NAVAL POSTGRADUATE SCHOOL

THE AIRCRAFT FLEET

UV 18-A Twin Otter (2)

Pelican (2)

Sentry BK 30
UAV (5)

SPA-10

NAVAL POSTGRADUATE SCHOOL

FACILITIES:

- Marina Facility
  - 3500 ft runway - manned operations only
  - 30,000 sq ft maintenance hangar
  - Instrumentation and Calibration Laboratory
  - Maintenance and Payload integration shops
  - Offices

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CIRPAS FACILITIES:

- **Camp Roberts Facility**
  - **Friendly airspace for UAV testing and training (R2503).**
  - **Military ground maneuvers (equipment, personnel)**
  - **3500 x 60 ft runway**
  - **2000 sq ft hangar**
  - **Office Space**

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UV-18A Twin Otter

TODWL two axis scanner

- Operated for 15 years
- Research Capacity: 1500 lbs
- Research Power: 5600 W at 28 VDC, 4000W 110VAC 60 hz:
- Science Payload Stationing:
- - Internal Standard Racks
- - Various Pylon Mounted Pods
- - Various Fuselage Mounted Fairings

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New UV-18A Twin Otter

Army Golden Knights UV-18A Transferred to CIRPAS on Sept 2013

Now BUNO 762255

ALL Research Modifications to our current Twin Otter (256) are transferable to the New Twin Otter (255)

Army has provided funds to cover all maintenance and some Research Modifications

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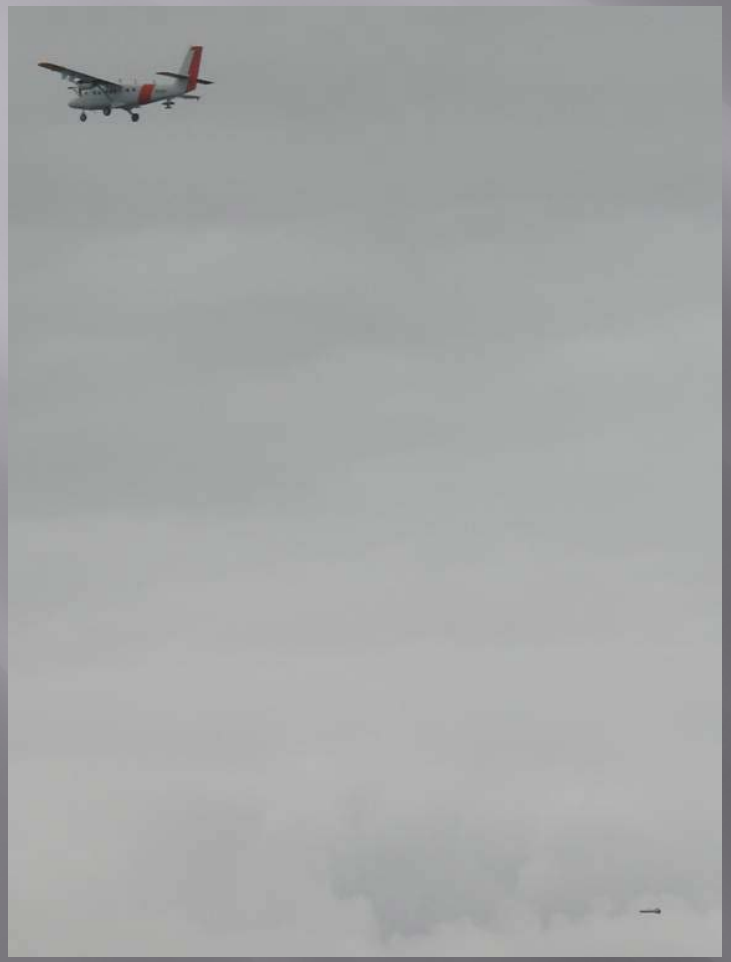
INSTRUMENTATION - Smart Towed Vehicle



Operates at 300 Ft
1200 Ft. Separation Possible
75 Lbs. Flux Payload

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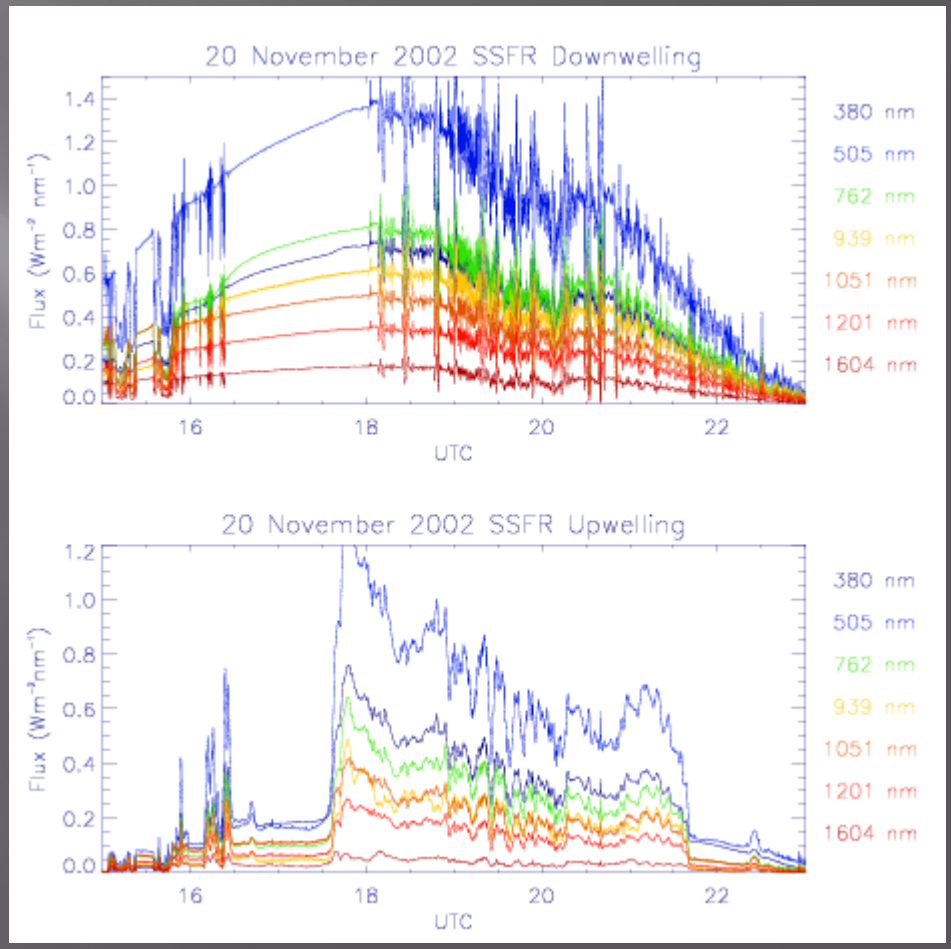
INSTRUMENTATION
Stabilized Radiometer Platform



- Radiometric Stabilized Platform Now Operational
- Flight tested in Spring 2014
- Holds 3 Radiometers Stable within 15 Degree of Aircraft Movement

Stabilized Platform Off / On /Off

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INSTRUMENTATION

MICRO-SIZED AIR-LAUNCHED EXPENDABLE METEOROLOGICAL SENSOR & CHAFF

ALE-47 Pod can shoot various chaff cuts for observation with ground or air based Radars

The New QinetiQ MAXMS is prepackaged in a MJU-38/B form factor. Upon ejection, the excess packaging falls away allowing the parachute to deploy and Sonde to Fall.

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Storm Penetrating A-10

A-10 has 11 hard points on wings and belly where 8000 lbs of instruments may be suspended.
It has a belly bay where 2200 lbs of stuff may be mounted

Engineering test flights are planned in mid-year 2015 (including tests of baseline instruments and communication).
Progressive science flights are planned in latter half of 2015

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Storm Penetrating A-10

	SPA-10	Storm T-28
Max sampling altitude	~30,000 to 35,000 ft	23,000 ft
Max on-station time with 115 mi mission radius	~2.75 h at 10,000 to 30,000 ft	~1 h at 20,000 to 23,000 ft
Payload	2,200 lb internal, 8000 lb external (more if altitude is limited)	500 lb external
Pylons	7 pylons with triple ejector racks plus 4 Additional pylons for a possible total of 25 instrument pods	2 each single pod pylons + 2 modified wingtip instruments
Mission Radius w/ 1h on-station at altitude	400 mi with 1 h at 30,000+ ft	100 mi with ~1 h at 20,000 ft
Ferry Range	1040 mi internal fuel only; 1500 mi with single external tank	500 mi
Payload Power	15 kW AC (fully isolated from aircraft power) from hydraulic generator	2 kW DC (fully isolated from aircraft power) from secondary generator on engine

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Sentry Block 30 UAS

Operational For One Year:

- Med Endurance, Med payload platform.
- Small Footprint, Easily transportable, Ruggedized UAV
- 10,000 ft. Max Altitude
- 6 Hours Endurance

Sensor / Payload Descriptions:

- EO/IR Imaging Payload
- 75 LBS Payload Capacity

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NEPTUNE UAS

Neptune II – RQ-15

- 21 Aircraft
- 6 GCS
- 6 Launchers
-6 GS-207 EO/IR
-6 Ultra 8000 Sensors
-Spare Parts Kits
-22 Million + Value

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NEPTUNE UAS

Problems:

- All Aircraft need an upgraded wiring harness to resolve reliability problem

- Kit for upgrade is available for ~$20k per AC

Instrument Issues with Water Landings?

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NEPTUNE UAS

Benefit:

- Designed for at Sea Operations
- 15 - 22 lbs. payload
- 0.25 –.5KVA @ 28v
- 2 – 4.5 Endurance
- 50 N miles Range
- Compact System
- Two Person Operation
- Navy IFC

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NEPTUNE UAS

Request for Transfer of Neptune System is Pending

Uses same GSC as our Sentry BLK 30 System

Which is now operating at Camp Roberts

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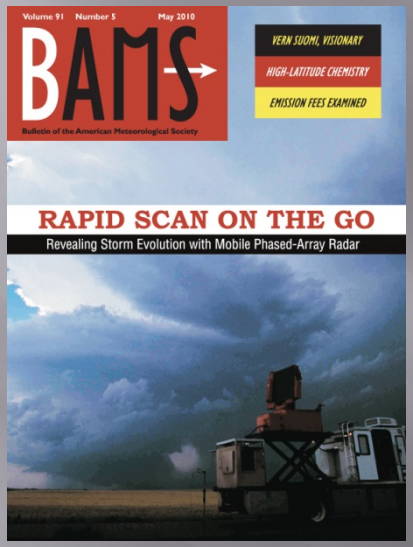
GROUND BASED ASSETS



MWR-05X Mobile Storm Radar

Parameter	Value
Transmitted frequency	X-Band
Transmit power	15.13 kW (peak) 240 W (average)
PRF	10 kHz (max)
Transmitted pulse width	1 μs
Antenna type	Mechanically rotated electronically scanned phased array
Azimuth BW	1.8°
Mechanical Azimuth Scan	360°, 30 RPM
Electronic Azimuth Back-Scanning	6 to 8, depending on elevation angle
Elevation BW	2.0°
Elevation Scan	-18° to 55° relative to the horizon
Range Resolution	150 m

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GROUND BASED ASSETS

TPQ-37 Mobile Radar

S-Band Full Phased Array
Peak power: 120 KWatts
PRF: 3 kHz
Range Resolution: 150 m
Dwell time (integration time): 250 ms
Scan time: 4 beams per second

Most research modifications used for the MWR are transferable to the TPQ-37

Conversion Process Saves Engineering Costs

Research Modifications Require Mostly time and material costs