



# NASA UAS: ICCAGRA Update 27 Sept 2011



*Presented by:*

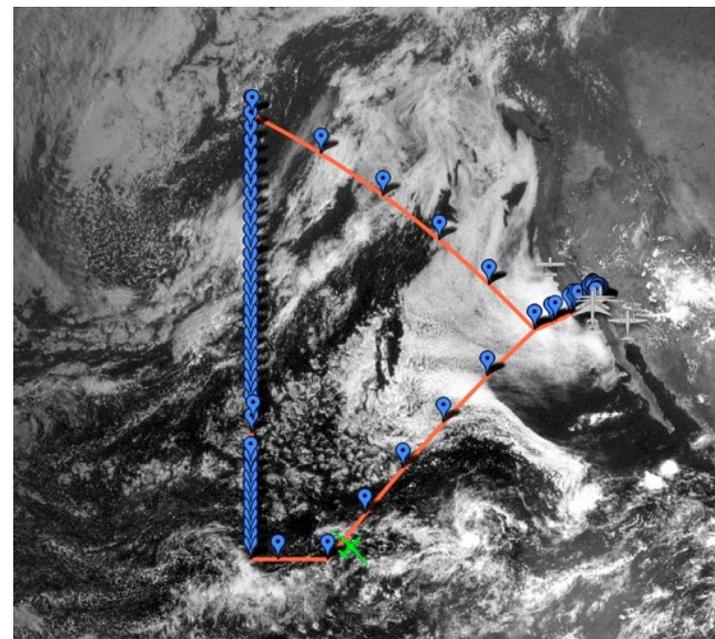
**Brenda L. Mulac**

NASA UAS Program Lead

# UAS Platform and Mission Update

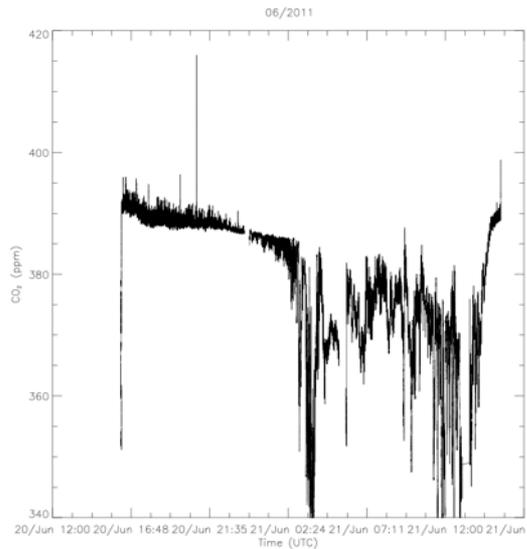


- Global Hawk:
  - Fleet has grown to 5 aircraft
  - 2 aircraft are operational
  - Mobile ground station arrived at Dryden
  - Wallops ground station in procurement
  - Missions:
    - Whispers (NOAA)
    - Hurricane and Severe Storm Sentinel (HS3)
      - EV-1 mission, 5 years, \$30M
      - First mission out of Dryden over Pacific and Gulf
      - 2 flights, 42.6hr total



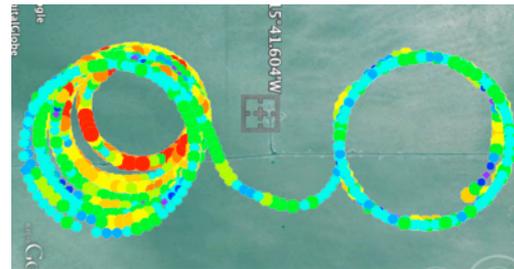
# UAS Platform and Mission Update

- Ikhana:
  - GA has developed Iridium capability; working to get capability on Ikhana
  - Procuring a versatile science pod for ease of uploading science payloads
  - Getting ready for MIZOPEX, ICEBRIDGE
- SIERRA:
  - New Payloads: Meteorological Measurement System (MMS), Picarro G2301-F
  - Missions: Railroad Valley Experiment (8.6hr)

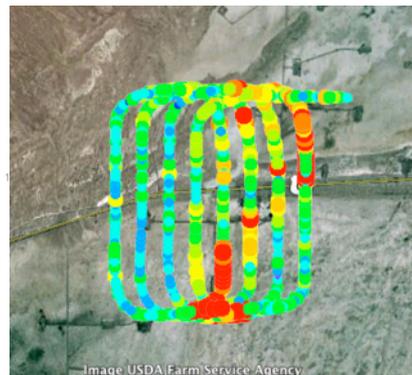


**CO<sub>2</sub> Diurnal Cycle**

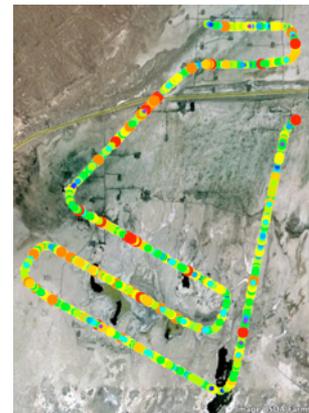
**CO2 profiles**



**Methane over oil wells**



**Methane over playa**



**Instrument package**



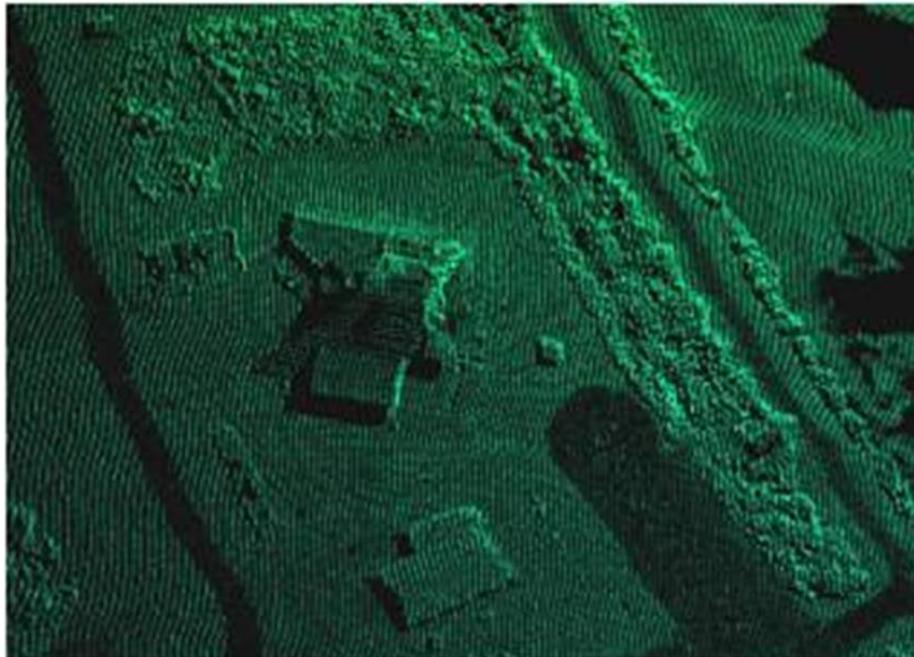
**Ground truthing**

# UAS Platform and Mission Update



- Viking:
  - Wallops based project
  - Miniaturized the ATM lidar – previously used on P-3 and DC-8
  - Designed a photometric system of stereo high resolution cameras used to determine terrain characteristics
  - Mission designed to compare use of a photometric system to lidar for mapping terrain

[http://www.youtube.com/watch?v=Ge6lpzjP\\_fI](http://www.youtube.com/watch?v=Ge6lpzjP_fI)



# Future Missions



- **Operation IceBridge: *Global Hawk* and *Ikhana***
  - DC-8 and P-3 currently being used over Antarctica and Greenland
  - Plan to start using both *Global Hawk* and *Ikhana* by 2013
- **Airborne Tropical Tropopause Experiment (ATTREX): *Global Hawk***
  - Study of water vapor chemical composition in tropopause/stratosphere and impacts on climate
  - 5 year project, missions start 2012
  - Basing tentatively in Guam and Australia
- **Hurricane and Severe Storm Sentinel (HS3): *Global Hawk***
  - Basing at Wallops Flight Facility starting Sept 2012
- **A-40 Missions - 2012**
  - MIZOPEX – J. Maslanik PI; *Ikhana* and several small UAS from U of CO; Basing in Fairbanks and Oliktok Point
  - Earthquake Hazards and Groundwater Flow – Swift and SIERRA UAS with magnetometer and lidar; Surprise Valley, CA
  - Carbon Dynamics in Sea Grass and Coral Reef Biomes – Bat 4 and SIERRA UAS equipped with hyperspectral sensors; Florida Keys and Tobago

