



# Scientific Committee for Oceanographic Aircraft Research UNOLS SCOAR

*Report to the UNOLS Council  
November 30 2017*

Luc Lenain  
Scripps Institution of Oceanography  
San Diego, CA

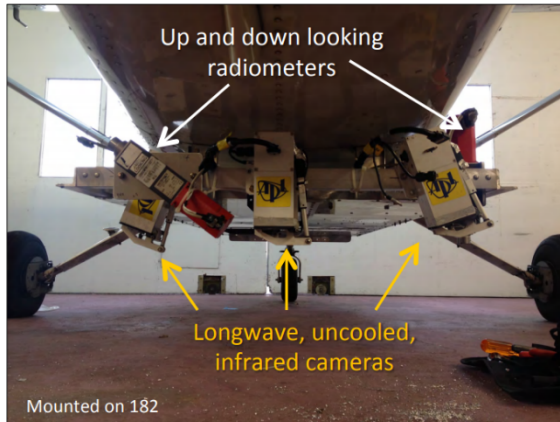


Selection of presentations available on the SCOAR website:  
<https://www.unols.org/committee/scientific-committee-oceanographic-aircraft-research-scoar>

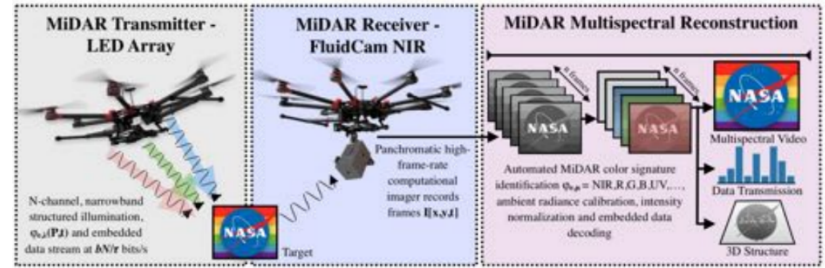


9

### CASIE – Camera Only Platform (COP)

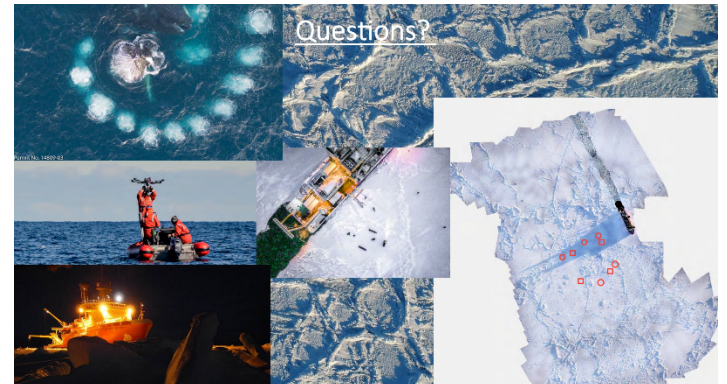
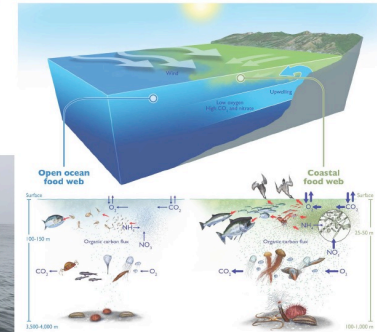
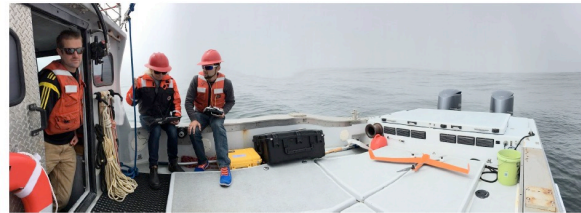


### MiDAR REMOTE SENSING



### MBARI's CANON Experiment

2017's interdisciplinary field experiment used UAVs for the first time to attempt collection of surface temperature data in collaboration with the [Flightwave VTOL](#) system.



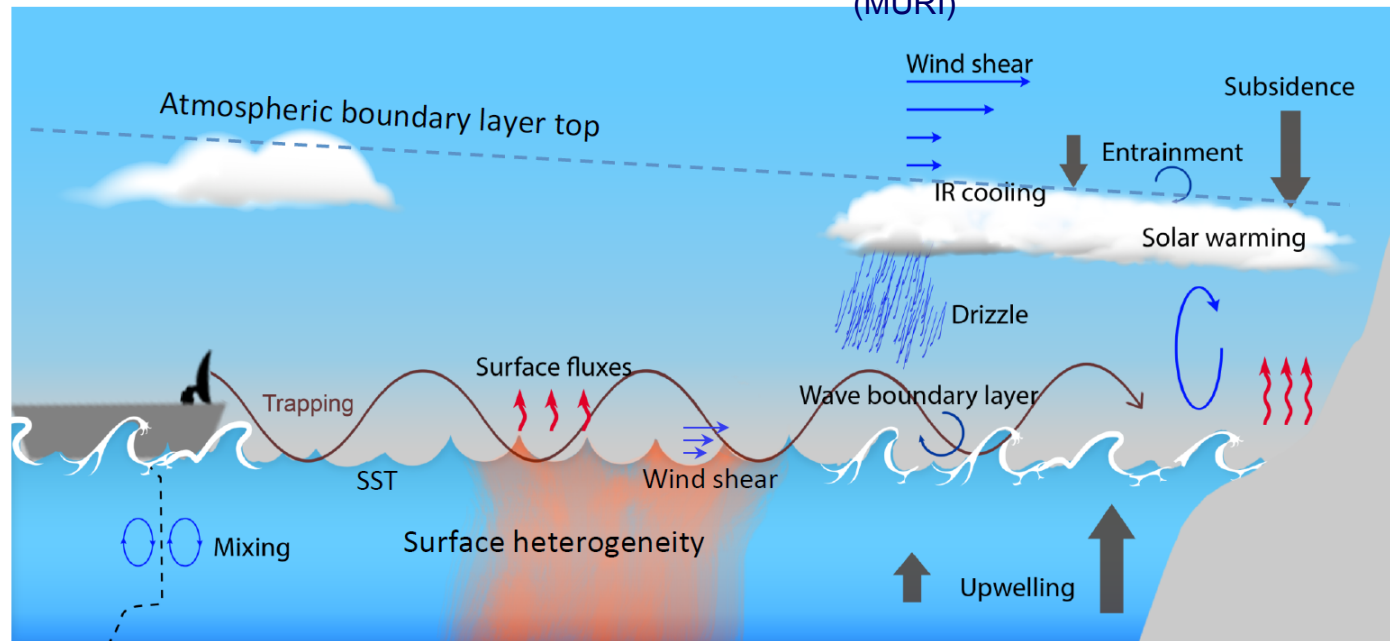
# Coupled Air Sea Processes and EM Ducting Research (CASPER) Project

Reports by Qing Wang (NPS) & Djamel Khelif (UCI) (representing CASPER Team)

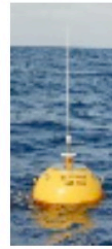
- **Better understanding of the surface layer and boundary layer physics**
  - Marine surface layer physics including wave effects
  - Validity of the basic Monin-Obukhov similarity theory in heterogeneous conditions
- **Understanding the effects of subgrid-scale variability of atmospheric refractivity and their impact on EM propagation**
- **Evaluation and improvements of evaporation duct model and mesoscale model for EM application**



ONR FY2014 Multi-disciplinary University Research Initiative (MURI)



# CASPER-West: 27 Sept - 26 Oct. 2017, Pt. Mugu, CA



**Platforms**

GORDON AND BETTY  
**MOORE**  
FOUNDATION

# Bridging the Scientific and Indigenous Communities to Study Sea Ice Change in Arctic Alaska

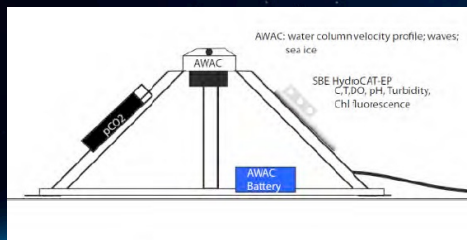
Christopher Zappa (LDEO), Andy Mahoney (UAF), Alex Whiting (NVK), Sarah Betcher (FNF)



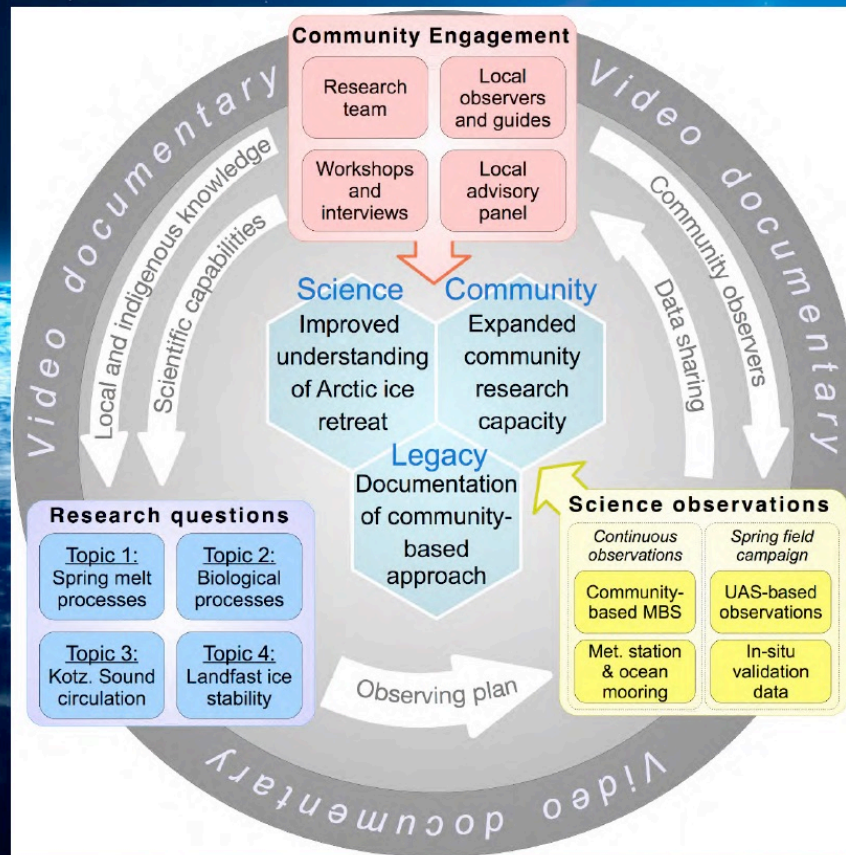
## Approach: Science questions and objectives driven by local community needs

# Project Overview

### Mooring



### VTOL UAS



In the process of

- Compiling guidance documents and information to the research community who are interested in using airborne assets in support of their research (e.g. FAA POC per region, aircraft operators with contact information, recent field deployments summary with POCs etc.)
- Developing pilot training for UAS operations from ships
- Draft guidance document (handbook) for PIs who are planning UAS operations from ships
- Discussing policy on use of UAS for non-research purposes from ships
- Develop for future science users examples of how UAS have been used from ships in the past.

A list of Points of Contacts (POCs) of groups/people experienced in UAS operations from ships would also be useful; such as ship operators with UAS operation experience, as well as, experienced UAS operators.

This last point motivated the UNOLS survey sent to ship earlier this year



Status: draft under review by  
SCOAR and Subcommittee on UAS  
Shipboard Operations.

## Unmanned Aerial Systems (UAS) Operations from UNOLS Ships: Operator's Handbook

---

### Revision

Rev 1.0: June 21 2017, by Luc Lenain

Rev 1.1: August 1 2017, by Luc Lenain

Rev 1.2: August 15 2017, by Luc Lenain

Rev 1.3: August 21 2017, Luc Lenain, Annette De Silva and input from SCOAR group

Rev 1.4: August 31 2017, Input from Jeff Garrett

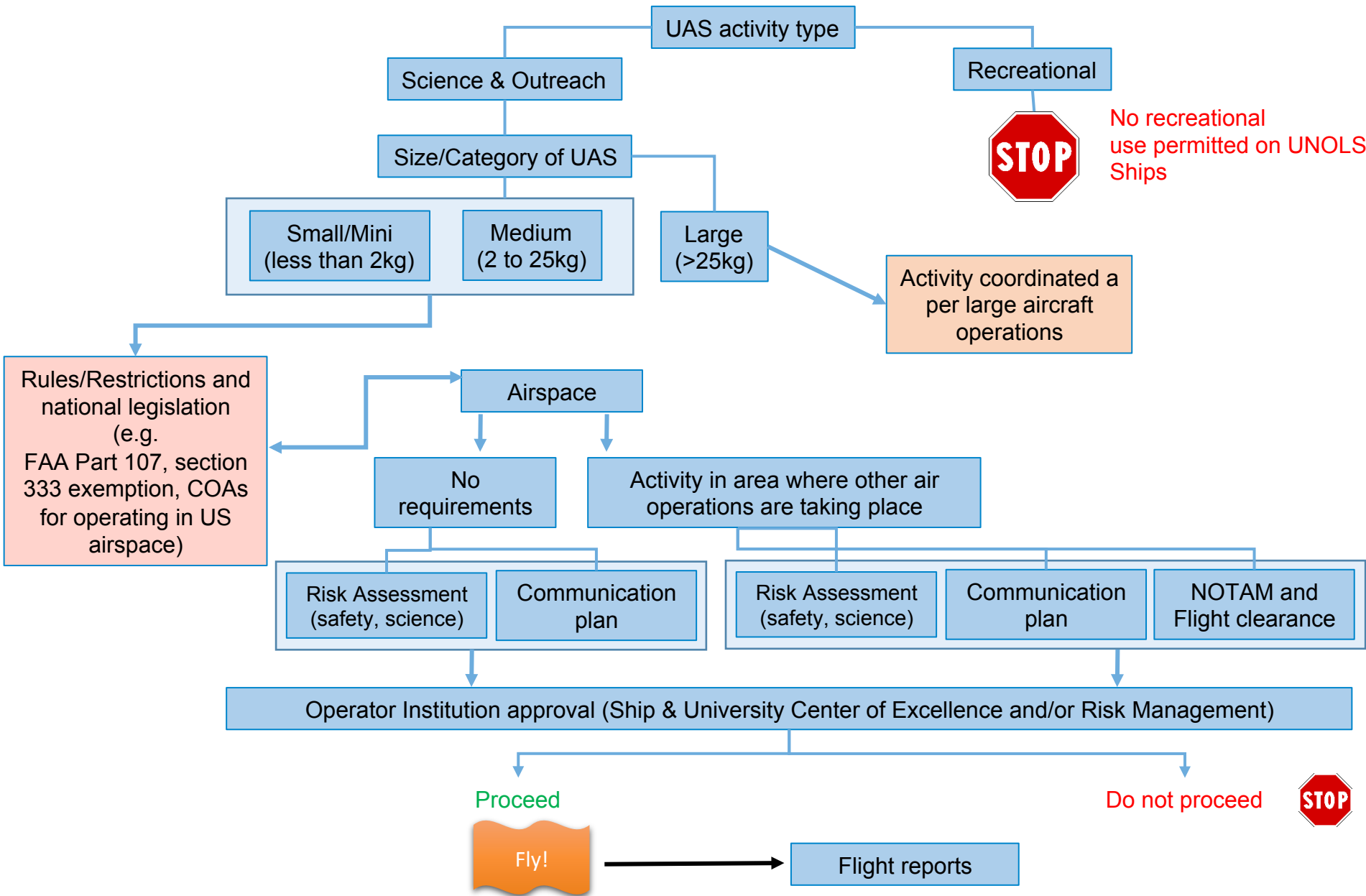
Rev 1.5: October 14 2017, by Luc Lenain

---

### Contents

Chapter 1 – General Information .....	4
Introduction.....	4
Size & Category.....	4
FAA Operation of Small Unmanned Aircraft (Part 107) .....	5
Certificate of Authorization (COA).....	5
FAA Section 333 Exemption .....	5
Flowchart for decision-making .....	6
Future considerations .....	6
Chapter 2 – Requirements.....	7
Chapter 3 – Supporting materials .....	9
Appendix 1: Risk assessment and management .....	10
Appendix 2: Communications plan .....	11
Appendix 3: NOTAMS (Notice to airmen) or similar notification.....	13
Appendix 4: Reporting, record-keeping and sharing of information-Pilot Record .....	15
Appendix 5: Reporting, record-keeping and sharing of information-Flight Record .....	16
Appendix 6: Reporting, record-keeping and sharing of information-Accident, Incident and Near-Miss Reporting.....	17
Appendix 7: Centers of Excellence and FAA Test Sites .....	17
Appendix 8: Operator Institution POCs.....	19
□ Scripps Institution of Oceanography – University of California San Diego .....	19
□ Etc.....	19
Appendix 9: Instrumentation – Environmental Review .....	19
References.....	19

# Flowchart for decision-making (Under review, not final!)





## SCOAR Membership

Name	Start	End	Term	Position
Luc Lenain, SIO	04/15	04/18	First	Chair
Raphael Kudela, UCSC	10/11	10/17	Second	Member
Michael Starek, TAMU-CC	02/17	02/20	First	Member
Hanu Singh, NEU	02/17	02/20	First	Member
Chris Zappa, LDEO	09/15	09/18	First	Member
David Fisichella, WHOI	07/14	07/17	First	Member
Steven Hartz, UAF – RVTEC Rep	03/05	XXXX	XXXX	Ex-Officio
Bob Bluth, NPS – Operator Rep	01/03	XXXX	XXXX	Ex-Officio
Haflidi Jonsson, NPS – Operator Rep	01/03	XXXX	XXXX	Ex-Officio
Roy Woods, NPS – Operator Rep	03/09	XXXX	XXXX	Ex-Officio

Sending out call for new member shortly.