UNOLS SCOAR: Scientific Committee for Oceanographic Aircraft Research

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SCOAR@unols.org

2025 SCOAR Meeting (Winter)

SCOAR Website: Briefs from past annual meetings, currently undergoing update to include more resources to users

https://www.unols.org/committee/scientific-committee-oceanographic-aircraft-research-scoar

Current Membership:

Name	Institution	Role	Rep Of	Term Start	Term End
Dr. Christopher Zappa	LDEO	Chair		9/1/2021	Dec-24
Dr. Armin Sorooshian	UA	Member		10/1/2021	Oct-24
Dr. Michael Starek	TAMU	Member		9/1/2017	Dec-23
Dr. Britton Stephens	NCAR	Member		4/1/2019	Dec-25
Dr. Hanumat Singh	NEU	Member		2/1/2017	Dec-23
Dr. Roni Avissar	Miami	Member		11/1/2020	Nov-23
Andrew Woogen	OSU	Committee-Rep	RVTEC	11/1/2020	
Dr. Debbie Bronk	Bigelow	Ex-Officio		11/1/2020	
Dr. Anthony Bucholtz	NPS	Ex-Officio		3/1/2019	

Last Annual Meeting at Texas A&M University, Corpus Christi at the Conrad Blucher Institute – November 2023

We had some turnover this year on the Committee (2-3 members)...

- Staggered overlapping approach.
- First meeting.

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Current Membership:

Name	Institution	Role	Rep Of	Term Start	Term End
Dr. Christopher Zappa	LDEO	Chair		9/1/2021	Dec-27
Dr. Mikael Witte	NPS	Member		Sept 2024	Sept-27
Dr. Dr. Gijs de Boer	Colorado	Member		Sept 2024	Sept-27
Dr. Liane Gould	NASA	Member		Sept 2024	Sept-27
Dr. Britton Stephens	NCAR	Member		4/1/2019	Dec-25
Dr. Hanumat Singh	NEU	Member		2/1/2017	Dec-23
Dr. Michael Starek	TAMU	Member		9/1/2017	Dec-23
Croy Carlin	WHOI	Committee-Rep	RVTEC	Feb 2025	Feb-28
Dr. Debbie Bronk	Bigelow	Ex-Officio		11/1/2020	
Dr. Anthony Bucholtz	NPS	Ex-Officio		3/1/2019	

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Goal

- To inform broader community on the use of airborne assets in support of ocean sciences, in particular in coordination with Academic Research Vessels.
- **The Committee shall also promote collaborations and cooperation between facility operators, funding agencies and the scientific community to improve the availability, capabilities and quality of aircraft facilities supporting the ocean sciences.**
- SCOAR is available as a resource to those PIs, RVTECs, etc. who are interested adding such capability to future field programs.
- Receive community input and feedback on implementation? Follow-up discussions about all UAS are welcome.

- 3 Members will rotate off this year. Staggered overlapping approach.

- CIRPAS scheduled for 4 field programs in 2024. REDSAW (ONR), PACE-PAX (NASA), AirSHARP3 (NASA), SHIMMER (ONR).

- SCOAR participation in STEMSeas... working with Sharon Cooper to participate in future 2025-2026 cruises. Excitement.

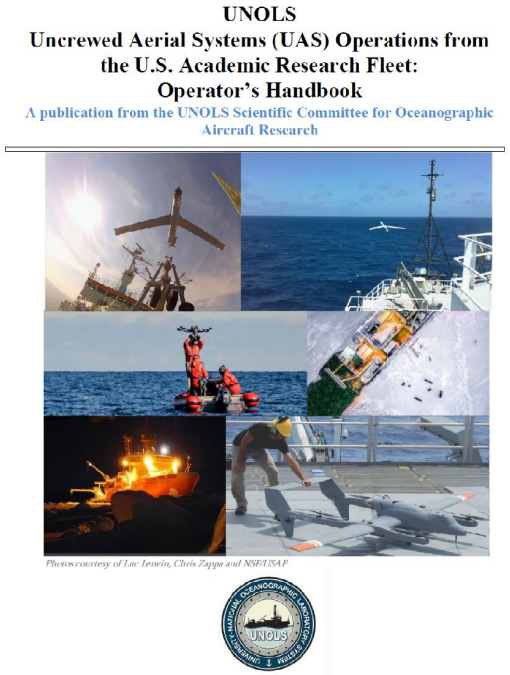
- SCOAR support for upcoming decade of oceanographic research…
  - e.g., US CLIVAR: Air-Sea Transition Zone Study Group Report (“A New Paradigm for Observing and Modeling of Air-Sea Interactions to Advance Earth System Prediction”)
  - SCOR Working Group #162: OASIS Project (Super Sites)
  - NASEM Report: “Future Directions for Southern Ocean and Antarctic Nearshore and Coastal Research”

- AGU Ocean Sciences Town Hall (Feb 2024). TH13D - Expanding the Reach of the Research Fleet: Autonomous Airborne Systems in Support of Ocean Sciences
  - How aircraft have been used to expand the reach of the Research Fleet (Gray / U Maine; McGillivary / USCG)
  - Future needs of aircraft to expand the research fleet (OASIS by Chidong Zhang / NOAA; CLIVAR by Clayson / WHOI)
  - Panel Discussion

- White Paper for a Phased Plan to explore the desire and feasibility of UAS Facility (Community Workshop in 2026?)
- Antarctic Research Vessel – Moving towards sustained ocean-going UAV capability (including the NASEM Report)
  - Opportunity to provide input
- Review of the UAS Guidance document; Original Published: July 2021 – Version 2.0.
- RVTECs using UAVs on RVs
- Review Supporting Crewed Aircraft

Questions?

Promote the use of Uncrewed/Unoccupied and piloted aircraft in support of atmospheric and oceanographic research



- Developed the Uncrewed/Unoccupied Aerial Systems (UAS) Operations from the U.S. Academic Research Fleet: Operator's Handbook: *A roadmap to using Uncrewed Aerial Vehicles on Academic Research vessels.*

- The handbook is designed to provide detailed guidance on how to operate UAS from the Academic Research Fleet (ARF)

- Status: Handbook endorsed by UNOLS council, available on the UNOLS website

- Needs a review… current activity of SCOAR
  - UAVs and Security Issues... e.g., DJI.
  - List of UAVs that should not be used because of security issues.
  - Update on procedures
  - BVLOS (Beyond Visual Line-of-Sight) issues

https://www.unols.org/sites/default/files/UNOLS_SCOAR_UAS_Operator_Handbook_V1.0.pdf

Promote the use of Uncrewed/Unoccupied and piloted aircraft in support of atmospheric and oceanographic research

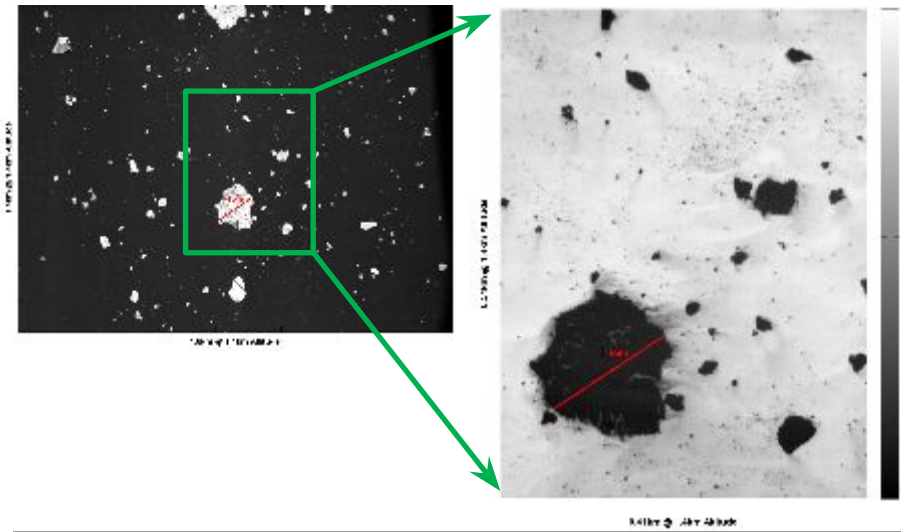
- Explore various approaches to make UAS a standard capability of the Academic research fleet.

- Andrew Woogen's team at the OSU MarTech group is part 107 certified and has upgraded their UAS which has increased our capabilities.
  - Utilizing our new vehicle to do flight missions (~every 2 weeks) in Newport to capture media of the construction process of the new Ship Ops pier.
  - These flight missions as pilot training opportunities.

- White Paper for a Phased Vision for a UAS facility as part of an Implementation Plan
  - Interest from science community and R/V Techs
  - Immediate steps:
    - Workshop planning
    - Continue to Facilitate on ships (R/V Sikuliaq example)

- Ethan Roth (Science Operations Manager, R/V *Sikuliaq*) working with Andrew Woogen (OSU; UNOLS SCOAR)
- Planning to utilize a fixed wing UAS for ice surveys this summer on UAF R/V *Sikuliaq*
- SCOAR provided guidance on UAS options, on how to operate UAS from the Academic Research Fleet (ARF), on EEZ logistics, etc.
- Ethan arranged for an onsite training class by the manufacture. Emily Shimada (OSU MarTech) is sailing that *Sikuliaq* cruise as Marine Tech and she'll be participating in that training class and likely piloting this new UAV on it's first test flight missions.
- Very interested to learn from this integration into the Ship operations. Its called the 'SearchWing'
- Goal is to become part of the Marine Tech toolbox, which is a step in the right direction for SCOAR's interests

Intermediate Fixed-Wing UAVs



Visible (Left): 1.4 km x 1.8 km
Infrared (Right): 0.54 km x 0.41km

Promote the use of Uncrewed/Unoccupied and piloted aircraft in support of atmospheric and oceanographic research

- White Paper for a Phased Vision to explore the desire and feasibility for a UAS facility as part of an Implementation Plan

- Overall idea here was to develop a longer-term plan to build out a UAS facility (UNOLS or otherwise) for all stakeholders. This could be imagined as something UNOLS oversees (or not), that a specific institution runs or a number of institutions run. All options would support NSF-type research. And RVTECs would be integral to this.

- An initial effort to develop our longer-term plan would be for SCOAR to hold a workshop with stakeholders and interested folks, both users and those interested in running a facility. This is something that we could write an EAGER grant to NSF to get funds to do this.

- We also discussed the possibility of writing a small grant to get some coordinated UAS operations going on UNOLS vessels. This could be an EAGER, or other funding avenues.

- Based on the community input from all stakeholders, we decide whether to move forward:
  - MRIs are in varying size and target. The classic MRI program is institution specific for equipment or instrument development up to $4 million.
  - Mid-scale Research Infrastructure-1 (Mid-scale RI-2; up to $20 million) and -2 (Mid-scale RI-2; $20 million to $100 million) which could be teams of institutions.

Promote the use of Uncrewed/Unoccupied and piloted aircraft in support of atmospheric and oceanographic research

- Continue Providing Input for UAVs on the Antarctic Research Vessel
- Attended an ARV Workshop at the National Academy of Sciences earlier this Spring
- Planned ARV is to have a UAV hangar and deck space for UAV operations

Preliminary Concept Design

Promote the use of Uncrewed/Unoccupied and piloted aircraft in support of atmospheric and oceanographic research

- SCOAR participation in STEMSeas... Discussed with Sharon Cooper in December and again after the New Year. She runs the program and was excited to think about including a SCOAR component to the program…

- One framework for outreach… Road Show on SCOAR
  - Community Colleges, MSI…
  - Onboarding… specific set of slides for the Reps
  - Working on 5-slide, 30-slide decks

- AGU Ocean Sciences Town Hall (Feb 2024)
  - What kind of format?
  - Q&A?
  - Present White Paper?

- Review Supporting Crewed Aircraft
  - An MFP for aircraft?
  - Work with ICCAGRA

Questions?