

ICCAGRA FALL 2012 MEETING

17 October S2012



Jim McFadden
Chief, AOC Programs

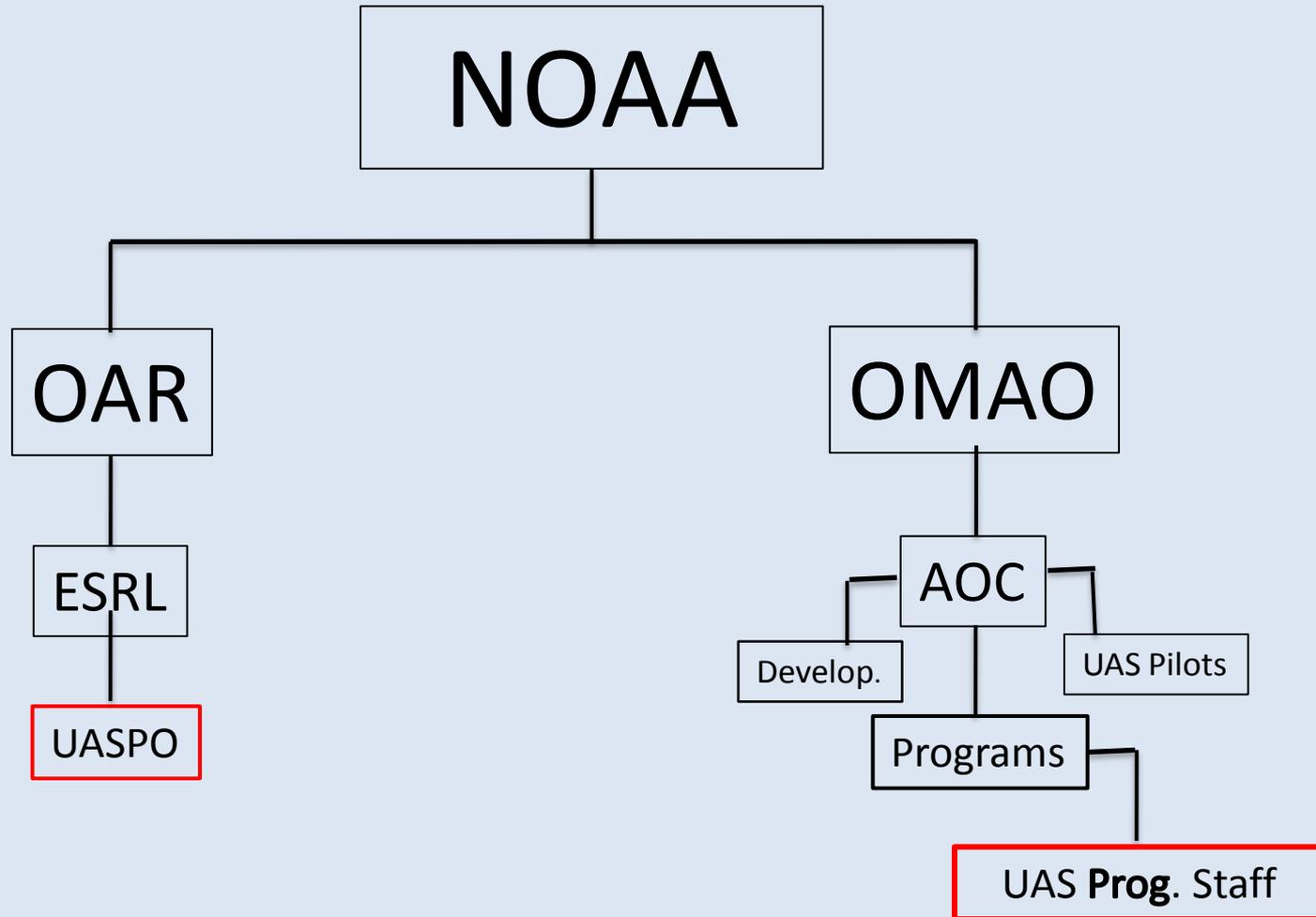


Office of Marine and Aviation Operations

NOAA's Interagency UAS Collaboration



NOAA UAS Staffing



NOAA UAS Platforms

Global Hawk

Puma

Sky Wisp

Quad-copter

Hexacopter

Coyote

GALE

Silver Fox

Manta



GLOBAL HAWK

Hurricane and Severe Storm Sentinel (HS3)

AOC CONTRIBUTION

3 Pilots
2 Technicians (part time)

Atmospheric Tropical Tropospheric
Experiment
ATTREX



GLOBAL HAWK

Hurricane and Severe Storm Sentinel (HS3)

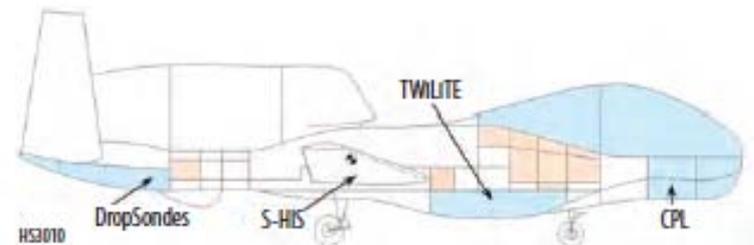


Figure 3-5: Environmental Global Hawk Payload Arrangement

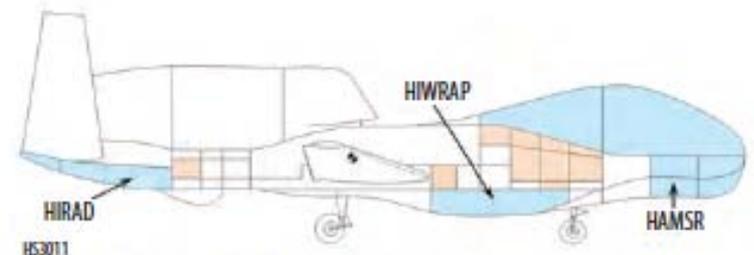
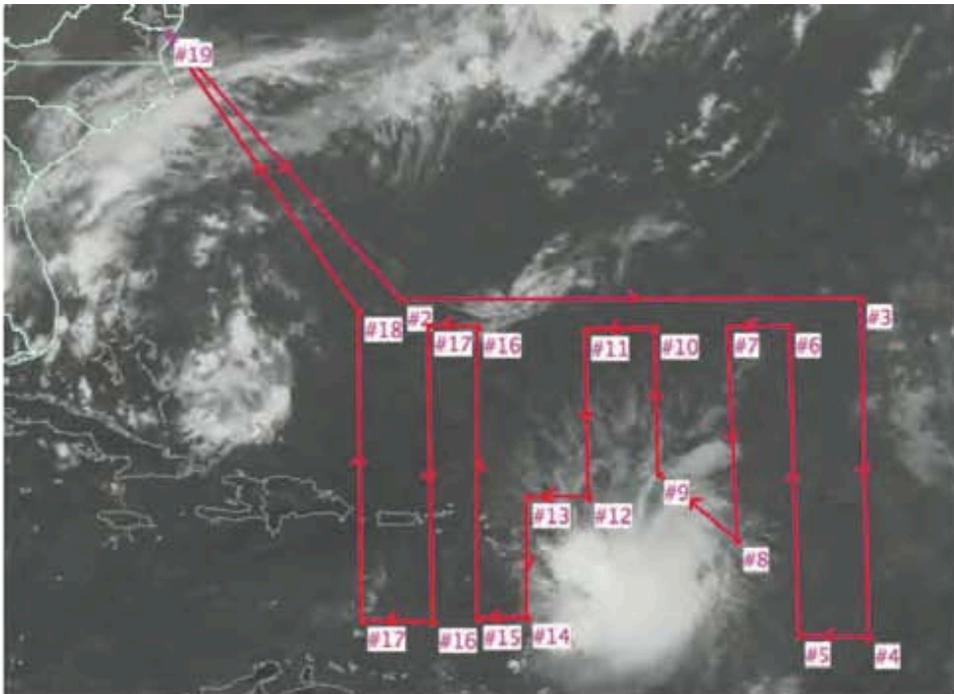


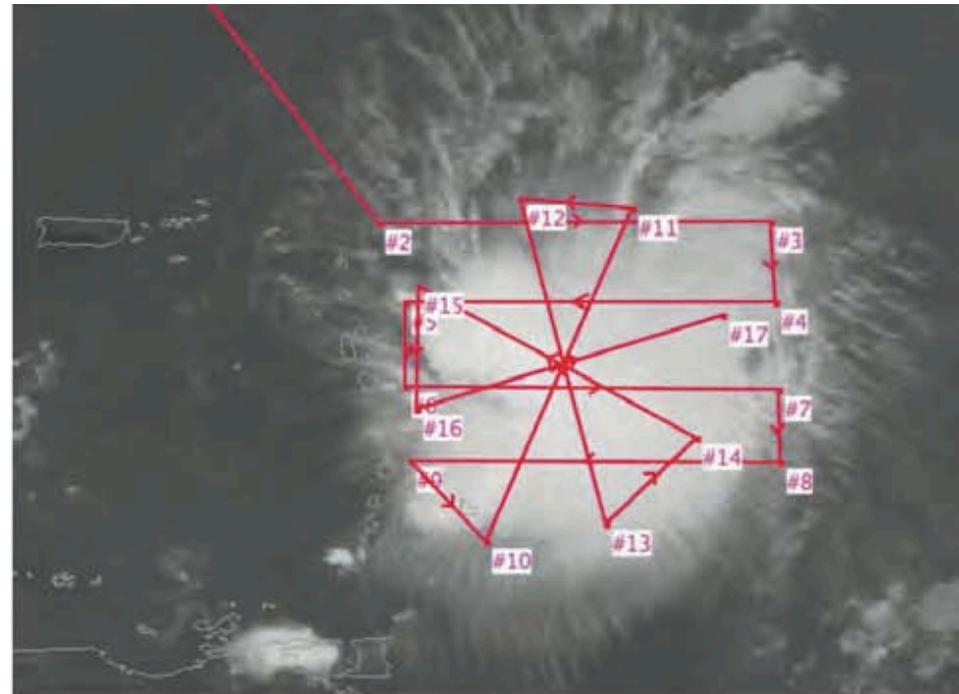
Figure 3-6: Over Storm Global Hawk Payload Arrangement



HS3 Flight Tracks for 2012 Hurricane Season



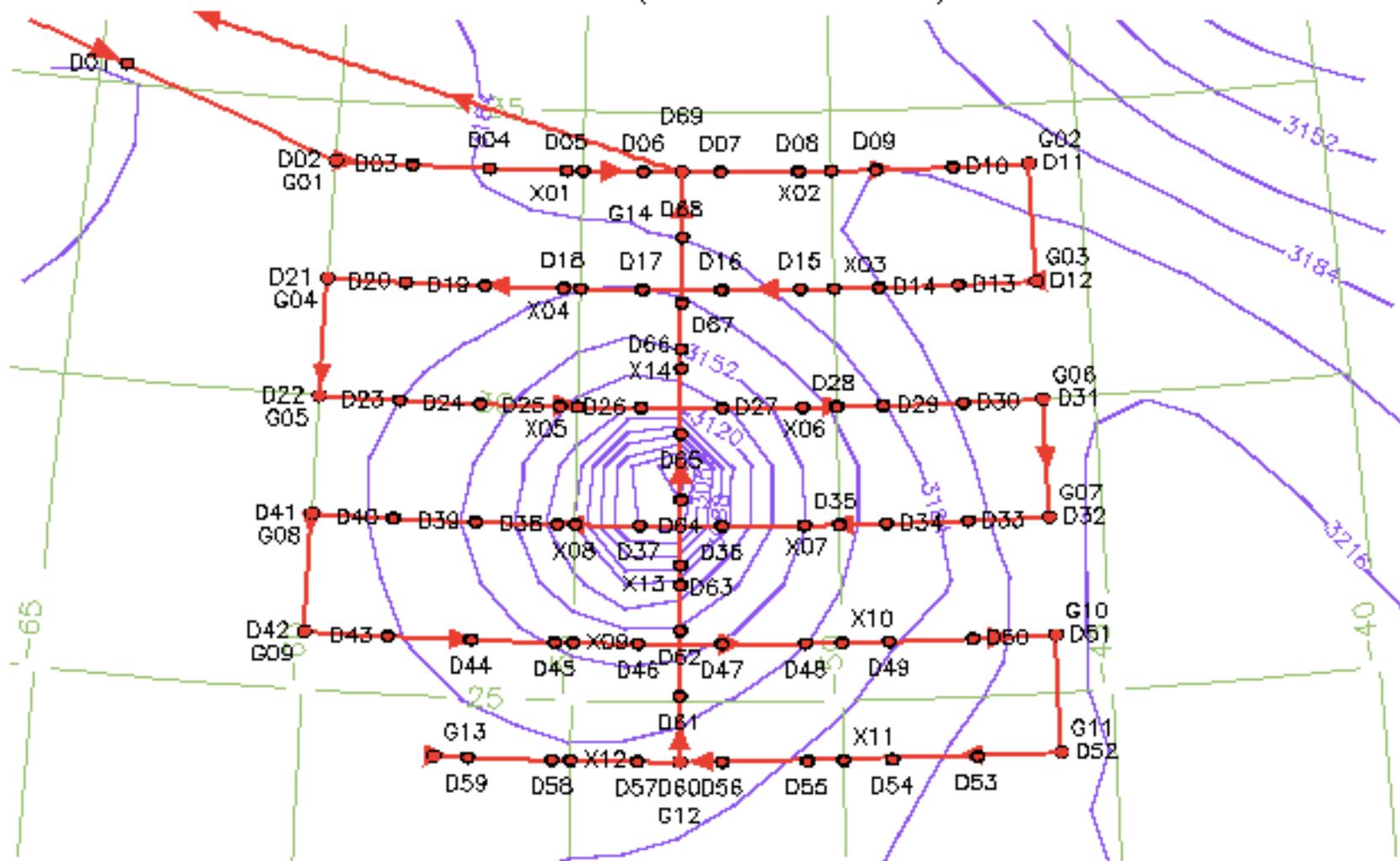
Environmental Flight Pattern



Storm Structure Flight Pattern



2012-09-14T23:15 UTC (72-hr fcst) at 700.0 hPa

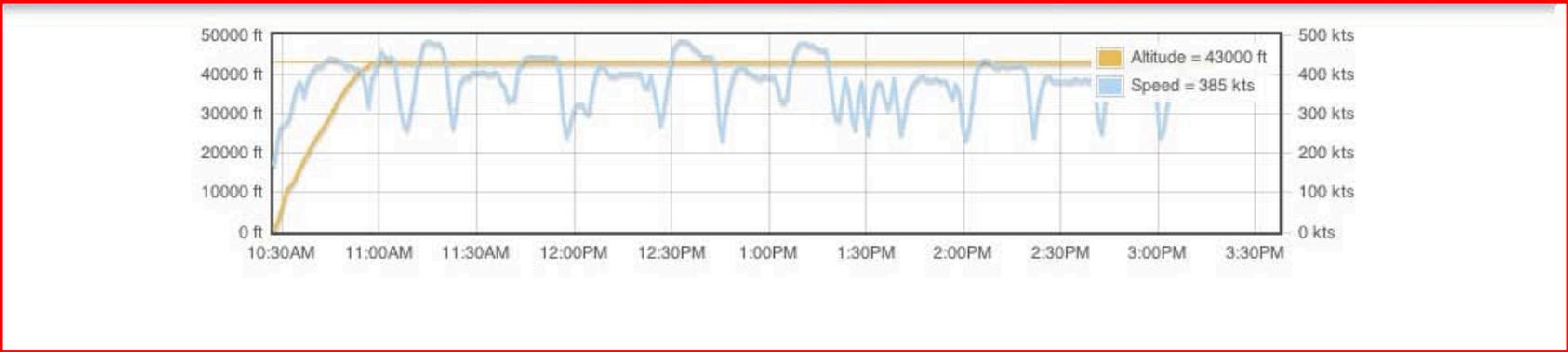
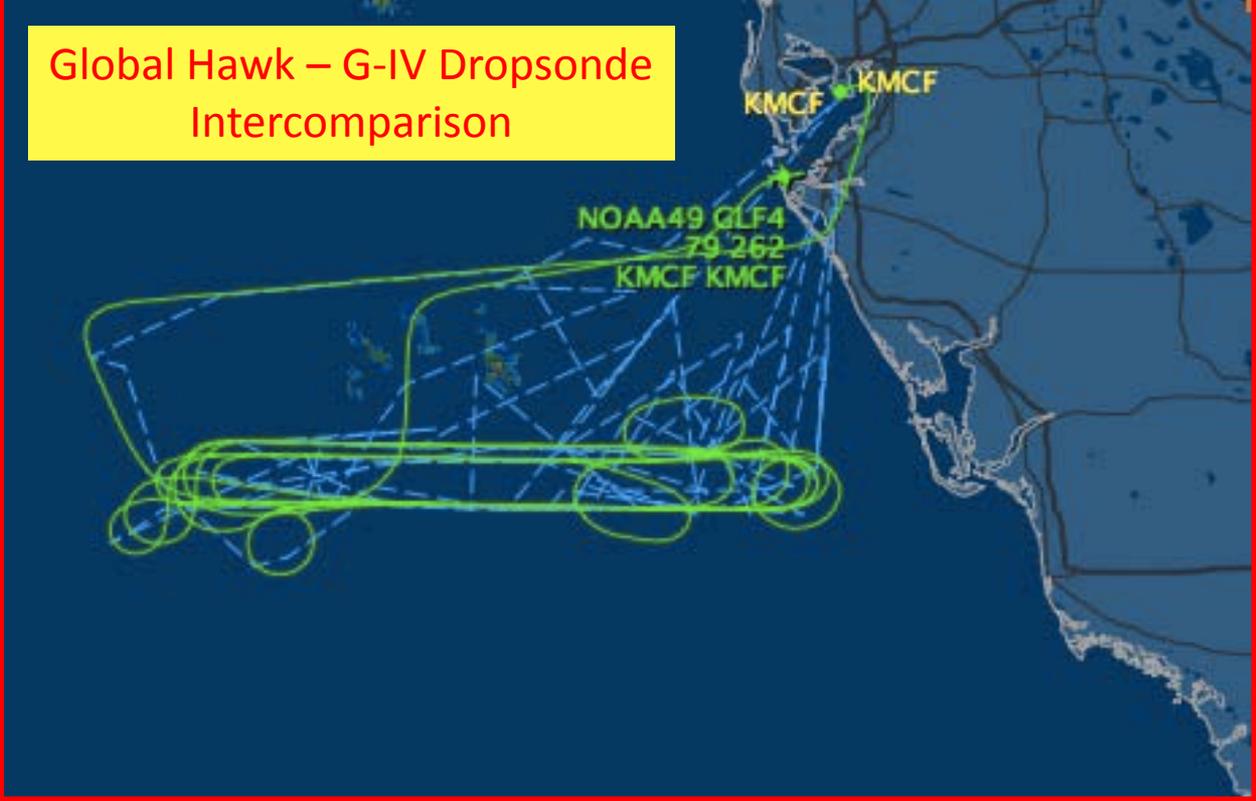


Z (gpm)

GDAS-GFS

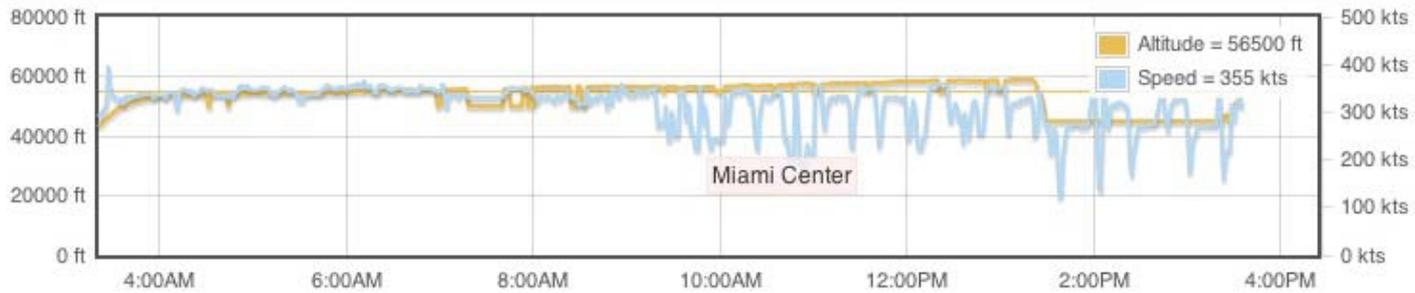


Global Hawk – G-IV Dropsonde Intercomparison



Global Hawk – G-IV Dropsonde Intercomparison

NASA872 ZZZZ
533 310
KEDW W168



PUMA OPERATIONS



Office of Marine and Aviation Operations



Semper Paratus

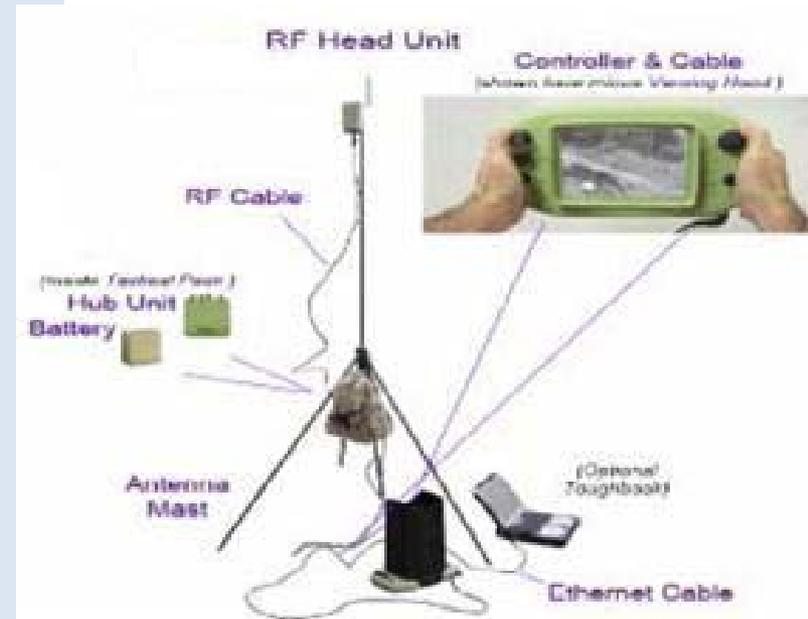
AVIATION environment

50

frag

Puma AE Specifications

- Two operators
 - Vehicle Operator (VO) Mission Operator (MO)
- Range
 - 10-20km
- Endurance
 - Up to two hours
- Payload
 - EO/IR gimballed camera



Puma Launch





Puma Recovery

- Deep stall auto-land
- Main wing and stabilator are designed to separate on touchdown to dissipate energy
- Land or water recovery



PUMA ACTIVITIES

- 1. Demonstration flights for law enforcement with U.S. Coast Guard and Fla. Dept. of Fish and Game**
- 2. Developing higher resolution camera capabilities to provide better service to multiple agencies.**
- 3. With U.S. Navy assistance, upgrading current pilots to qualified Puma instructors**



SKYWISP



Office of Marine and Aviation Operations



SKYWISP UAS



COYOTE AND GALE



Coyote UAS

Partnership with NAVAIR and BAE Systems
Packaged in sonobuoy tube
Deployed from P-3 free-fall chute
Demonstration flight 20 Sept 2009
Telemetry data streamed to GCS on P-3



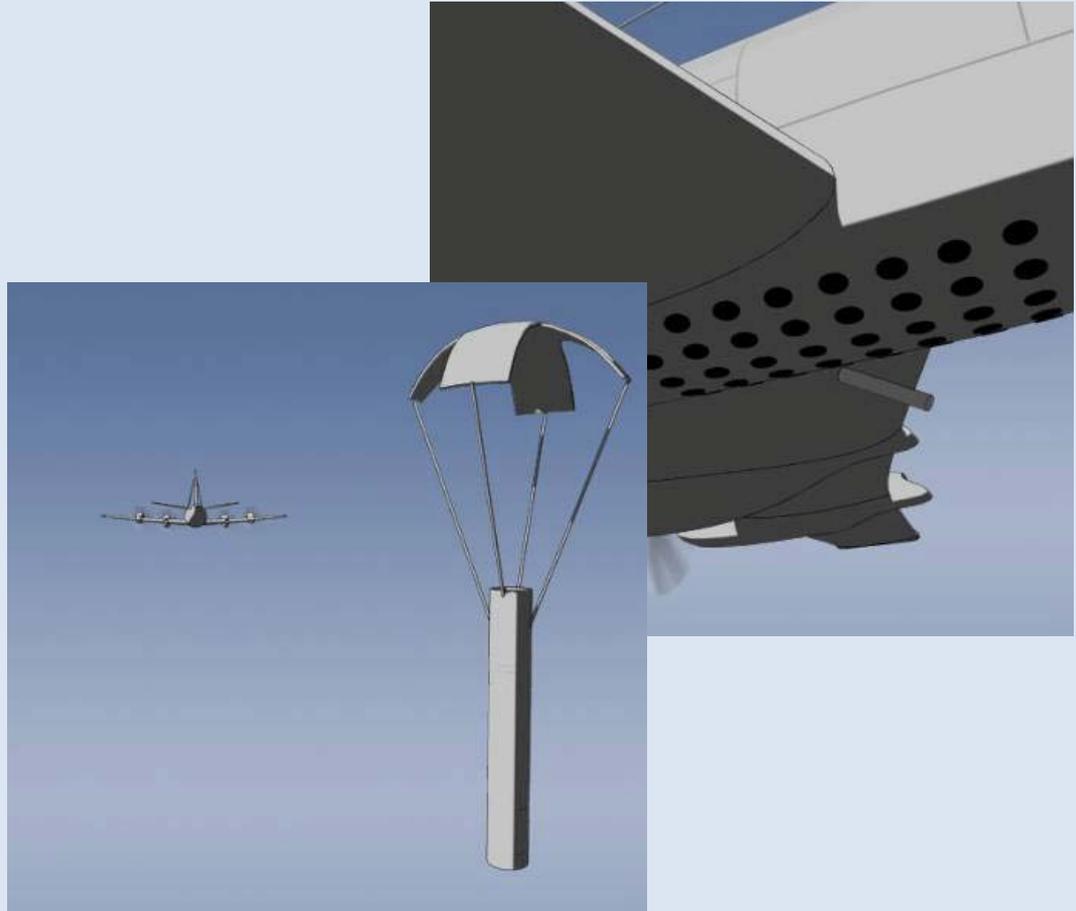
Technical Requirements

P-3

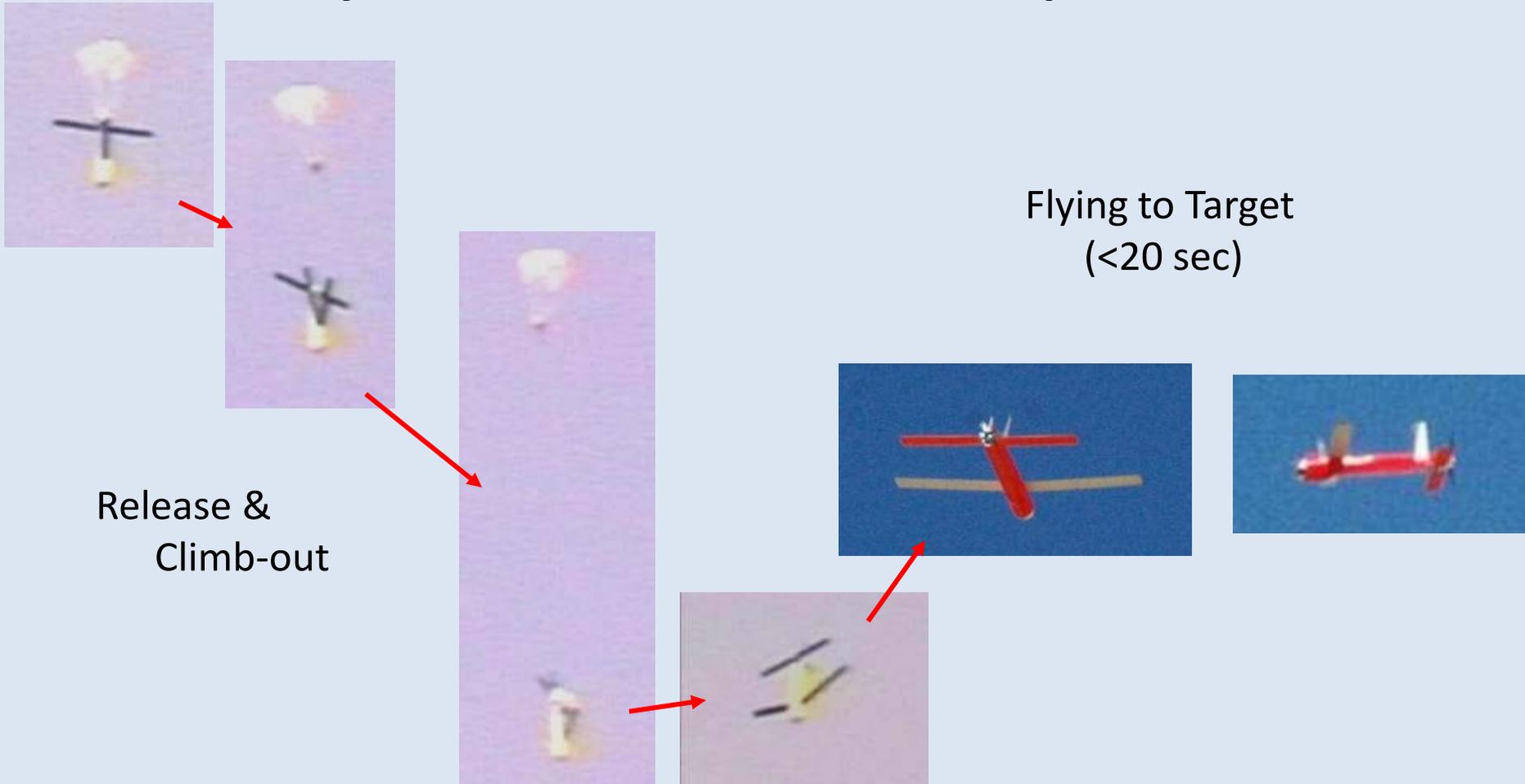
- Store and deploy from within an “A” size sonobuoy tube (4.875” D x 36” L)
- Deployed at 150-250 kts, 5-20K ft

UAV

- Flight Airspeed: 50-75 kts
- Flight Duration: 1.5 hrs
- Range: 20 nm (threshold), 50 nm (objective)



Coyote – Mission Sequence

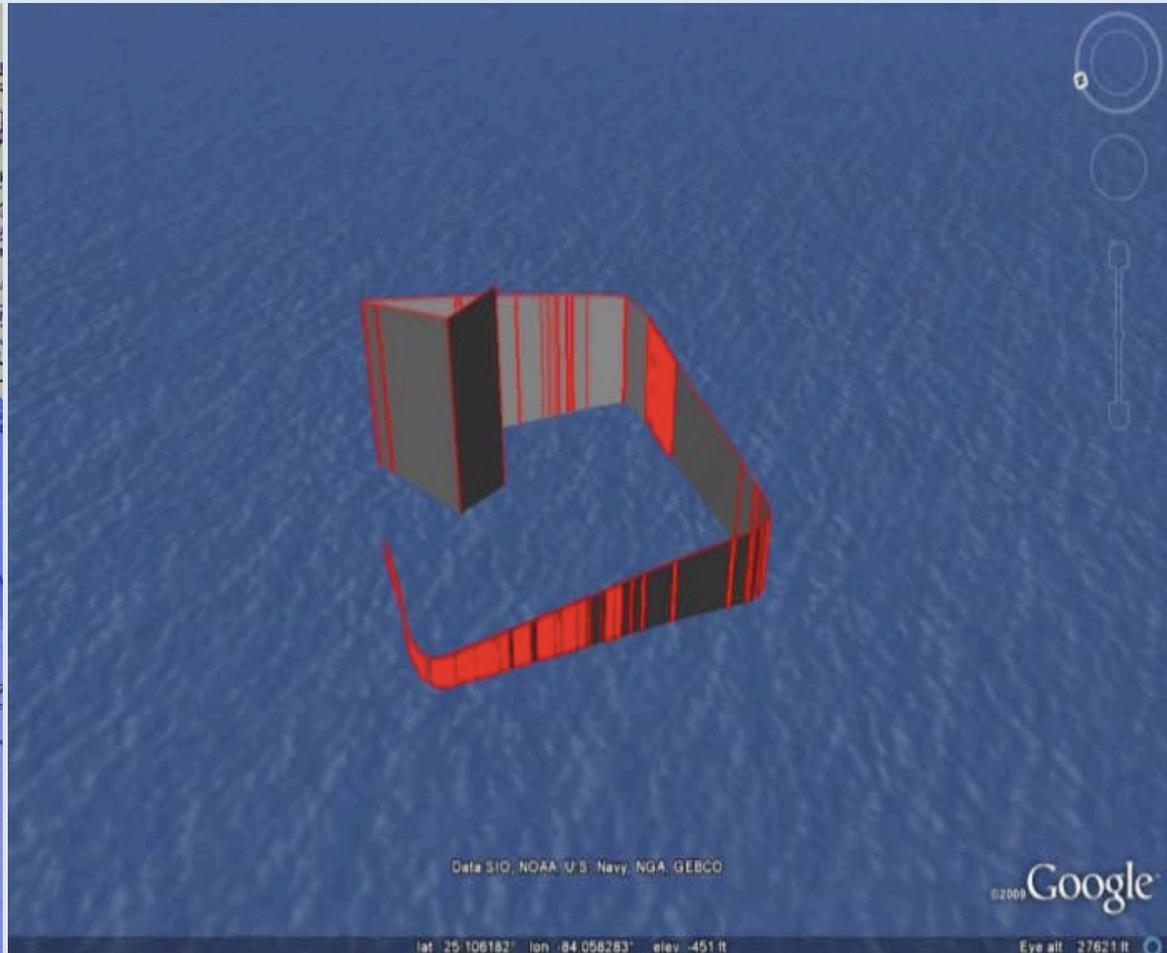
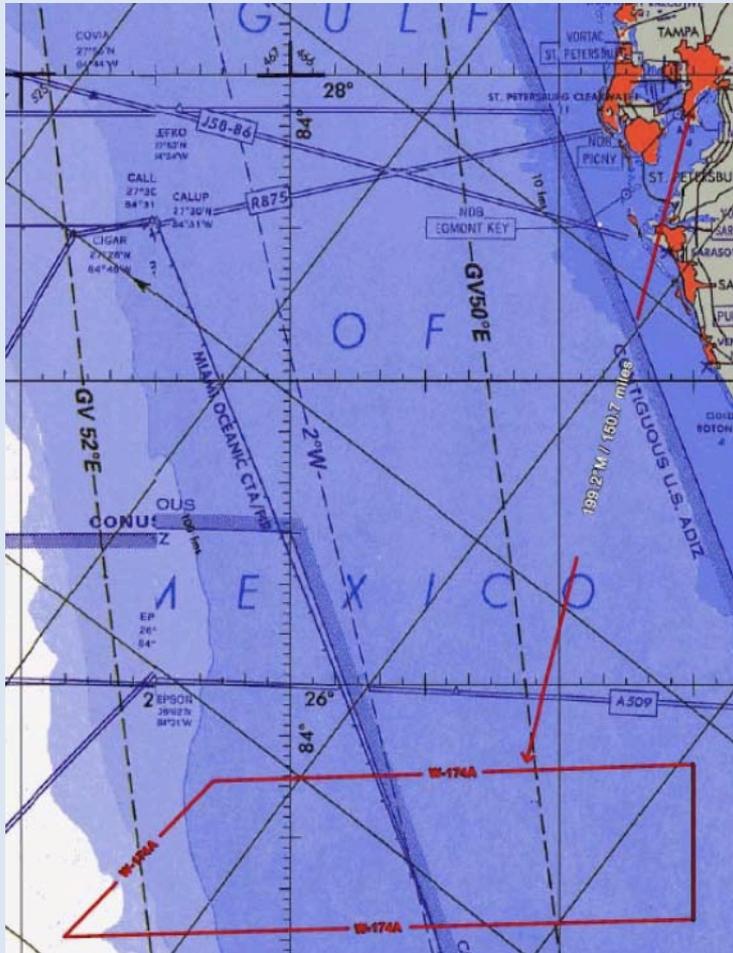


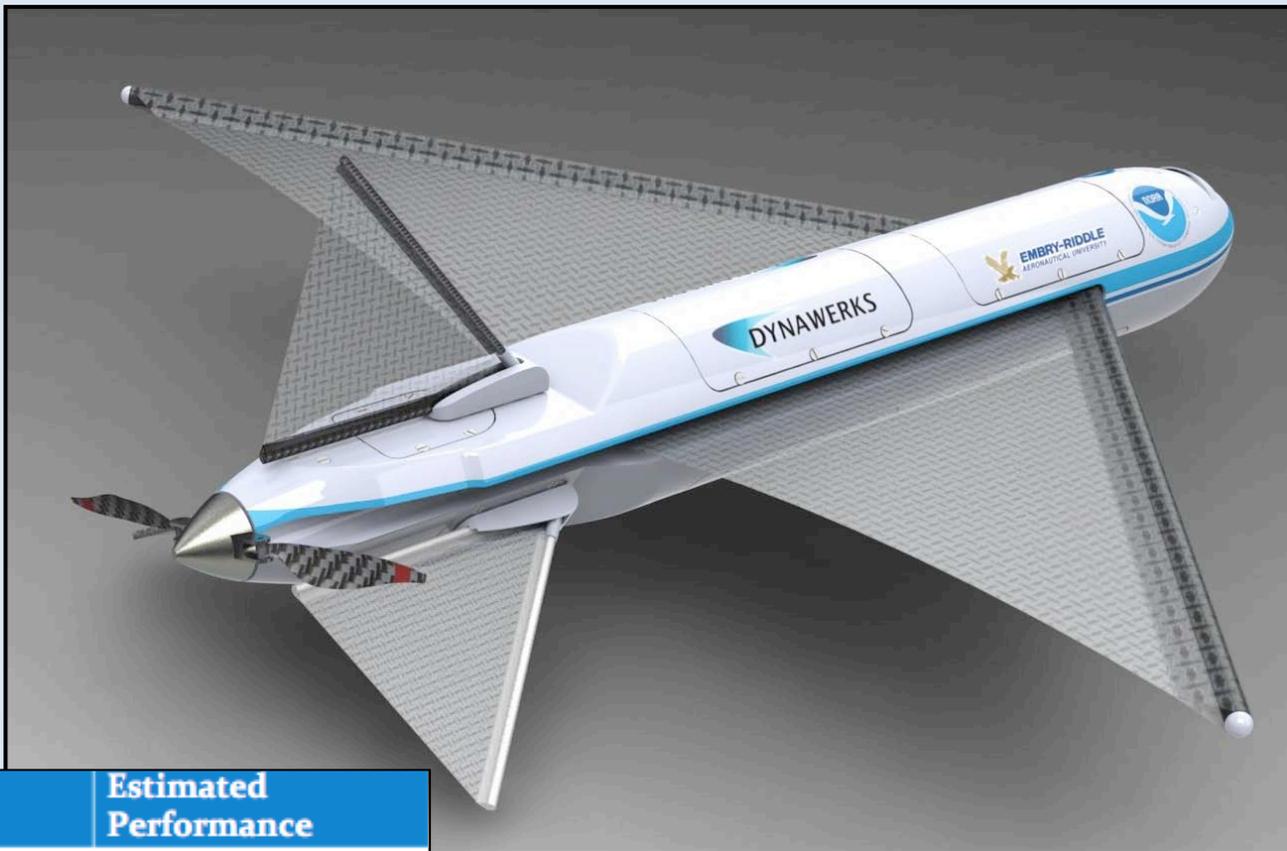
Purpose

- To evaluate the utilization of the Coyote for hurricane research, as well as other scientific applications
- To evaluate the ability of the Coyote to fill data gaps in low altitude regions (near-surface TC environment) and provide continuous data to supplement existing instrumentation



Demonstration Flight





Performance Attribute	Estimated Performance
Mission Weight	8.0 <u>lbm</u>
Cruise Speed	42 <u>kts</u>
Dash Speed	110 <u>kts</u>
Stall Speed	22 <u>kts</u>
Mission Endurance	60 minutes

GALE

*Embry-Riddle Aeronautical University and
DynaWerks*



SILVER FOX

MANTA





Silver
Fox

Manta



VTOL





HEXACOPTER



QUADCOPTER

D4-1000



DEVELOPMENT





AOC

HEXACOPTER

UNDER DEVELOPMENT



Office of Marine and Aviation Operations

SUMMARY OF NOAA'S COLLABORATIONS

- Providing flight (3 pilots) and technical (2 technicians) support to NASA HS3.
- Working with the U.S. Coast Guard and Fla. Dept. of Fish and Game on enforcement demonstrations using the Puma.
- Working with the U.S. Navy on obtaining the Coyote and Silver Fox UASs.
- Working with the U.S. Navy to obtain instructor training for Puma pilots at Pt. Magu, CA.
- Working with Dept. of Interior and Dept. of Forestry about sharing UAS roadmap techniques and building upon each agency's successes and failures.



QUESTIONS?

