

**UNOLS Scientific Committee for Oceanographic Aircraft Research  
2010 Ocean Sciences Meeting  
Town Hall Session  
Portland, OR  
February 22, 2010**

Meeting Minutes

Note: All appendices are in pdf format unless otherwise noted.

*Appendices*

|      |  |
|------|--|
| I    | <a href="#">Participant List</a>   |
| II   | <a href="#">SCOAR Introduction</a>   |
| III  | <a href="#">Collaborative UAC Control for Information Acquisition</a> (7 video clips available upon request - please e-mail UNOLS at office@unols.org) |
| IV   | <a href="#">Flyingfish: Unmanned Aircraft Systems (UAS) for Ocean Science Missions</a>   |
| V    | <a href="#">Flyingfish: "Out of the Blue" Video</a> (WMV file)   |
| VI   | <a href="#">Flyingfish: "Monterey" Video</a> (WMV file)  |
| VII  | <a href="#">Flyingfish: "Biostation" Video</a> (WMV file)  |
| VIII | <a href="#">Unmanned Aircraft System</a>   |
| IX   | <a href="#">Measurements of Air-Sea Fluxes with a Controlled Towed Vehicle (CTV)</a>   |
| X    | <a href="#">CTV Video</a> (WMV file)   |

Introduction by Dan Schwartz (University of Washington)

- There are a number of independent organizations using aircraft research – need to coordinate efforts
- Acknowledges Phil McGillivray, Vernon Asper, Jon Alberts, Erin Jackson, Tim Schnoor
- Announced sign up for SCOAR email list
- Need to coordinate efforts after 100 years of using ships and aircraft together in research
- SCOAR Activities 2009-2010 – June 11 Teleconference, Sept 15-16 Alaska UAS Interest Group, Nov 9 – 10 ICCAGRA, Feb Ocean Sciences Meeting
- Explanation of UNOLS – CIRPAS: first UNOLS facility for aircraft research
  - Unmanned and manned aircraft – manned example: Twin Otter
  - Still a role for larger manned aircraft
  - Will hear more about innovative unmanned projects being developed
    - Air (C-130) deployable coyote
    - U Michigan facility
    - Integration of small unmanned system from NOAA ship MacArthur
  - What about a hybrid? UAS and Manned Aircraft...

Raja Sengupta (University of California, Berkeley) – collaborative UAC Control for Information Acquisition: ONR Sponsored Research at C3UV (also at meeting: William Hodge)

- “Brains” of the aircraft were on display for attendees
- Movie: unmanned aircraft flying over river
  - No GPS coordinates being taken on aircraft, on board image processing, keeps looking for water and takes image – segregates water pixels and non water pixels

- Spirals out from initial gps coordinates to find water
- Once it lines itself up along river vector it doesn't need gps coordinates any more
- Build interface where one person can control multiple aircraft to view many things over a large area
- Unmanned aircraft will autonomously make several passes to find desired location – can also do this with multiple aircraft – can communicate with each other via wifi and coordinate their actions
- Search, surveillance, location tasks
- Localize operations to a position of about 4 meters
- Basic lesson for community: telemetry coming from scan eagle and video coming from scan eagle are not time synchronized. Video time stamped on ground. Need geo referenced video for these operations.

#### Guy Meadows (University of Michigan) – Persistent Ocean Surveillance – Flying Fish

- Phase I vehicle underwent sea trials in 1998
- First fully autonomous flights to and from ocean surface
- Phase II – Balanced energy budget – electric/solar recharging 5/6 2010 sea trials.
- Missions: Persistent Ocean Surveillance Mission, Harmful Algal Bloom Mission, Oil Spill or Frontal Boundary Tracking, Possible Collaborative Missions, Possible AUV Missions
- This is a work in progress...

#### Greg Walker (University of Alaska) – Recent ScanEagle Ops in the Bering Sea

- Where does this fit in the civil sector? Airspace issues, pilot training issues, etc.
- Safe Airspace Integration, New payloads and processing, Enhancement Testing in field operations
- Airspace Use Studies – used historical data to show how many aircraft actually operate in the airfield area the ScanEagle is using, show FAA that ScanEagle is safe to fly – they were granted permission to operate within 5 miles of the ship
- Aircraft can survive icing
- Footprint fairly small

#### Tim Veenstra (Airborne Technologies, Inc.)

- Marine debris work led to small unmanned aircraft project
- Aircraft could deploy buoy once it locates debris
- Low cost - \$15,000 airframe, easy op, vessel or land-based, satellite tracking, flight and ground control software (most open source)

#### Dan Schwartz – Video: Controlled Towed Vehicle (CTV) on CIRPAS Twin Otter