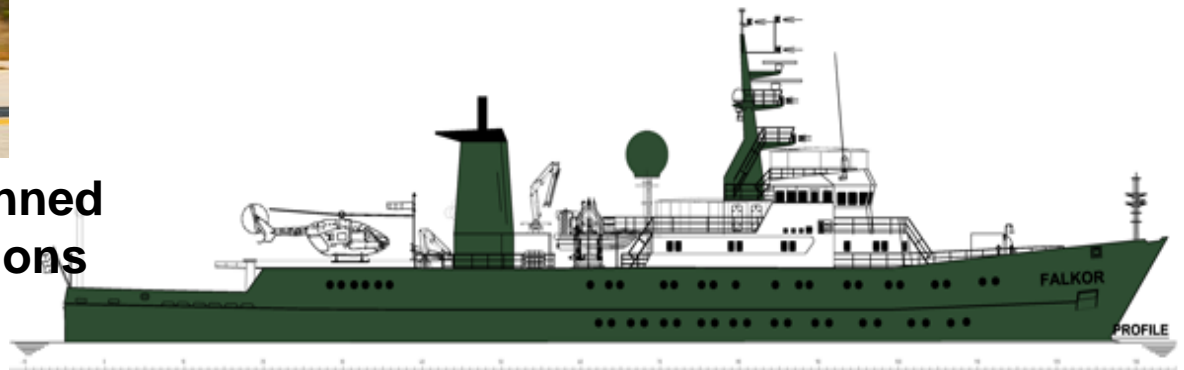


# Scientific Committee for Oceanographic Aircraft Research

*Briefing for the UNOLS Annual Meeting: Oct. 2011*



**Integrating Manned & Un-manned  
Aircraft into Ocean Observations**



# SCOAR Membership 2011 / 2012



**Daniel Schwartz**

**James Hain**

**Raphael Kudela**

**Luc Lenain**

**Phil McGillivray**

**Steven Hartz**

**Chair**

**Associated Scientists at Woods Hole**

**UCSC**

**University of California at San Diego**

**United States Coast Guard**

**University of Alaska (RVTEC represent.)**

**Bob Bluth**

**Hafliði Jonsson**

**Le Roy Woods**

**CIRPAS (ex officio)**

**CIRPAS (ex officio)**

**CIRPAS (ex officio)**



**SCOAR Meeting  
Held at the  
CIRPAS facility**

**Marina, Calif.**

**June 23 & 24  
2011**



***Presentations available at:***

**<http://www.unols.org/meetings/2011/201106sco/201106scomi.html>**

# Meeting Host:

- **CIRPAS - Located on the South/Central California Bight**
- **Marina Facility**
  - 3500 ft runway - manned operations only
  - 30,000 sq ft maintenance hangar
  - Instrumentation and Calibration Laboratory
  - Maintenance and Payload integration shops
  - Offices



UNOLS SCOAR Meeting  
 CIRPAS Hangar 507  
 Marina CA  
 June 23 and 24, 2011

<i>Joining by Telecon</i>	<i>Last</i>	<i>First</i>	<i>Institution</i>	<i>E-mail</i>
	Bailey	Rosanne	Univ of Alaska	rbailey11@alaska.edu
X	Bonadonna	Michael	NOAA	Michael.bonadonna@noaa.gov
X	Beach	Reggie	NOAA/OAR/OER	Reginald.beach@noaa.gov
	Bluth	Bob	CIRPAS	rtbluth@nps.edu
	Coffey	John	NOAA/UAS	John.coffey@noaa.gov
	DeSilva	Annette	UNOLS	office@unols.org
X	Grant	Bernard	NSF	bgrant@nsf.gov
X	Hall	Phil	NOAA/OMAO	Phillip.hall@noaa.gov
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	Jonsson	Haf	NPS	hjonsson@nps.edu
	Lenain	Luc	Scripps	llenain@ucsd.edu
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	Prince	Mike	ONR	jonathan.m.prince@navy.mil
	Tomlinson	Jason	PNNL/DOE	Jason.tomlinson@pnnl.gov
	Woods	Roy	NPS	rwoods@nps.gov

## ***Discussion Topics***

- ***How can embarked Unmanned Aerial Systems revolutionize - spatially, quantitatively, and qualitatively - the data collection and observations conducted from research ships? UAS are proving to be capable tools in multiple military and civil applications. Sensors are smaller, more capable with new ones on the horizon.***
- ***Explore further coordination between manned aircraft and ships and observatories for coastal and EEZ programs.***
- ***Regulatory issues are supplanting platform limitations as the primary operational challenge.***
- ***Funding Agencies are likely to face Budgetary pressure as deficits grow (Which may make these platforms more attractive)***

# ***SCOAR Activities, 2011 and 2012***

- ***Briefing on UAS and shipboard operations to Schmidt Ocean Institute, January 2011.***
- ***Planning (ongoing) for integration of an UAS into an ONR sponsored science program operating from a UNOLS AGOR.***
- ***SCOAR meeting, with participation by funding agency personnel, June 2011.***
- ***Briefing on SCOAR for the ICCAGRA Meeting, September 2011.***
- ***SCOAR Booth at Ocean Sciences 2012, in Salt Lake City: to include representative UAS airframes, sensors, posters, and information on how investigators can go about accessing these assets through the CIRPAS facility.***
- ***Further communications and interactions with ICCAGRA and IWG-IF.***
- ***Recruitment of new members.***
- ***Outreach to the Ocean Science Community to inform investigators on the uses, capabilities and availability of manned and unmanned aerial assets for marine science research.***

## *Ship / UAS ops in the Arctic*

*(pictures courtesy of P. McGillivary, USCG)*





# *Objective*

*Demonstrate the value added of Full Motion Video (FMV) streaming from Small Unmanned Aerial System (SUAS) during Arctic Operations*

## GOALS:

- Demonstrate that SUAS operations can be done *SAFELY* on/off board ships
- Demonstrate Intelligence, Surveillance, and Reconnaissance (ISR) capabilities of SUAS
- Stream Full Motion Video from RAVEN SUAS on to ROVER for
  - Sea ice ridge detection/monitoring
  - Marine mammal detection
  - Assistance in emergency exercises
  - Detection and monitoring of oil spilled from ship or oil exploration

# RAVEN

Complete System



- Employed since 2002
- Hand launch/recovered
- Battery powered (60-90min endurance)
- Line-of-sight command and control
- Full color and IR capable payloads
- System fits into a large backpack

<b>Manufacturer</b>	<b>Wingspan</b>
AeroVironment Inc	4ft 3in
<b>Launch Method</b>	<b>Length</b>
Hand-launched	3ft (0.9m)
<b>Recovery Method</b>	<b>Weight</b>
Deep-stall landing	4.2lb (1.9kg)
<b>Camera Payloads</b>	<b>Cruise Speed</b>
Color/IR/Thermal	30mph

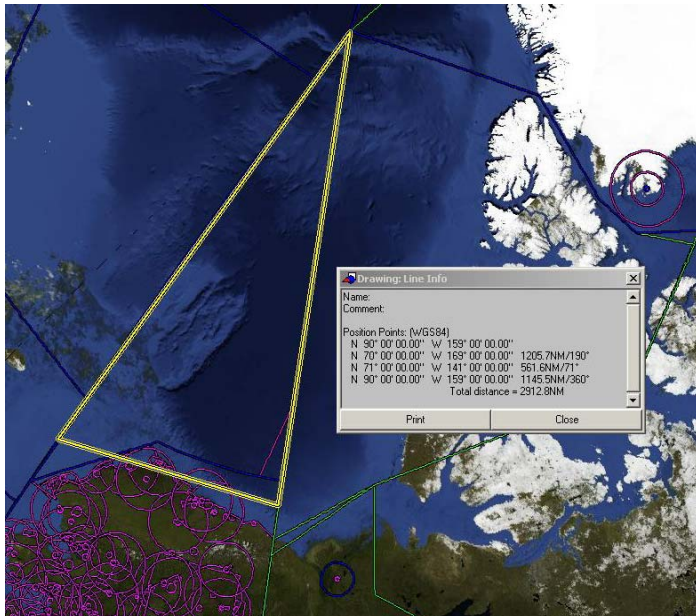


RAVEN FMV Snapshots \*video is archiveable and can be streamed live on the internet with proper bandwidth

# Certificate of Authorization

## Certificate of Authorization (COA) from this FAA for RAVEN flights in the Arctic has been approved/issued

- COA application is for entire Alaskan airspace above Barrow, encompassing over 60% of HEALY's ECS mapping mission



Area of operations approved in COA

2011-WSA-60-COA

1

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION	
CERTIFICATE OF WAIVER OR AUTHORIZATION	
ISSUED TO	United States Special Operations Command
	100 Bartley Street Suite 110S Hurlburt Field, Florida 32544
	This certificate is issued for the operations specifically described hereinafter. No person shall conduct any operation pursuant to the authority of this certificate except in accordance with the standard and special provisions contained in this certificate, and such other requirements of the Federal Aviation Regulations not specifically waived by this certificate.
OPERATIONS AUTHORIZED:	Operation of the Raven UAS at or below 1200'MSL/AGL in Class G airspace within the Anchorage Domestic Flight Information Region (FIR) and Artic FIR under the jurisdiction of Anchorage ARTCC as depicted in Attachment 1.
LIST OF WAIVED REGULATIONS BY SECTION AND TITLE	N/A
STANDARD PROVISIONS	
<ol style="list-style-type: none"> <li>A copy of the application made for this certificate shall be attached and become a part hereof.</li> <li>This certificate shall be presented for inspection upon the request of any authorized representative of the Federal Aviation Administration, or of any State or municipal official charged with the duty of enforcing local laws or regulations.</li> <li>The holder of this certificate shall be responsible for the strict observance of the terms and provisions contained herein.</li> <li>This certificate is nontransferable.</li> </ol>	
Note-This certificate constitutes a waiver of those Federal rules or regulations specifically referred to above. It does not constitute a waiver of any State law or local ordinance.	
SPECIAL PROVISIONS	
Special Provisions are set forth and attached.	
This certificate 2011-WSA-60 is effective from August 15, 2011 to August 14, 2012, and is subject to cancellation at any time upon notice by the Administrator or his/her authorized representative.	
BY DIRECTION OF THE ADMINISTRATOR	
	<i>Asst. M. Williams</i>
FAA Headquarters, AJV-13 <small>(Region)</small>	For: <u>Dean E. Fulmer</u> <small>(Signature)</small>
<u>August 2, 2011</u> <small>(Date)</small>	<u>Acting Manager, Unmanned Aircraft Systems</u> <small>(Title)</small>

***See you at Salt Lake City!***



# *University-National Oceanographic Laboratory System*



*Thank You!*

***UNOLS SCOAR  
Committee***

***Daniel Schwartz  
Chair***

