

# **An Overview of the ICCAGRA Subcommittee on Unmanned Aircraft Systems (UAS)**

**Presentation to the Joint EUFAR-ICCAGRA  
meeting**

**May 3<sup>rd</sup>, 2009 – Stresa VB, Italy**

**Matthew Fladeland – Chair  
NASA Ames Research Center**



# Participating organizations and their representatives

**Matt Fladeland– NASA**



**Brenda Mulac– NASA/FAA**



**Jason Tomlinson – DOE/PNNL**



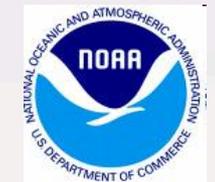
**Peter Milne - NSF**



**Michael Hutt - USGS**



**Phil Hall - NOAA**



# Why do we need this subcommittee?

- Unmanned aircraft systems provide observations in **remote or dangerous** locations where there is risk to pilot and aircraft. They also satisfy requirements for **long-duration loitering**.
- Existing UAS have the capability to enable observations that **manned aircraft cannot achieve**, and as systems mature and show promise, there is increased **interest in more widespread use**.
- **Improved coordination** among US federal agencies is important given the complex, **rapidly evolving technologies** as well as the **policy/regulatory framework** that enables their use in the national and **global airspace** systems.





- To improve coordination and exchange of technical information regarding UAS in use or under consideration by participating ICCAGRA agencies.
- To provide a forum for discussing opportunities and challenges related to conducting research from UAS



# Functional Description

Provide a forum to discuss requirements, new capabilities and challenges to implementation of UAS for agency uses. Include the spectrum of issues:

- Science
- Applications
- New technology
- Processes and procedures
- Policy
- Explore manned-unmanned complementarity
- Document and share lessons learned



# Agency activities: NASA

- Past activities have included partnerships with DOE, NOAA, and USDA/USFS to fly Gnat, Altus, Altair and Predators in support of radiation measurements and ocean studies.
- Other NASA missions include agricultural monitoring (Helios) and cloud electrification experiment (Predator) using the
- NASA recently acquired 3 Global Hawks from the USAF - the first mission will be conducted over this pacific July-Aug 2009
- The SIERRA UAS will be conducting a mission from Svalbard over the arctic ice June-July 2009.



# Agency activities: NOAA

- NOAA has flown the NASA Altair for fisheries management and ocean surface characterization, the Aerosonde into and around hurricanes, and the Manta (ACR) over Greenland in a recent demonstration.

- NOAA is developing a research program that uses UAS to focus on 3 regions: the Arctic, the Pacific Ocean, and the Gulf Region



# Agency activities: DOE

DOE projects have operated a variety of locations including the DOE CART site in Oklahoma and another two series at the DOE sites at the North Slope of Alaska (NSA) and at the Tropical Western Pacific (TWP) in Darwin, Edwards Air Force Base (clear sky flux profiling), Monterey Bay (maritime stratus cloud properties) and Kauai (sub-tropical cirrus cloud properties).



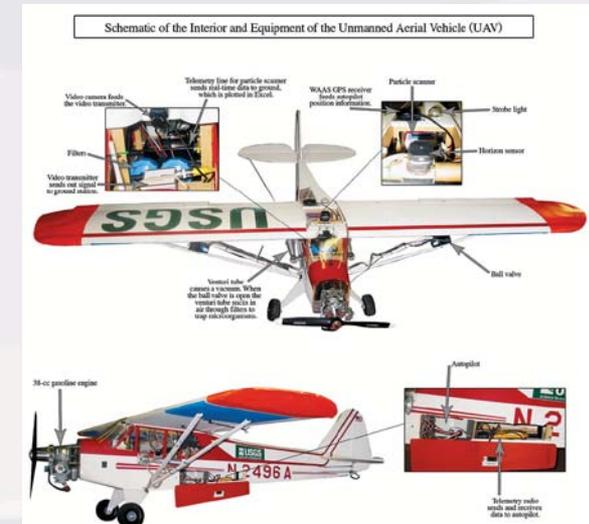
The ARM UAV Program supports three types of activities as summarized below:

- 1) Routine observations of cloud, aerosol and radiative properties
- 2) Participation in IOPs designed to contribute to our fundamental understanding of clouds, aerosols and their impacts on radiation.
- 3) Foster an instrument development program whereby miniaturized in-situ and remote sensing instruments will be purchased or developed to provide measurement capabilities that minimize space and energy requirements.



# Agency activities: USGS

- In 2007 the a Silver Fox (ACR) was deployed to monitor seismic activity at Mt. St. Helens in Vancouver, Washington.
- A applications workshop was conducted in 2008
- There is interest in future use of the NASA Global Hawk for carrying new LIDAR and SAR instruments.
- Small UAS are of interest for dust transport studies and low altitude magnetometry missions



# Agency Activities: NSF

- NSF-funded researchers have used UAVs in a variety of ways throughout the world with a recent mission using multiple stacked Mantas over the Maldives
- A number of missions are also flown from Antarctic research stations which NSF manages



# Anticipated year-1 deliverables

- AIAA Unmanned Unlimited/Infotech@Aerospace users workshop in April 2009
- Provide documentation to the US FAA on agency requirements and plans for policy formulation and to support R&A projects
- Develop online reference material on ICCAGRA member assets, capabilities and access procedures
- Facilitate joint UAS mission between two or more ICCAGRA agencies
- Distribute quarterly meeting reports including actions and recommendations



- Cataloging and updating interagency agreements pertaining to use of UAS across agencies;
- Coordinating SBIR & STTR solicitations to leverage development of capabilities that meet shared requirements;
- Coordinating RFIs and RFPs to meet interagency goals.



**Thank you for your time and  
consideration.**

**Any questions?**

