPP-SH online meeting. Prefer to have it in conjunction with WAMC. Question of timing to remove it from Polar AMS meeting that is scheduled for early June and before IAMAS in mid-July. Decision was late June-early July timeframe. I will be contacting the WAMC organizing committee very soon.

### ***Input from Session 2:***

DL – would like to discuss YOPP-SH and WAMC. PPP-SERA would like to run a workshop at the meeting but a face-to-face meeting is strongly preferred. Would like to know if the meeting is going ahead face-to-face within the next month.

IS – Ocean ice interactions group (<https://www.igsoc.org/symposia/2021/lajolla/>) on 27 June so this is another potential clash with YOPP-SH.

DB – should have WAMC/YOPP-SH dates by the next meeting in about a month.

## **2. Updates on commitments for YOPP-SH SOP.**

DB: Vito Vitale will join second session to give details on likely Italian effort. Spoke to Paolo Grigioni, have firm plans to discuss cooperation in Concordia and Terra Nova Bay. Support from Italian Research Agency.

Also, from **Naohiko Hirasawa about Japanese contribution:**

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“I would like to tell you about the Japanese activities regarding the next SOP of YOPP-SH in 2022 winter.

First of all, we will have enough additional radiosondes to handle SOP events. During that period, the X-band precipitation radar should be running (the system is currently being assembled at Syowa Station), and we will estimate precipitation amount/intensity using the radar and study the precipitation system together with WRF (and if possible, would like to compare them with AMPS). We will release the data to everyone, so if you are interested, I would be very happy if you could contact me.”

**Email from Eric Bazile:**

“Thanks for the information Hira, this additional observation for the precipitation, in Dumont D’Urville a MRR is available (C. Genthon) and in other places in Antarctica. A focus, on precipitation evaluation between models for all Antarctica and at some super site (YOPPsuperSite) will be interesting during the winter SOP?”

David, Jordan and others could we compare as a first step the accumulated precipitation during all the summer YOPP-SH SOP period given by the models for latitude > 60S, WRF, AMPS, ARPEGE, IFS , ERA5? and then try to use some super site observation later?? May be the amount is too small? Do we have the same deficiencies among the NWP models?”

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AG: Joint project with Vito Vitale. Will also attend the later call.

CG: Observation on Kerguelen Island. Under discussion whether we can launch radiosondes. Need to get logistical support. Micro Rain Radar and ... cloud.. ? radiation measurements. Dumont D’Urville...

EB: official answer from Meteo France - contribution of additional soundings from Dumont D’Urville now approved. Decided to show why it is needed to increase soundings from Kerguelen. Interested in Japanese message about precipitation. Focus at Dumont D’Urville is on precipitation. If we could compare observations with model predictions for different stations, that will be interesting.

DB: Christophe, didn’t you send an email about funding of a big new project?

CG: Measurements in the field will be too late for YOPP. Technological challenges, radars, lidars on observation platforms in remote locations to profile the atmosphere along with surface measurements. Same at Dumont D’Urville and Dome C. Five points to measure between the two stations. Deploy system in 2023/24 and measure maybe in 2024.

### **3. Discussion of Planning for TOPs. Two groups. Antarctic Peninsula and Weddell Sea. Ross Sea and East Antarctica.**

DB: My research group in conjunction with Jordan's Group at NCAR have a funded project about AMPS system to look at the impact of additional radiosondes from summer SOP. There is a technique called forecast sensitivity to observations (FSO). You can isolate impact of certain observations on a forecast. Working on bringing up this capability, but not completely working yet. Thinking that as we plan for some of these TOPs, can run a limited number of representative cases (Atmospheric rivers, Cyclones etc.) We probably can fund some of that under the existing project. Not a lot but able to contribute to planning of the TOPs. In the previous meeting, we talked about the topics for TOPs, Adriana started a Google doc. We need to pick that up again to do more planning to decide exactly what will be done. We probably should have two groups, one focusing on Peninsula Area/Weddell Sea, a second, East Antarctica/Ross Sea. Meetings should be continued on a regular basis as we get closer to the SOP in 2022. Set up for the SOP has to be done during the coming austral summer, when resources/activities might be limited due to being busy after the COVID pandemic.

IG: had several meetings in past months with colleagues. Scientific part: good mix of science questions related to atmospheric rivers. But limitations on resources and planning for next year. **Updates for next summer season? What will programs be doing?**

ML: US program. Will be discussed on Friday, no decision before 1 March.

SC: UK limited for this season. Next season, they are just starting to think about it. But with SOP in wintertime, normal staff should be down there. Can't see any issues at the moment.

IG: Helium and extra radiosondes?

SC. There is still time to bring those down. And there is some extra usually down there.

AG - Argentina: Campaign will go on without much difficulty. This year restricted campaign. Hope for next summer more normalized. So far OK for everyone in the bases. Will have regular campaign, maybe restricted.

SG - Spain: Meetings with superiors, will engage with regarding the campaign. Complicated at the moment, no update.

RC - Chile: Premature at the moment. Likely but some restrictions, not with cargo. Just like this year limitations sending people (only two instead of 12 people).

SJP: Korea sticks to original plans regarding sounding material. There is no problem for securing radiosonde sensors and helium gases, some of the material are already at the stations (King Sejong and Jang-Bogo). Only issue is people. Only one icebreaker for supply. Campaign would be possible if I can successfully train new members. If things are OK next summer, I will go there myself together with overwintering team. Overwintering team members will be there during the winter SOP.

JI - Japan: I don't have any updates. We are already preparing next year as a normal situation. For radiosonde operations even this year 2 launches per day in summer and winter, should be OK during the TOPs.

PS: from TROPOS in Leipzig, just back and see how we can contribute to YOPP. Continuing measurements in Punta Arenas.

FM: Sharing Screen: latest update of SIPN South seasonal projection. 13 contributions this time. Have to wait until February to get winner of contest. Again, statistical models seem to do a better job than the dynamical ones. Outliers: dynamical model output.

TMG. Steve covered everything.

IG – said that there was some follow-up discussion after Session 1 that helped to clarify things.

## **Session 2 Discussion**

VV – Italians would like to suggest some further cooperation on the rainfall radar as well with the Koreans and possibly the French. Discussions underway and they will prepare a short document for their Italian commission for the additional funding required to do the work. A group looking at measuring liquid water content of the clouds as part of their radiosonde flights. The French are doing something similar. It is an additional sonde that you fly with the normal sondes. Could end up with lidar, these radiosonde obs (anasphere <http://www.anasphere.com/slwc.html>), microwave and others to get a better understanding of the liquid water content of the clouds and water vapour profile of the polar troposphere. The anasphere uses a spare channel in the Vaisala sonde to send the data back to the ground. Aiming for around 100 extra normal soundings plus some of the anasphere. They may also be able to provide some extra anasphere sondes to the Argentinians.

IG – noted that the anasphere had been used for the circum Antarctic cruise. Easy to use. Not many people using it, costs a little more than the normal radiosonde.

DB – it seems that there is quite a lot of interest in comparing measurements of precipitation with the NWP precipitation output using the MRR radar.

VV – not sure that the MK5 radar is suitable for winter precipitation observation as the sizes of the drops are very small.

DB – the focus is probably on the coastal regions where the winter storm temperatures will approach zero and thus the liquid water content should be higher and thus visible to the MRR radars

VV – will check with his colleagues to see how the MRRs respond in winter

IG – there are MRR algorithms for snowfall as well as rain and the Spanish have algorithms that can be used. They have been quite successful to date.

DB – seems we need to clarify further on this topic after Vito has consulted his colleagues

AG – can this method also be used to study transport of microplastics etc?

IG – don't know if this can be used for other particles. It has been used for volcanic particles in the Antarctic. Initially designed for instances where there are quite high concentrations of

particles so where particle concentration is low the measurements need to be looked at carefully.

PR – Putting in an NSF proposal with one of DB’s Postdocs.

IS – just purchased a new buoy from cryosphere innovations company ([https://www.cryosphereinnovation.com/?gclid=EAJalQobChMIoe7e0ti\\_7gIV8oJLBR0BxAzSEAAAYASAAEgIKDfD\\_BwE](https://www.cryosphereinnovation.com/?gclid=EAJalQobChMIoe7e0ti_7gIV8oJLBR0BxAzSEAAAYASAAEgIKDfD_BwE)) and it measures precipitation. They will be trying it out alongside one of their traditional mass balance sea ice stations. They try to recover the buoy before the ice melts. It costs around NZ\$27,000. Uses Iridium comms so the data is realtime and it is GPS tracked. It looks like MOSAiC put out 7 of them. It uses an acoustic pulse to the surface to measure the accumulation or ablation of the surface which is a combination of precipitation plus drift and other surface changes.

VH – nothing to add for the TOP

IG - I would like to discuss forecast. Would it be useful to setup a similar display based on GFS or IFS large-scale fields MSLP and IVT above threshold to determine intense transport: [https://cw3e.ucsd.edu/ivt\\_iwv\\_natlantic/](https://cw3e.ucsd.edu/ivt_iwv_natlantic/) It’s a regional focus. Should we be doing something like this for the TOPs. These show the areas with a strong moisture transport. Not quite atmospheric rivers but a close approximation. Irina can set up a window for different regions around the Antarctic for the TOP and forecasting for events

PR – what is happening with our TOP white paper? Penny made some edits about a week ago.

DB – yes we need to keep working on this.

### ***Wrap-up***

*DB – further plans for summer programs and the TOPs to be discussed in the coming months. I want to continue to make progress.*

*JW – do we need to set some critical dates for the TOP planning as we are now 14 months out from the start of the TOPs and many countries are getting into their financial years.*

*Next online sessions: March.*

**Finish Session 1:** 4:15 CET/3:15 pm UTC/10:15 am EST.

**Finish Session 2:** 12:10 am CET/ 11:15 pm UTC/6:10 pm EST (USA).

