



NOAA/NWS/SFSC MODERNIZATION UPDATES AND PLANS

GRUAN ICM-8

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AGENDA

Intro to SFSC

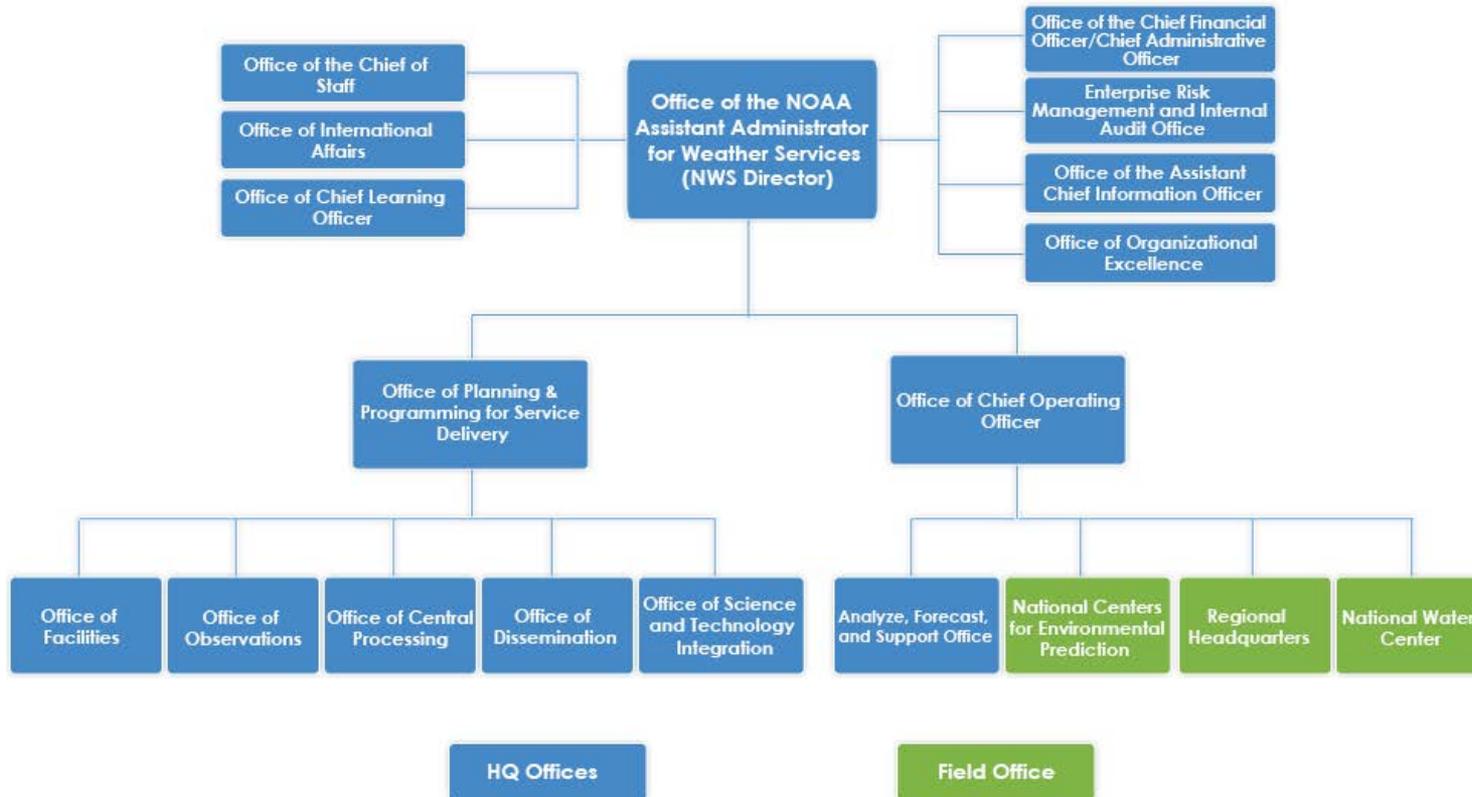
Modernization

Recent Updates

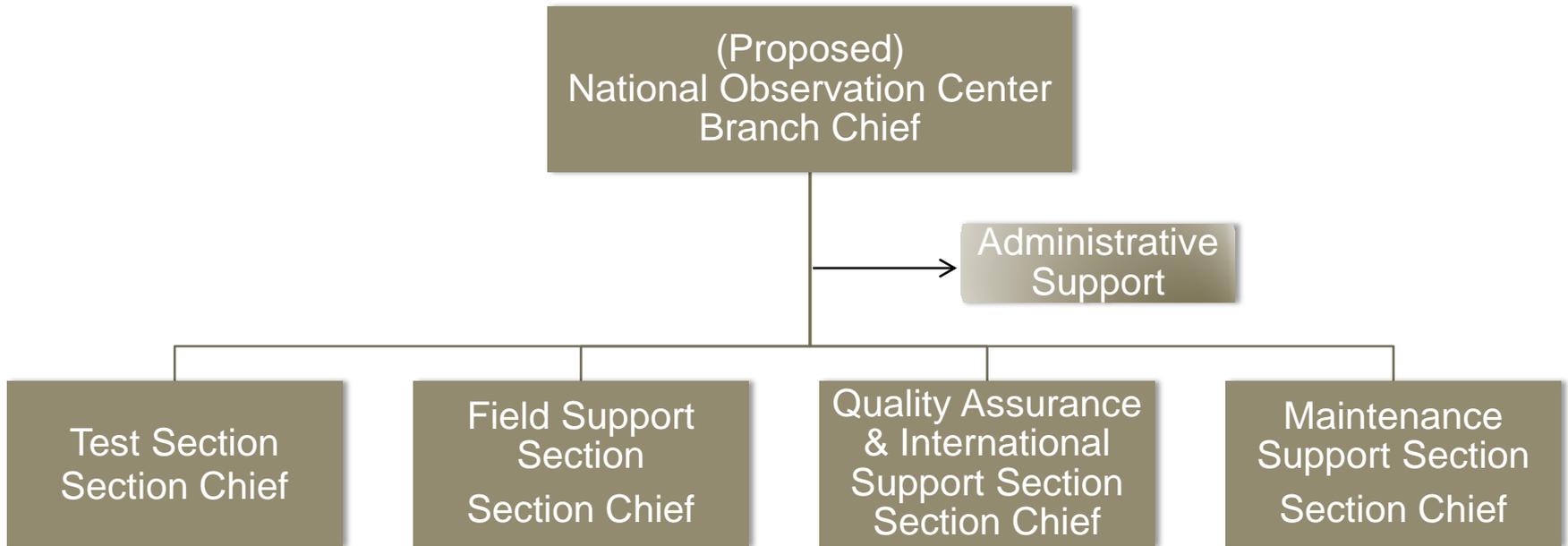
Change in Radiosonde Testing Philosophy for NWS?

Current and Future Activities

NWS ORGANIZATION



STERLING FIELD SUPPORT CENTER (SFSC)



SFSC MISSION STATEMENT

The Sterling Field Support Center is a one of a kind facility. Our mission is to ensure that NWS observing systems produce scientifically sound data which conforms to National and International standards for Upper Air, Surface and Climatological reporting.

As the NWS experts on Observations the SFSC:

- **Provides timely response to operational field problems and concerns related to these systems.**
- **Is the apex for integration of new and modified observational equipment and procedures.**
- **Actively participates in National and International committees and conferences for the purpose of sharing information, advances technologies, and fostering a commitment to the WIGOS Framework Implementation Plan.**

Sited in Northern Virginia on 226 acres
With four buildings and
32,000 square feet under roof



WFO

WSR88D

Radomes

Radomes

Inflation BLDG

Bldg 16/
Observer
Tower

Wind Tunnel

SFSC Test Beds

© 2012 Google

Google
614
Eye alt

Imagery Date: 8/28/2010

38°58'23.82" N 77°29'08.57" W elev 279 ft

MODERNIZATION EFFORT

NWS Standard Barometry Lab

- New Fluke Piston Gauge and Pressure Controller
- Calibration of Mercury Manometer MS-3
- New environmental controls and monitors
- NWS Standard Barometry Lab function, personnel, and equipment established at SFSC

Hardware

- Labs becoming standardized on National Instruments DAQs
- Temperature Bath, Supertherometer/Resistance Bridge, Reference Chilled Mirror, Chamber Instrumentation, Differential Pressure Sensors for Wind Tunnel
- GPS Simulator in Acquisition

Software

- Labs becoming standardized on NI LabView software
- Proficiency buildup through developer certifications
- Calibration Management Software in Acquisition

Establishment of Quality Assurance Team

- Developing management system for quality measurements and calibrations

NIST Relationship

STANDARDS LABS

Lab		Standard	Range	Uncertainty
	Temperature	Platinum Resistance Thermometer	(-80 to +55 °C)	± 0.002 °C
		Thermometry Bridge		
		Calibration Bath		
	Humidity	Humidity Generator	10 to 95%	RH: ± 0.5%
		Low Humidity Generator (TS 4500)	-95 to +20°C	± 0.1 °C
		Low Humidity Generator (TS 3900)		± 0.2 °C
		Chilled Mirror	-70°C to +30°C	± 0.1 °C
	Pressure	Piston Cylinder Gauge DH type PPC4	500 to 1100 hPa	0.002%
		Cistern-Siphon type Standard Barometer	0 to 1075 hPa	0.006%
	Wind	MKS 698A	Diff Press	0.08%
		Mensor	Diff Press.	0.03%
		Paroscientific	800 – 1100 hPa	0.07%
		Omega	Diff Press	0.08 %

ENVIRONMENTAL CHAMBERS

Chamber	Range	Capabilities	
	<p>Temperature/ Humidity</p>	<p>-62 to +66 °C 20% to 95% 234 cubic feet</p>	<p>Equipped with spray nozzle for ice accretion and frozen precipitation</p>
	<p>Temperature/ Humidity</p>	<p>-62 to +66 °C 20% to 95% 328 cubic feet</p>	<p>Intent to outfit chamber with radiation measurement system</p>
	<p>Temperature/ Altitude</p>	<p>-75 to +177 °C Ambient pressure to 10hPa 64 cubic feet</p>	<p>Equipped with GPS simulator to simulate differential GPS calculations</p>
	<p>Salt Fog</p>	<p>Set to 35 °C 80 cubic feet</p>	<p>Typical run is for 30 days</p>

SAMPLE OF SFSC CATALOG



ENVIRONMENTAL CHAMBER LAB EQUIPMENT

Tenney WITR Environmental Chamber ("Blue Tenney")

PURPOSE

This equipment (also known as the "Blue Tenney") is a large walk-in enclosure used to test equipment under simulated environmental conditions. The system can accurately control the interior temperature and humidity. Additional capabilities of the equipment include the ability to perform controlled insolation tests and freezing rain tests.

TECHNICAL SPECIFICATIONS (most relevant features)

Temperature range:	-62 to +66 °C
Humidity range:	20% to 95% relative humidity (effective controllable humidity range is for dew points of +8 °C and above)
Interior volume:	234 cubic feet (72" wide x 72" deep x 78" high)

NWS USERS AND TYPICAL EXTERNAL CUSTOMERS

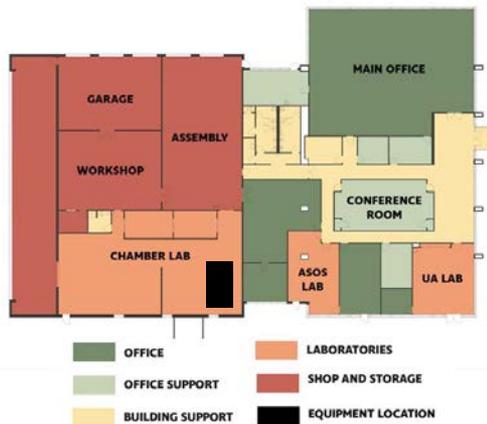
MANUFACTURER, MODEL, BUILD DATE, AND STATUS

Manufacturer:	Thermal Product Solutions
Model:	WITR
Build Date:	Approx. 1992
Status:	<ul style="list-style-type: none"> Equipment is expected to remain operational for the foreseeable future Steam generator and compressor replaced since 2014 Vulnerable to power failures; uninterruptable power supply should be added Water spray system needs to be replaced

FACILITY RELATED COMMENTS (e.g. difficult to load, should be in another location, etc.)

INFORMATION PROVIDED BY

LOCATION: Please review equipment location on the floor plan at left and make corrections as needed.



RECENT UPDATES

NWS management is reinvesting in SFSC

- Separate budget apart from testing programs
- Increase in staff
- Investment in new technology

Ultimate goal is TBD, but SFSC is the answer to a few significant agency issues:

- A space to put people
- The place for introducing new observing technologies
- Increased WMO involvement

SFSC to apply for WMO Region IV RIC

CHANGE IN RADIOSONDE TESTING PHILOSOPHY

Quality over Quantity

- Utilize FPH or CFH for frostpoint reference
- More sondes on a single balloon release, similar to plans for UAll
- Profile simulations using Flight Similitude Chamber w/GPS Simulator
- Maximize use of Environmental Temp/Humidity Chambers

Mimic WMO Processes for Analysis

- Current processes rely heavily on precision measurements
- Investigate GRUAN representation in Technical Review Group

CURRENT ACTIVITIES

DIRECTLY & INDIRECTLY SUPPORTING GRUAN

Current/ Near Term:

- Continue Beltsville/SFSC co-located GRUAN site (GMAC)
- Approval to perform up to 5 flights per month in support of GRUAN activities
- Continue data sharing with NESDIS/ Beltsville
- Complete Multi-thermistor radiosonde evaluation
- Transition NWS Pressure Standards Lab to SFSC
- Visit Lead Centre in Lindenberg to determine how we can support/ augment their functions
- Start using GRUAN related processes for upcoming radiosonde evaluation for temporary deployment
- Work with GMAC to develop test methodology for RS92 to RS41 comparison
- Begin assessment of Lockheed Martin radiosonde for inclusion into GRUAN

FUTURE ACTIVITIES

DIRECTLY & INDIRECTLY SUPPORTING GRUAN

Long Term:

- Increased WMO Involvement including:
 - Establish RIC
 - GRUAN Participation
 - WIGOS
 - WMO UAll – Anticipated support of 2 onsite personnel (pending FY17 travel approval)
- Full US network radiosonde test and conversion to 403MHz
- Evaluate new profiling technology as it matures
- Transition Autosonde from RS92SGP to RS41

HOW CAN WE SUPPORT GRUAN?

OUR VISION IS TO SUPPORT THE LEAD
CENTRE AND G-MAC

NOW IS THE TIME!