**SPADE**

**Meeting Summary**

**Meeting 1: 1 February 2018 – 11 AM**

Participants: Stephen, John and Julie (notetaker)

1. **Background**

* Pillar 1 project funded by GWF
* SPADE focuses on storms and precipitation near the continental divide
* Involves field project and numerical simulations with GEM
* The project officially started 1 Jan 2018. I currently work with UQAM and U of S to figure out the funding transfers

1. **Inception meeting**

* All PIs, core members and admin staff met in Waterloo 22-23 January 2018.
* We had 5 min to talk about SPADE and it went well.
* JT talked also with Sean Carey and we will try to link more with MWF as for the observing period, annual meeting and knowledge mobilization activities.
* For the knowledge mobilization, JT did a presentation to the undergraduate students.

1. **Inception and annual reports (end of April)**

* JT will contact you individually for specific information. The deadline is April 30 but I will start working on it now.
* GWF – inception report similar to the proposal and annual report just started.
* Confirm the budget year with Kelly.
* SD will change HQP from Jan 2019-Dec 2020 instead of Sept 2018-August 2020.
* JP’s PhD student will work on GPM over the mountains and radar. He has a remote sensing and atmospheric science background from Brazil.

1. **Field project planning**

* Need to start planning the project
* Site location:
  + East: Fortress – high speed internet powerline clearing to download data quickly for snow sensors, AC …
  + West: TBD – we were thinking of meeting after the GEWEX meeting in Canmore. We could take a day to go visit Nipika or other sites.
    - Nipika – Shawn installed station there before but not sure it was in the valley or not. Need to look at a possible site at a similar elevation than Fortress
    - Vermillion Crossing Park Canada. AC? Made a phone publically accessible
    - Visit the weekend after GEWEX – SD has a vehicle. We are planning to visit on Saturday. Ron, Shawn available?
  + Glacier: Need more information about the site/activities
* Instruments:
  + East: need a MRR only, we will probably install the scanning lidar at Fortress as well. John can buy one from the GWF core instrumentation budget. May have a Multi-Angle Snowflake Camera.
  + West: need to start from scratch.
    - 1) Met station – provided by Stephen
    - 2) MRR – use the ECCC
    - 3) Disdrometer – can ship the one at UQAM for 2 months
    - 4) Scanning lidar?
    - 5) Precipitation gauge –tipping bucket rain gauge is available. A Geonor /Pluvio + single alter may be available. SD to verify.
  + Glacier: Need more information from Shawn.
* Need a MRR:
  + We will get one from GWF but it would be useful to have a few.
  + Borrow from NCAR if available
  + Few other options:
    - Buy an extra one with the McGill CFI-EOS – letter from GWF
    - NSERC RTI was submitted for a MASC, not enough funding for MRR
    - UNBC Research office – up to 10K – interest into the MRR 1 -2 pager need for the instruments. To be submitted by Friday.
    - UQAM – JT is exploring the possibilities
* Suggest to a team responsible for each site:
  + East: JT (to work with JP + 2 technicians)
  + West: Stephen – Mark Taylor work in the past and available for the field project.
  + Glacier: need to confirm with Shawn
* Timeline:
  + Visit possible western sites the Saturday after the Gewex meeting in Canmore.
  + Do we aim to install instruments this Fall or Spring 2019?
  + Need to discuss with ECCC and invite them to the next meeting.
* Accommodation:
  + Barrier station would be a possibility. JT to contact the responsible. Adrienne will be back in a few months.
  + Bring a trailer to Nipika if cabins are too expensive and/or rent a RV.

1. **Numerical simulations**

* JT to contact Vincent Vionnet to start planning the simulations. How to organize this?
* JP mentioned that Vincent Vionnet is running GEM at high resolution to study the impact on hydrological models. Used GEM at 250 m and downscale down to 80 m (CHM). It is very sensitive to precipitation.
* JT asked UQAM tech support to start testing GEM 4 LTS to make sure it is ready for May 2018.

1. **Round Table**

* JT to investigate the different between MRR pro and 2.
* Could also invite Brian Menonous to participate.
* Airborne cold region observatory – big drone with lidars, can fly for up to 8 hours.
* To characterize precipitation at the ground we need to fly the drones before and after the event.
* We would need permission on the western side but all fine at Fortress.
* Still planning to create a blog/website.

1. Next meeting

In 2 weeks at the same time. 11 AM Eastern Time 15 Feb 2018.

**Meeting 2: 15 February 2018 – 11 AM**

Participants: Stephen, John, Ron and Julie (notetaker)

1. Update from the last meeting
   1. JT will send individual emails.
   2. Accommodation: Barrier Lake station cabins should be available from before May 10th and after June 20th (see email below).
   3. ECCC – Cloud physics division:
      1. JT contacted Dave Hudak (email below)
      2. They could provide more instruments. RS and JT to discuss with Dave
   4. ECCC – RPN: JT is meeting with Vincent Vionnet on Tuesday 20 Feb 2018 at RPN.
   5. MRR : PRO is better but not sure yet if the software developed by Pavlos to look at snow profiles will work well… JT needs to investigate more about this.
   6. John Pomeroy:
      1. ICAR model could be tested using SPADE data.
      2. JT to contact Ethan Gutmann
   7. Could use the SODARS. It measures wind speed and temperature profiles up to 450 m.
   8. JP: drones flying 3 km but need permission to go higher altitude (can measure air temperature).
2. Western site
   1. Possible sites on the western side; Nipika, lower in elevation, Vermillion crossing, national park, AC Power maybe available.
   2. Visit sites in May. Vermillion cross closer to the eastern side of the divide.
   3. SD will investigate the possibility to borrow a RV.
3. Blog/website: Need to start building the weebly blog page.
4. Round table

JP: gave a summary of the INARCH meeting outcome; mentioned that summer students located in Canmore may be available this summer to work in the field.

SD: Confirmed that a master student will start in January 2019. One of his technicians will be available to work on the western site. A MRR may be bought by UNBC.

RS: Highlighted the importance to study the precipitation microphysical processes. Discuss the use of GPM for precipitation at the surface.

1. Next meeting is 5th April 2018 at 11 AM EDT.

**Meeting 3: 5 April 2018 – 11 AM**

Participants: Stephen, Ron and Julie (notetaker), Andre Bertonchini

1. Administrative actions
   1. Inception report
      1. Need to update the budget – where to send the U of C funding. It could be used for a project manager. JT to suggest an updated budget.
      2. I will then start the university transfer funds.
   2. Annual report
      1. I will send a first version by Monday.
      2. I will send the link to fill up the personal form.
   3. GWF annual workshop
      1. To connect with other projects such as Mountain Water Futures
2. Update from the last meeting/logistic
   1. MRR – should probably buy the MRR2
   2. Need to update Dave Hudak with the project
   3. ICAR: JT – To contact Ethan Gutmann in May
   4. Site visit on the Saturday after GEWEX. SD/JT/AB/JP are available
      1. SD will contact Nipika Moutain Resort
      2. We will decide during the visit if we need a RV.
3. HQP research projects
   1. Conduct a climatology study of the area during the summer 2018. JT/SD
   2. Trajectory model – JT: need to convert a Matlab code into a fortran code to efficiency. JT contacted Chris Debeer to know if the IT core team could help. He referred to Kevin Schneider and Jimmy Lin.
   3. High-resolution simulations – start working with Vincent Vionnet – the PhD student will be arriving in September 2018.
   4. Blog, we are aiming to have it ready this summer.
   5. SD: MSc student starting in January
4. Round table
   1. RS: Suggest cutting down the number of pages of the inception report. JT to check with Phani.
   2. SD: (1) Internal C-Grant at UNBC. The deadline is 15 April. Applied for a Geonor; (2) Summer field assistant 30 April – 31 August 2018. The goal is to deploy the weather station by the end of the summer; (3) Sabbatical in the fall at U of Manitoba and he is planning to visit UQAM as well.
   3. AB: Data assimilation and hydrological model; looking at GPM. He can help with the field experiment. Interested to use the MRR to analyse the precipitation products and work on the remote sensing. JT suggested contacting Branko for the MRR data from 2015. It is available through the CCRN database.
5. Next meeting is 19 April 2018 at 11 AM EDT.

**Meeting 4: 19 April 2018 – 11 AM**

Participants: Stephen, Andre Bertonchini, and Julie (notetaker)

1. Update from the last meeting
   1. Reports
      1. Both reports are now done. I will send them to co-Is one more time for revision
      2. University transfer funds will start in May 2018.
      3. We will have a coordinator/RA linked to SPADE based at UNBC. She will have access to the research truck.
      4. JT will check if that person could have an office at the Coldwater Lab during the project.
   2. Purchased of the MRR
      1. Discuss the pros and cons of MRR2 and MRR Pro
      2. JT to talk with John on Friday morning.
   3. The NSERC RTI proposal for a MASC was not funded. JT will try again this year.
   4. Site visit on the Saturday after GEWEX. SD/JT/AB/JP are available
      1. We will meet in Canmore at 8h30 to go to Nipika Moutain Resort on May 12th. SD will send them a note to confirm but they are expecting us.
      2. SD aims to install weather station at the end of the summer 2018.
      3. AD will help to organize a visit of Fortress Mountain on Friday afternoon. JT will mention it to JP.
2. HQP research projects
   1. Conduct a climatology study of the area during the summer 2018. JT/SD need to plan the analysis.
   2. JT to follow up on the trajectory model. The contact persons are Kevin Schneider and Jimmy Lin.
   3. Blog, our coordinator/RA will create it this summer.
3. Round table
   1. SD: Confirm seed-grant application for a Geonor precipitation gauge for the western site. Jeremy starts on the 30th April and will help with the installation of the weather station.

Next meeting 17 May 2018 at 11 AM EDT.

Some emails exchanges:

De : "Hudak, David (EC)" <david.hudak@canada.ca>

Date : jeudi 8 février 2018 12:55

À : "Thériault, Julie Mireille" <theriault.julie@uqam.ca>

Objet : RE: SPADE meeting

Hi Julie:

I met with Mike Harwood, our lead technical person, this morning.

Here is what I learned:

· The MMR we have is not a MRR Pro

· The lidar we have is made by Halo Photonics (model Streamline XR)

· Mike does not think anything needs to be done this year at the site. But he did suggest a site visit in the summer/early fall would be helpful. He asked how long the deployment of the equipment would be. I wasn’t sure. Of particular relevance is whether it has to endure a winter in the field or not.

· Mike said it was not essential that all our equipment be at one locale if splitting them up makes more sense.

Although Stella has only committed us to 1 MRR and 1 Doppler lidar, let us know if you have any other measurement requirements – more of the same or other instruments like a ceilometer or met station . Mike says there may be other possibilities but we can’t promise anything yet.

Dave

De : Farah Lodhawalla <farah.lodhawalla@ucalgary.ca>

Date : mardi 13 février 2018 11:31

À : "Thériault, Julie Mireille" <theriault.julie@uqam.ca>

Objet : Re: accommodation - Barrier Lake

Apologies, to answer your question, duplexes are not available before May 10th and after June 20th as we have field group bookings for 2019 that will be using the duplexes.

From: Thériault, Julie Mireille <theriault.julie@uqam.ca>

Sent: Monday, February 12, 2018 3:01:27 PM

To: Farah Lodhawalla

Subject: Re: accommodation - Barrier Lake

Hi Farah, That would be great! It is not available before may 10th and after June 20th? If yes, could you book at those times as well? If you only have 1 or 2 cabins, you could just book what you have, we will try to find a plan B.

Thank you!

Julie

De : Farah Lodhawalla <farah.lodhawalla@ucalgary.ca>

Date : lundi 12 février 2018 14:59

À : "Thériault, Julie Mireille" <theriault.julie@uqam.ca>

Objet : Re: accommodation - Barrier Lake

Hi Julie,

I can tentatively book in 3 duplexes for you between Fri May 10 2019 - Thu Jun 20 2019 as we already have bookings for field courses etc. for 2019 between May to June.

I would recommend sending an email towards the end of this year to confirm a date with Adrienne Cunnings (I am her maternity leave replacement, she will be returning around mid-May 2018). It is hard to give you exact dates at this stage as bookings between May to June 2019 could change and our field courses are already booked (typically b/w May to June).

Thanks,

Farah Lodhawalla,

Research Services Coordinator, Biogeoscience Institute

T: +1 403 220-5355

farah.lodhawalla@ucalgary.ca

From: Thériault, Julie Mireille <theriault.julie@uqam.ca>

Sent: Sunday, February 11, 2018 11:59 AM

To: Farah Lodhawalla

Subject: accommodation - Barrier Lake

Hi Farah,

I am Julie Thériault, professor at the Université du Québec à Montréal. We are planning a field project for May and June 2019 in Kananaskis. During our last project, in 2015, we rented cabines at Barrier Lake station. Would it be possible to book them again in 2019? We would 2 or 3 cabins during May and June 2019. I can call you to discuss if that is easier.

Thanks!

Julie