

# 2021 SCOAR Monthly Meeting – March 18 March 2021

Alice Doyle	Andrew Woogen	Anthony Bucholtz	Brandi Murphy
Britt Stephens	Bridget Harrell-Donze	Cathy Cahill	Chris Webster
Christopher Zappa	Colm Sweeney	Dan Eleuterio	David Fisichella
Frank Rack	Jason Tomlinson	John Coffey	Joseph Cione
Luc Lenain	Michael Starek	Phil McGillivary	Robert Logan
Roni Avissar	Tim Schnoor		

Participants: 22

## Welcome & Introductions - Luc Lenain

### Agenda:

- Discussion of COVID-19 Impact on Airborne Research
- ARCUS update - *Cathy Cahill/ UAF*
- NOAA Hurricane Research Division Update - *Joe Cione/NOAA*
- NPS CIRPAS Update - *Anthony Bucholtz/NPS CIRPAS*

### Discussion of COVID-19 on Airborne Research

**Luc Lenain** – UNOLS has been a leader in introducing safe COVID guidelines. Very successful, conservative approach. Quarantines. Minimize any transmission to crew or science team. Impact on amount of science completed.

We have been able to continue some airborne research. Easier than on ships.

**Britt Stephens** – Not a lot has changed since I last reported. We had large international campaign that was scheduled for last year but delay to this year. Now has been delayed again and is planned for 2022.

Two large C-130 campaigns planned for this summer.

- Out of Colorado and then Houston.
- Eclipse Project
- Methane Satellite
- Chartering plane to get to Colorado.
- We will have groups of people dedicated to a project with no crossover.
- Pilots have to do a lot of traveling for their duties.

### ARCUS update - Cathy Cahill/ UAF

Slide Show available at <https://www.unols.org/event/meeting/scoar-monthly-meeting-march>

Flying to the Future – Unmanned Aircraft System

- Assisting the FAA in the safe integration of UAS into the National Airspace System
- Supporting UAS users
- Conducting scientific research

*Questions:*

*Christopher Zappa – Detect and avoid systems, what do they consist of?*

*Cathy Cahill – in Canada ABSD and transponders. In US we have to use onboard radars, passive acoustics and optical. How far away can we spot aircraft. Real challenge. Differential between speeds of aircraft.*

*Luc Lenin – How small of a package can you get down to?*

*Cathy Cahill – Depends on system. Radars take more weight than the optical systems. Onboard radars reduce payload capacity.*

*Christopher Zappa – I would like to discuss DAA protocols and systems further.*

**NOAA Hurricane Research Division Update - Joe Cione/NOAA**

Slide Show available at <https://www.unols.org/event/meeting/scoar-monthly-meeting-march>

Exploring the Future of Hurricane Reconnaissance Using Small Uncrewed Aircraft Systems

End goal = Through enhanced observation, improve basic understanding, operational situational awareness and ultimately, hurricane intensity forecast performance

*Questions:*

*Anthony Bucholtz – Are flight plans preprogrammed or do you actually fly them?*

*Joe Cione – So fair, we have pilots, and we drop them down. In the future we will have logic on them that instructs them how to fly. Flight modes with different packages. Loiter, eye wall, inflow. Eventually they will operate autonomously.*

*Anthony Bucholtz - standard drop zone tube?*

*Joe Cione – Dropped out of AXBT chute. Everyone has to agree that they will fit.*

*David F – Number you plan per P3 mission? 3 AUs per P3?*

*Joe Cione – For now assuming we have to use a mothership. Only on station for 4-5 hours.*

*Four-hour drone. Only drop one. Won't drop multiple at one time. Two-hour drone we might do two. Eventually we could have swarms but cost a lot of money.*

*Michael Starek – How do you retrieve these?*

*Joe Cione – 30-to-40-foot waves. No way to recover them. Even if we could recover after the hurricane, they would be destroyed. The region we are flying in, is just not doable. We are just not there yet.*

*Phil McGillivary – How are you doing 3D winds?*

*Joe Cione – Playing games with Alpha and Beta and making assumptions. We aren't super confident in our estimations.*

*Luc Lenin – Do you see any differences?*

*Joe Cione – We are seeing some differences in the wind speed. Some issue with temp and relative humidity. Reasonable results. Payload needs to be isolated from heat being generated on the aircraft. No matter how much we try to isolate, it is still an issue. Dynamic pressure and static pressure is another problem. It isn't wildly off.*

*Chris Zappa – The next gen you are going to put multiprobe to measure 3d winds. Will it be pressurized to keep droplets out?*

*Joe Cione – I am not an engineer, but this problem is very well known. We are making the manufacturers work on pretty extreme situations.*

**NPS CIRPAS Update - Anthony Bucholtz/NPS CIRPAS**

Slide Show available at <https://www.unols.org/event/meeting/scoar-monthly-meeting-march>

Part of Naval Postgraduate school. Twin Otter DH-6

Do a lot of work for the Office of Naval Research but is available to the greater community as well.

*Questions:*

*Phil McGillivray – What did you do in Iceland?*

*Anthony Bucholtz – Couple years ago. Effects of gradients of sea ice on radiant balance and turbulence.*

**Conclusion and Thanks - Luc Lenain**