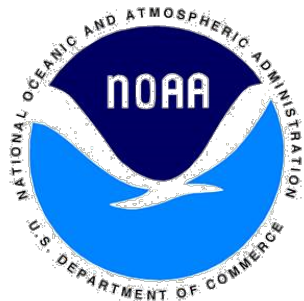


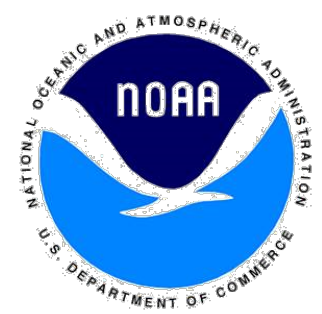
GMAC: UPDATES FROM NWS STERLING FIELD SUPPORT CENTER

GRUAN ICM10 4/24/2018

DAN BREWER & TONY REALE & JIM FITZGIBBON

NWS STERLING FIELD SUPPORT CENTER





OVERVIEW

Changes to the National Network

Coordination Among GMAC members

Autosonde Characterization

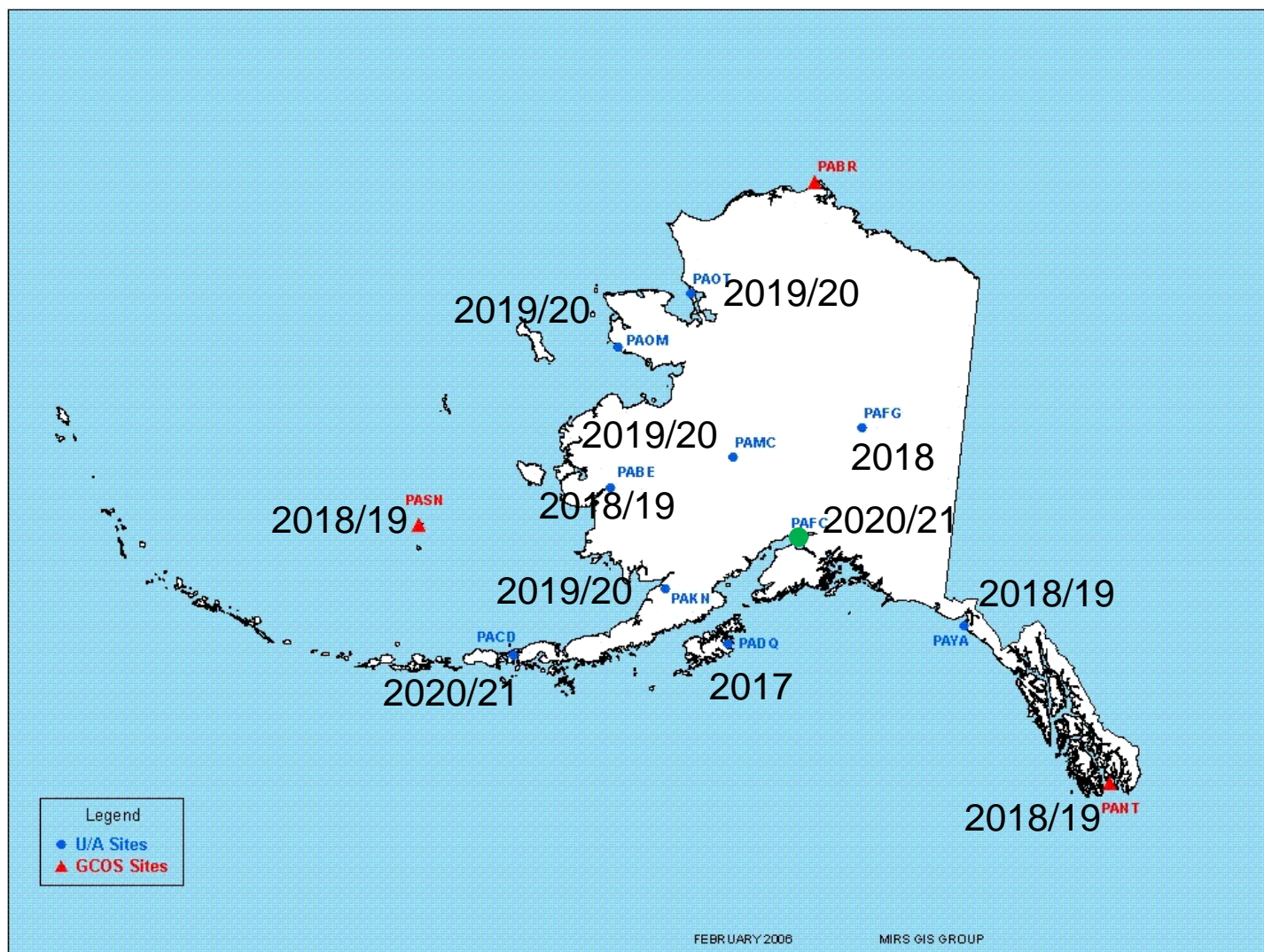
Solar Simulation

Upcoming Evaluations

WMO RIC Application

-
- Map of the United States showing the locations of U/A Sites (blue dots) and GCOS Sites (red triangles). The map includes state boundaries and major water bodies. Insets show American Samoa (NSTU), Hawaii (PHLI, PHTO), Mariana Islands (PGUM), and Puerto Rico and Virgin Islands (KSJU). A legend in the bottom right corner defines the symbols: blue dot for U/A Sites and red triangle for GCOS Sites. The date FEBRUARY 2006 and the text MIRS GIS GROUP are at the bottom.

TENTATIVE AUTOSONDE TRANSITIONS IN ALASKA

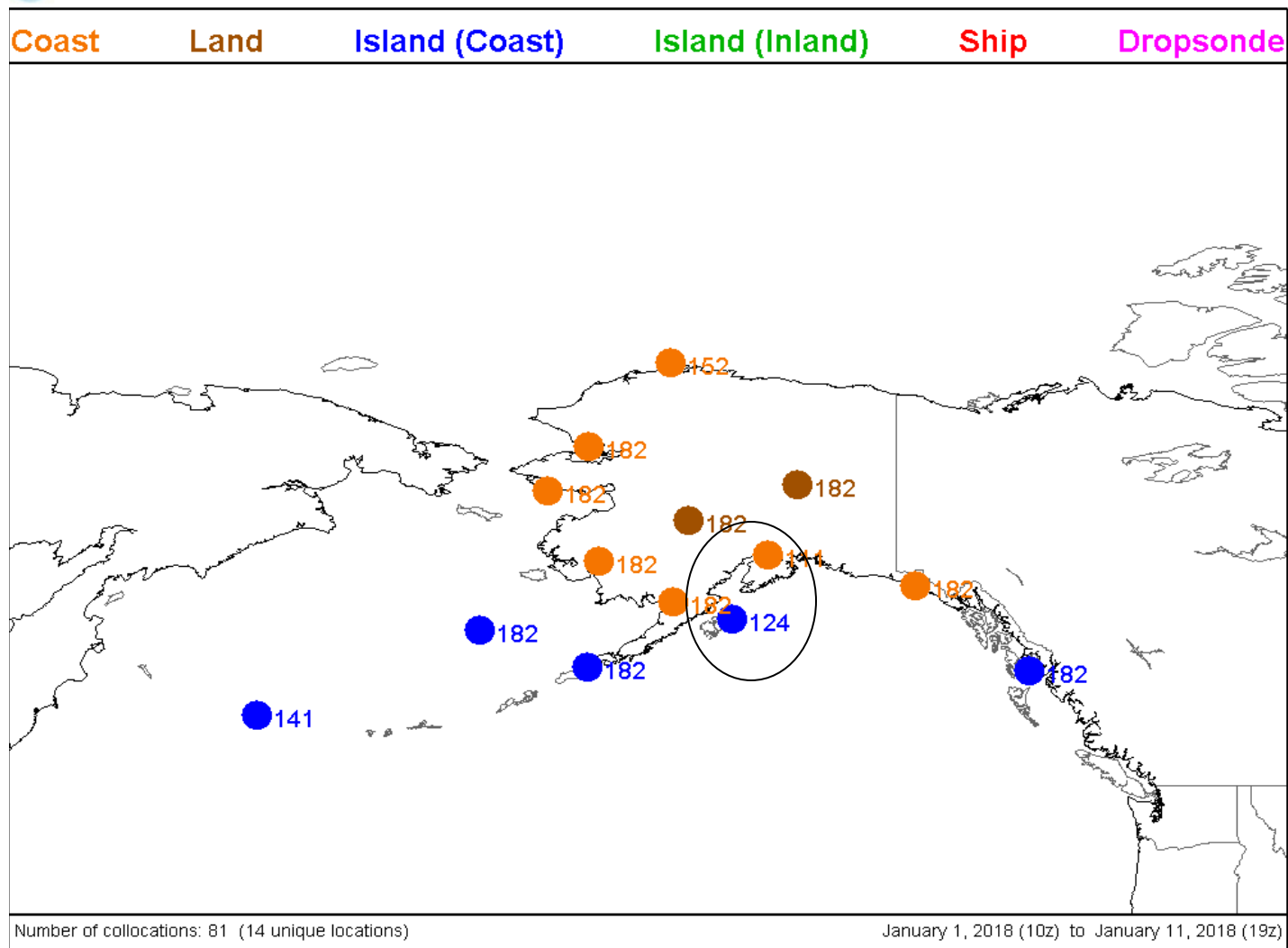




COORDINATION WITH GMAC: CHANGES TO ALASKA



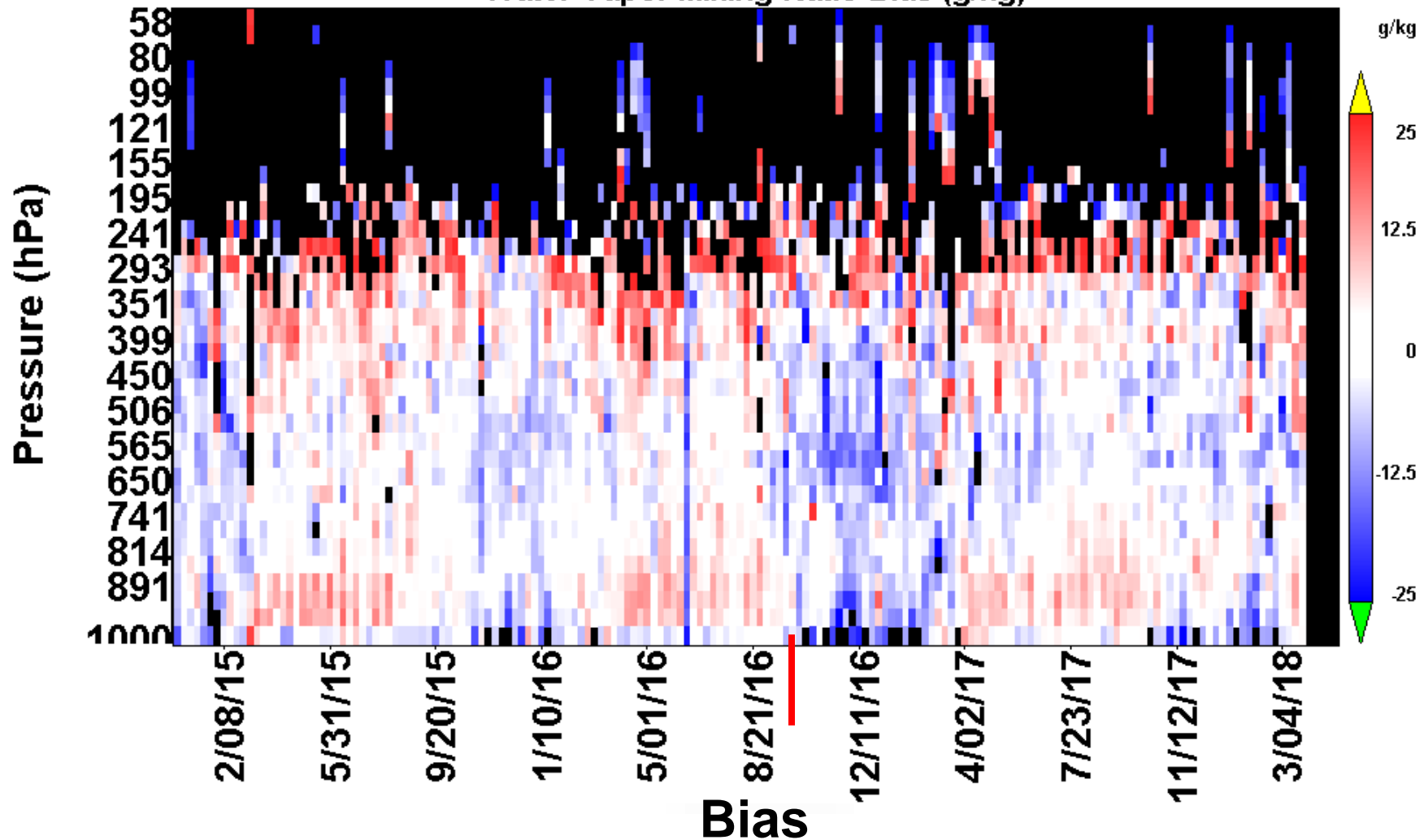
NOAA Products Validation System (NPROVS)



Alaska Region radiosondes scheduled for Transition to RS41 Beginning 2018



ECMWF ANALYSIS Analysis All Terrain(Passed) - Sonde All Terrain
Water Vapor Mixing Ratio Bias (g/kg)



Anchorage, transitioned to from SIP MK2 to LMS-6 **Sept 4 2016**



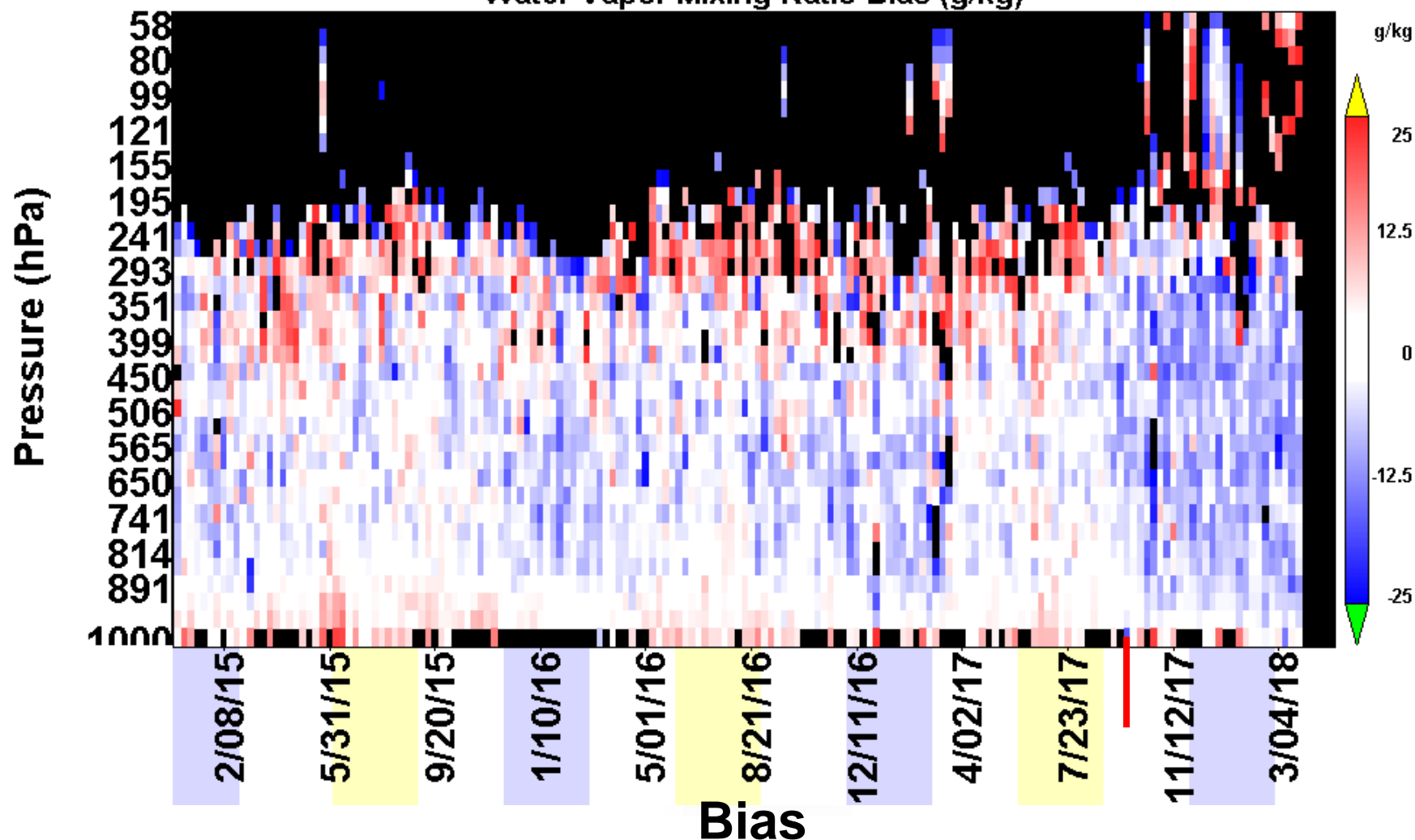
STAR

Center for Satellite
Applications and Research

formerly ORA — Office of Research and Applications



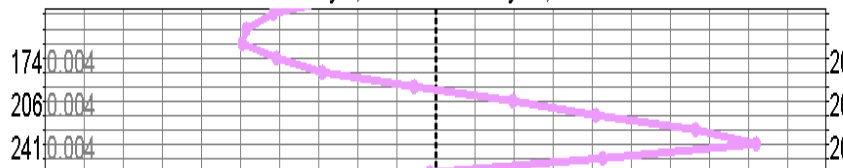
ECMWF ANALYSIS Analysis All Terrain(Passed) - Sonde All Terrain Water Vapor Mixing Ratio Bias (g/kg)



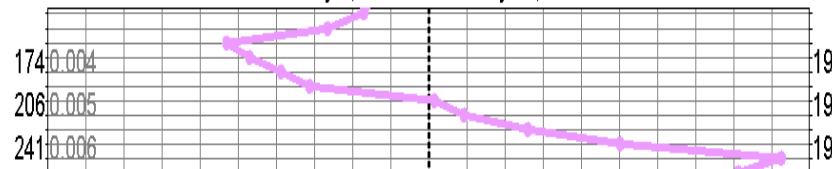
Kodiak, transitioned to LMS-6 Dec. 2013 and to RS41 (Auto) **Sept 12, 2017**



Water Vapor (sat - baseline) % error
January 8, 2018 to January 18, 2018



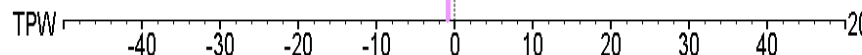
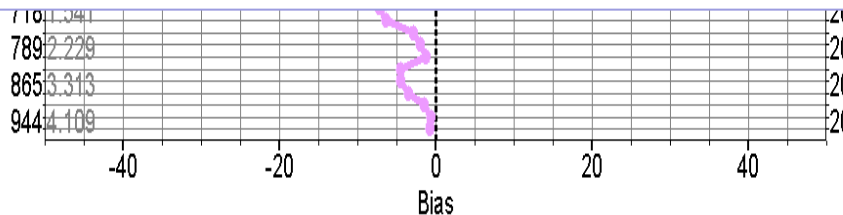
Water Vapor (sat - baseline) % error
January 8, 2018 to January 18, 2018



Pressure (hPa)

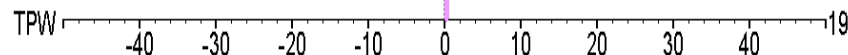
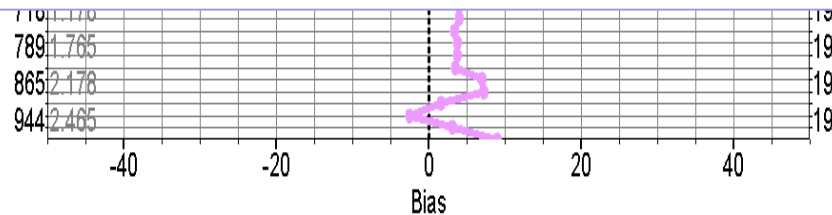
Such analyses based on historical collocations of radiosondes, forecasts and satellite profiles stored in NPROVS provides NWS with a (cost) effective alternative to project and monitor radiosonde transition impacts.

Sample Size



Baseline: SONDE

ECMWF



Baseline: SONDE

ECMWF

Time Series (previous 2 slides) and associated 10-day vertical statistics of ECMWF-minus-Radiosonde Bias confirms RS41 wetter (ECMWF looks drier) ... 9

COORDINATION AMONG GMAC MEMBERS



➤ **Coordinated flights**

- Currently once per month
- Intend to coordinate once per week
- Most of coordinated flights out of Autosonde

➤ **Shared data server**

- Upload flights for NESDIS to include in NPROVS products
- Separate/private data products for sensitive data

➤ **Intermet and RS41 dual CFH flight**

AUTO-LAUNCHERS CHARACTERIZATION

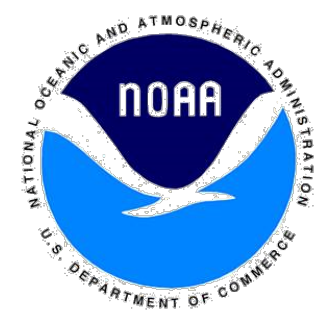


- **Characterizations performed on Autosonde and Robotsonde**
- **Characterizations put more emphasis on the operational utility of the technology than the scientific observations**
- **Can we share results? Probably not in entirety, but perhaps targeted areas (next slide)**
- **Can we perform additional testing? Possibly. Depends on resources**

AUTOSONDE CHARACTERIZATION



<i>Flight Train Components</i>	<i>Supplier</i>	<i># Flights conducted</i>	<i>Avg. Burst Altitude</i>	<i>Avg. Ascent Rate</i>
<i>GP26 (600g) w/ Integrated parachute</i>	<i>Vaisala</i>	<i>129</i>	<i>29111 m</i>	<i>301 m/s</i>
<i>GP26 (600g) w/ Integrated parachute</i>	<i>Totex</i>	<i>25</i>	<i>32440 m</i>	<i>294 m/s</i>
<i>GP26 (600g) w/ External Parachute</i>	<i>NLSC</i>	<i>16</i>	<i>33530 m</i>	<i>292 m/s</i>
<i>GP20 (350g) w/ External Parachute</i>	<i>NLSC</i>	<i>10</i>	<i>29665 m</i>	<i>272 m/s</i>



SOLAR SIMULATION

Test Resource



Specification

Temperature range: -75 °C to +177 °C

Pressure range: Ambient to 5 hPa

Pressure change rates:

1000 to 117 hPa (approx. 176 hPa per min); 117 to 45 hPa (approx. 7 hPa per min); 45 to 5 hPa (approx. 3 hPa per min)

Interior volume: 1.82 cubic meters (1.22 m W × 1.22 m D × 1.22 m H)

Test connections: Four ports with hermetically sealed interchangeable connectors



Manufacturer: SCIENCETECH

Source: 1000W Xenon Lamp

Spectral with AM1.5G filter: 400 nm – 1800 nm (400 nm – 1100 nm is Class AAA)

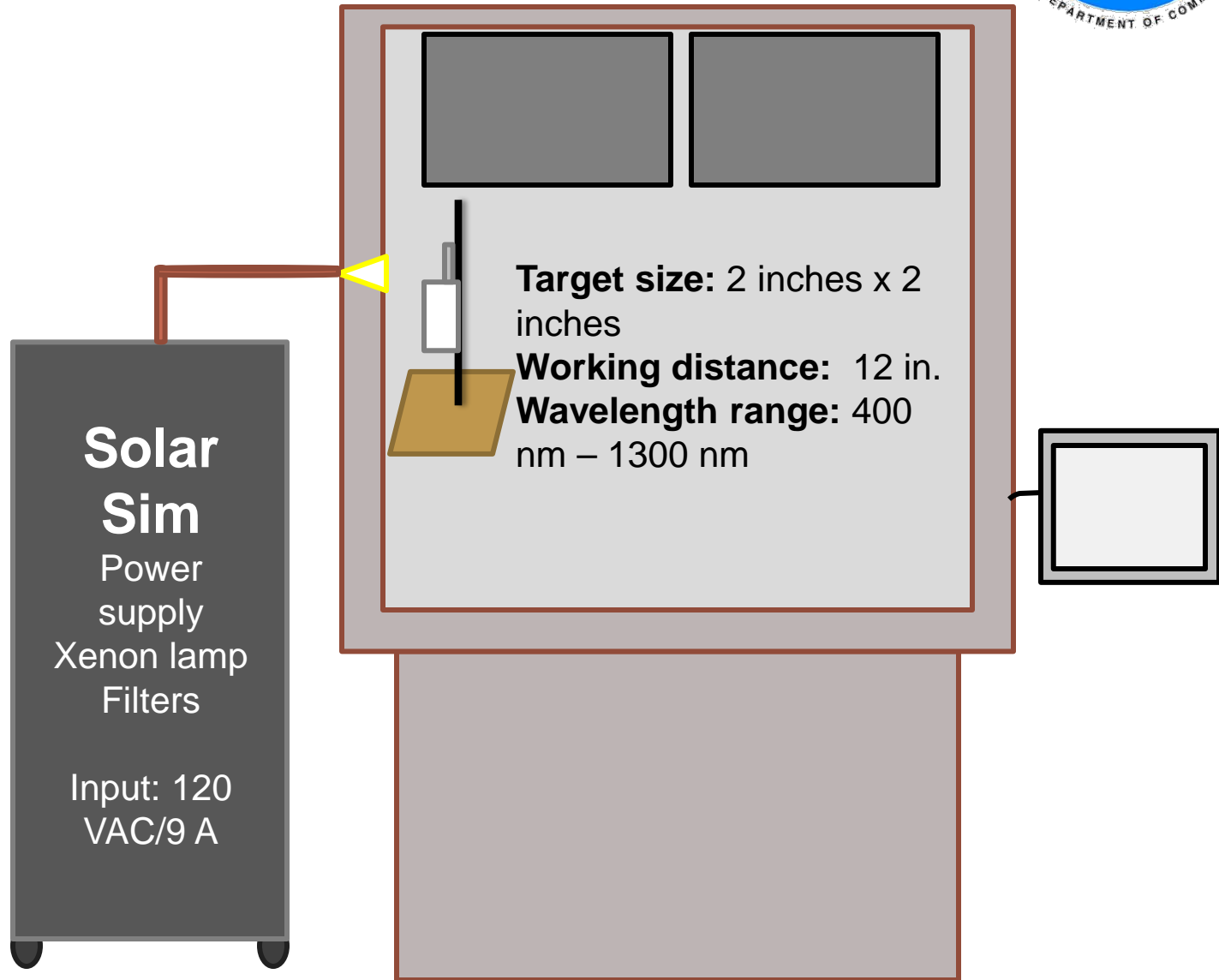
Working Distance: 30 cm

Output Power: 1 Sun with AM1.5G filter (100 W/cm² and 1.7 Suns without filter.

Target Size: 2 inch x 2 inch

Integrated Shutter for varying solar angles and exposure controller

SOLAR SIMULATOR – INTEGRATION INTO PRESSURE CHAMBER



UPCOMING EVALUATIONS



- **Radiosonde Frequency Migration Project**
 - 1680MHz frequency goes away in 2022
 - Entire network deployed and observers trained
 - Commercially available products
- **Data Continuity Study**
 - Dual Flights at Sterling of RS92 and LMS6 and ?
 - DCS to be enhanced by NESDIS NPROVS at mechanically difficult and logistically complicated locations
- **PS15 Evaluation**
- **Evaluations of changes to current systems**

WMO RIC APPLICATION



- **Target date for approval immediately following CIMO meeting late 2018**
- **Part of NWS Annual Operating Plan Milestones**
- **Intend to pursue ISO 17025:2017 accreditation in 2019**



Thank you!

Questions:

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- daniel.brewer@noaa.gov