

Working Group/Observational Data Spring 2017

Co-Chairs:

Mr. Vincent Tabor, NOAA/NESDIS

Mr. Eric Wise, HQ/USAF A3W

Exec. Secretary:

Mr. Anthony Ramirez, OFCM

Overview

- Scope of Responsibility
- Members
- Ongoing Activities
- Action Items
- Upcoming Activities

Scope of Responsibility

Facilitate the acquisition, processing, exchange, and management of observational data and metadata among the Federal Agencies, National Operational Processing Centers (OPCs), the World Meteorological Organization, and other related data centers. Primary focus areas:

- Meteorological, Oceanographic, and Space environmental data and metadata
- Provide an interface between the OPCs, their research and development partners in the Joint Center for Satellite Data Assimilation (JCSDA), and the other national data and prediction centers for the purpose of coordinating and satisfying national requirements for observational data
- Coordinate data formatting standards where practical and the implementation of approved data product enhancements and new data products
- Coordinate observational data issues that overlap related responsibilities of other OFCM committees and groups
- Ensure the OPCs and related data centers are provided the maximum quality and optimum quantity of observational environmental data streams required for assimilation into their respective processes

Member Agencies/Entities

NOAA

- National Environmental Satellite, Data, and Information Service/Office of Satellite and Product Operations (NESDIS/OSPO), Suitland, MD
 - National Centers for Environmental Information (NCEI)
 - Center for Weather and Climate (CWC) (formerly NCDC)
- National Weather Service (NWS), Silver Spring, MD
 - National Centers for Environmental Prediction (NCEP), College Park, MD
 - Environmental Modeling Center (EMC)
 - NCEP Central Operations (NCO)
 - NCO-Silver Spring (formerly Telecommunications Operations Center (TOC))
 - Space Weather Prediction Center (SWPC)
 - Office of International Affairs
 - Office of Observations
 - National Data Buoy Center (NDBC)
 - Office of Dissemination
- Office of Oceanic and Atmospheric Research (OAR)

Member Agencies/Entities

Air Force

- HQ AF/A3W, Pentagon, Washington DC
- Air Combat Command (ACC)
 - 557th Weather Wing, Offutt AFB, NE
 - 14th Weather Squadron, Asheville, NC

Navy

- Fleet Numerical Meteorology and Oceanography Center (FNMOC), Monterey, CA.
- Naval Oceanographic Office (NAVOCEANO), Stennis Space Center, MS
- Naval Research Laboratory-Marine Meteorology Division, Monterey CA.

Joint Center for Satellite Data Assimilation (JCSDA) (Headquarters), College Park, MD

The U.S. Integrated Ocean Observing System (IOOS)

WG/Observational Data

Co-Chairs	Mr. Vincent Tabor, NOAA/NESDIS Mr. Eric Wise, HQ/USAF A3W
<u>NOAA</u> NESDIS -- OSPO -- NCEI/CWC NWS -- NCEP/EMC -- NCEP/NCO -- NCEP/SWPC -- Office of Intl. Affairs -- Office of Observations --- NDBC -- Office of Dissemination OAR	Mr. Vincent Tabor Vacant Mr. Jeffrey Ator Mr. Dennis Keyser and Mr. Christopher Hill Mr. Walter Smith Vacant Mr. Fred Branski Ms. Alix Rolph Mr. Rex Hervey Mr. Robert Bunge Dr. Stephen Piotrowicz
<u>JCSDA</u>	Dr. James Yoe
<u>IOOS</u>	Mr. Derrick Snowden

WG/Observational Data

NAVY NAVO FNMOC NRL	Mr. Danny Illich Mr. Keith Willis Mr. James Vermeulen Dr. Justin Reeves Dr. Patricia Pauley
AIR FORCE HQ Air Force/A3W 557th Weather Wing --14th Weather Sq.	Mr. Eric Wise Mr. Mark Surmeier - Lead Mr. Al Zamiska Mr. Doug Wilkerson Mr. Randy Haeberle
OFCM Exec. Secretary	Mr. Anthony Ramirez

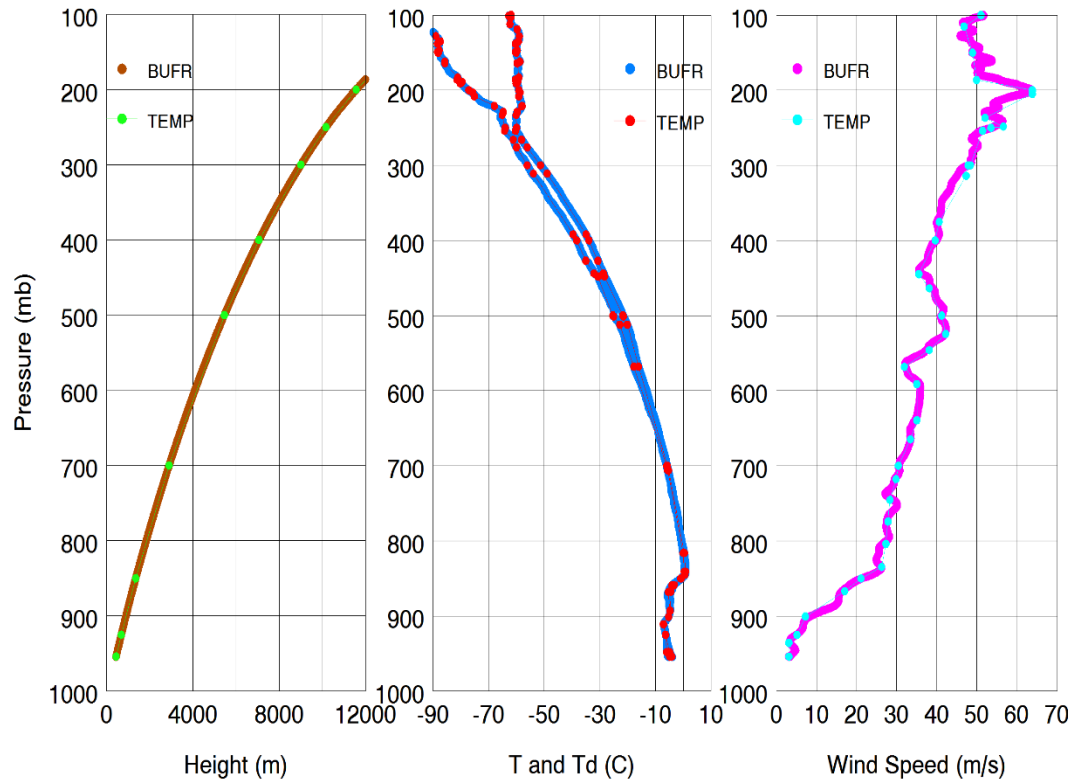
Ongoing Activities

Interagency implementation of WMO data management procedures

- BACKGROUND:
 - Two overlapping & concurrent WMO migrations
 1. WMO is migrating from Traditional Alphanumeric Code (TAC) forms to Binary Universal Form for the Representation of meteorological information (BUFR)
 2. WMO is implementing WIGOS and OSCAR/Sfc (from pub 9 vol A)
- TAC distribution was SCHEDULED to end in 2014, but...
 - TAC data counts are diminishing as countries discontinue TAC distribution
 - If production centers do not have replacement BUFR products, OPCs could experience negative impacts on model skill.
 - OPCs need to temporarily use BOTH TAC and BUFR data

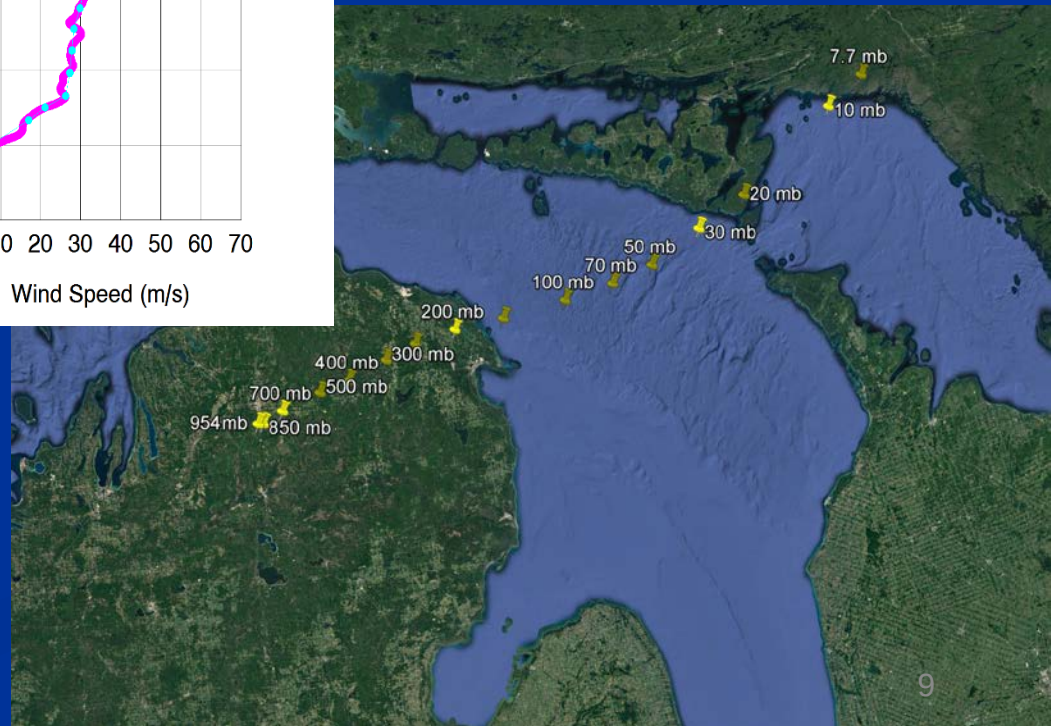
The Promise of BUFR

72634 (Gaylord, Michigan) -- 2017011200

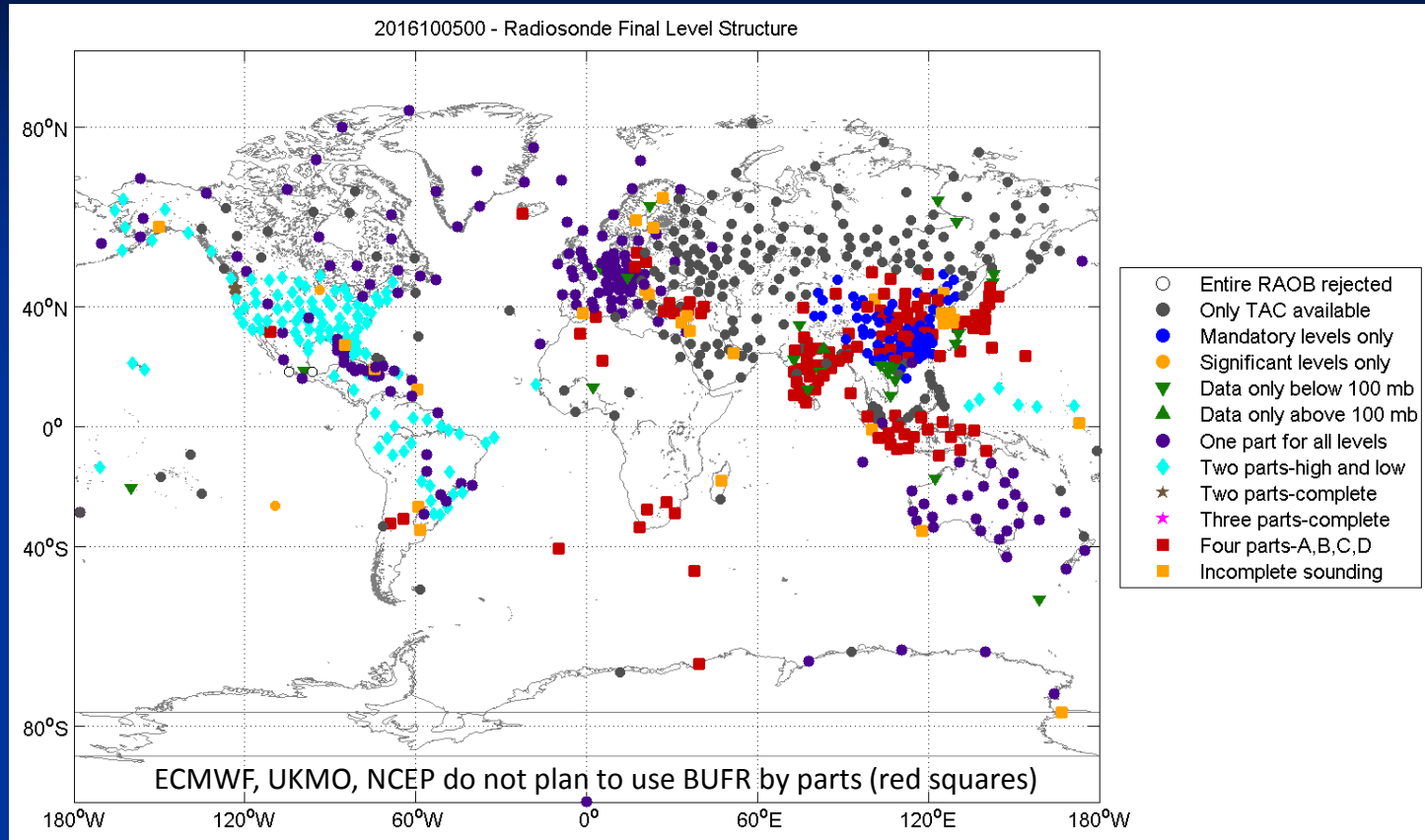


Operational high-resolution sounding for
72634 (Gaylord, MI) at 2017011200

- BUFR: 1-sec (~5 m) data with balloon drift, all variables at all levels
- High-res BUFR files now available operationally from six U.S. test sites
- Implementation across most NWS upper-air stations expected by late Sep 2017



The Reality of BUFR



Structure of BUFR radiosonde data received at FNMOC

- “Proper” BUFR—one message containing the full sounding (purple dots)
- “BUFR by parts”—one message for each of the four TEMP parts (red squares)
- NCO’s BMT BUFR provides multiple messages for the U.S., some of which are proper BUFR

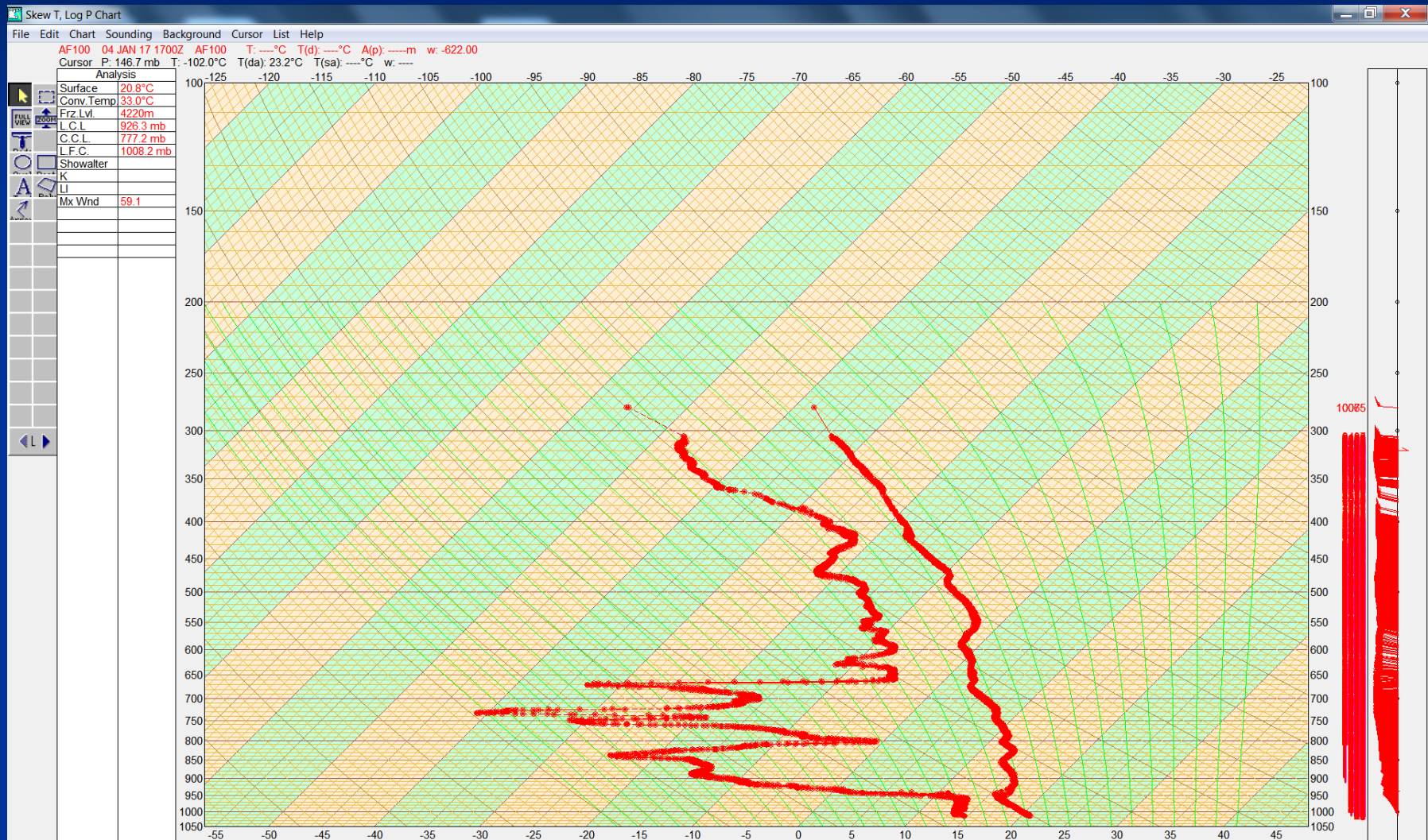
BUFR Migration Monitoring and Collaboration

- FNMOC, NRL, NAVO, NCEP, AF/A3W – Metadata Subgroup
 - Weekly conference calls continue – very active since January 2015
 - Consulting with NCEP/NCO to discontinue GTS transmission of:
 - Canadian TUABUFR radiosonde data
 - BMT radiosonde data for French station 78897
 - SYNOP converted from BUFR to TAC for non-U.S. stations

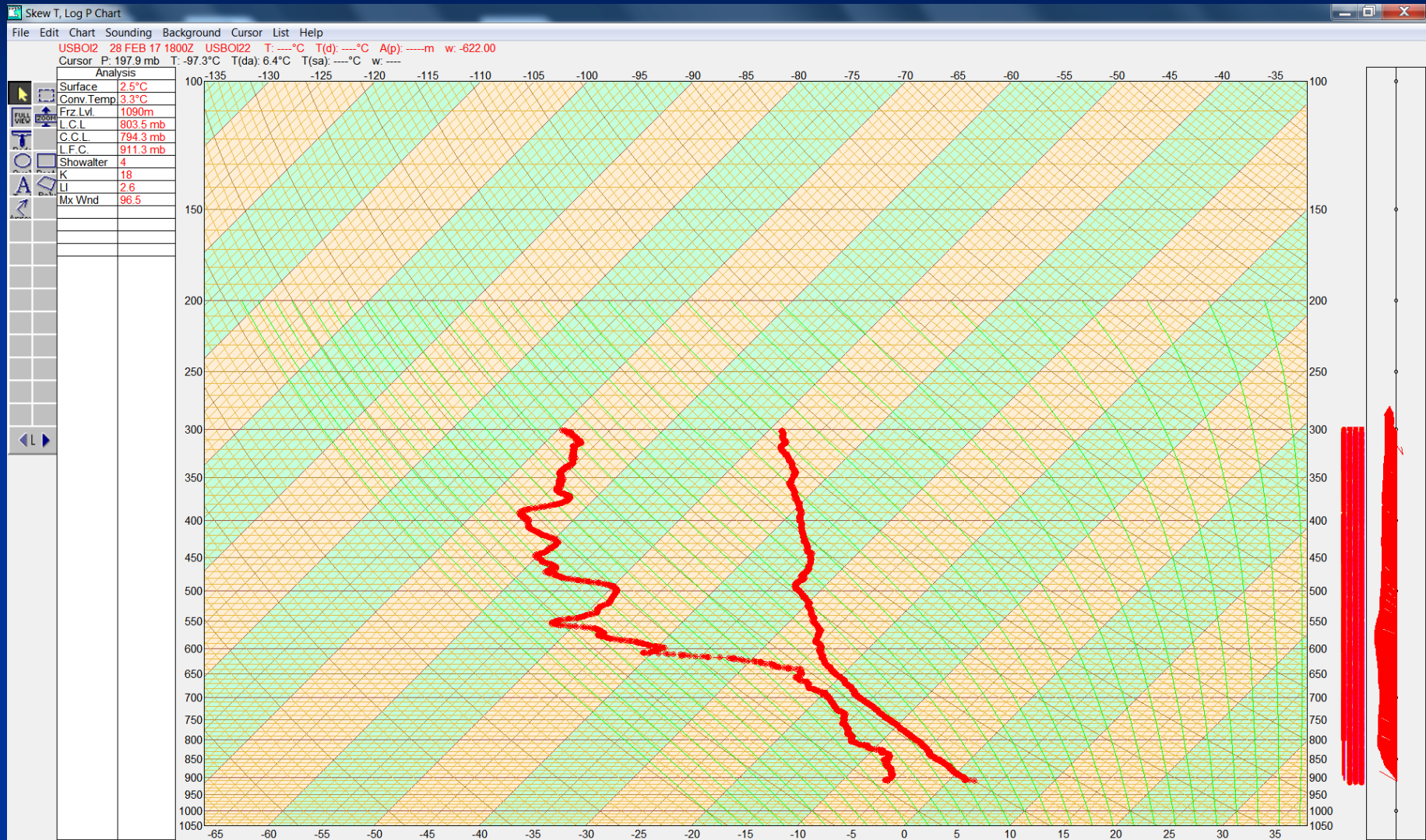
New High-Res BUFR Radiosonde and Dropsonde data

- Fire Wx soundings (obs of opportunity, < 200/yr) – ready for operations
- Caribbean station radiosondes (CHUAS) (10 stations)
 - Developing network connectivity – GTS bulletin headers
- Establishing requirement for near real-time Dropsonde data that meets WMO BUFR guidelines
 - ASPEN software now capable of generating high-res BUFR messages
 - Needs to be transmitted in TEMP DROP and BUFR for foreseeable future
 - NRL addressed at April 25-26 AVAPS (NCAR) meeting
 - Good progress – possibility of some real time data this season

Native High Res Dropsonde from the Air Force 53rd WRS – Keesler AFB – plotted by FNMOC



Native High Res Mobile RAOB that will be provided by the Fire Weather Teams – plotted by FNMOC



GOMOD

(Gulf of Mexico Operational Demonstration)

COMNAVMETOCOM --operational demonstration of unmanned systems -- Gulf of Mexico -- 30 May 2017 - 02 Jun 2017.

- Demonstrate environmental support capabilities for unmanned systems operations.
- Assess feasibility of Gulf of Mexico as Navy unmanned system test and training range.
- Test and evaluate emerging unmanned systems.
- Demonstrate full range of current/future unmanned systems capability with Navy/Joint/Interagency.
- Oceanographic and meteorological data collected will be shared between NAVO and Fleet Numerical (includes buoy (drifting and profiling) and glider data).
- U.S. Marine Corps has capability for RAOB soundings in High-Res BUFR
 - Plans to send High-Res BUFR message (directly) to FNMOC for processing.
 - "proof of concept" (i.e. FNMOC ingest of High-Res BUFR data in NWP DA systems).

Current Metadata Work

- Successfully corrected, in OSCAR/Sfc, most of the metadata errors originally identified
- Working with PRISM/IBL to update their BMT station list database to correct identified metadata errors
- Identified a problem with dual location stations
 - Dual location stations are radiosonde and surface stations that share a single identifier but are not co-located
 - Differences may be in horizontal location or elevation
 - 20-25 dual location stations
 - Developing criteria for establishing separate entries in OSCAR/Sfc for each location at dual location stations

WIGOS and OSCAR/Sfc

- WMO Integrated Global Observing System (WIGOS)
 - Future observing framework in support of weather, climate, water and relevant environment services; a WMO priority
- Observing Systems Capability Analysis and Review tool (OSCAR)
 - Two components: OSCAR/Surface and OSCAR/Space
 - OSCAR/Surface includes station metadata: information historically in WMO Publication 9, Volume A: Observing Stations and WMO Catalogue of Radiosondes (the WMO stations catalog)
 - OSCAR/Surface became operational replacement for Vol. A in May 2016
 - Vol. A look-a-like to be produced from OSCAR/Surface during 2-year transition
 - Initial population from Vol. A had some errors and omissions that need correction
 - GUI is not user-friendly; NCEP/NCO developing templates to gather requisite info
 - Traditional WMO station IDs will transition to much longer WIGOS IDs – potentially complicated software changes will be necessary.

2015-2.2 Develop an OPC-collaborative observational **data quality control process** (to include data error tracking spreadsheet):

- Metadata error discovery, reporting, tracking, and correction (U.S. and Non-U.S.)
- Other data related issues – data access, receipt, loss, bulletin drop-outs
- Identify and list key NOAA, U.S. (other than NOAA) and WMO points of contact
- Identify OPRs to fix data issues – both U.S. and Global
- **Data program managers (e.g. upper air) to pinpoint problems and find solutions**

OPR: FNMOC/NRL , NAVO, AF 557th, NWS/NCEP/NCO, NWS/Office of Observations

2015-2.3 Develop a **Conventional Data Technical Reference** (similar to TR-1) that provides guidance in all aspects of conventional data management (e.g. acquisition, quality control, exchange)

- Include key agency and WMO POC's and focal points
- Include key references

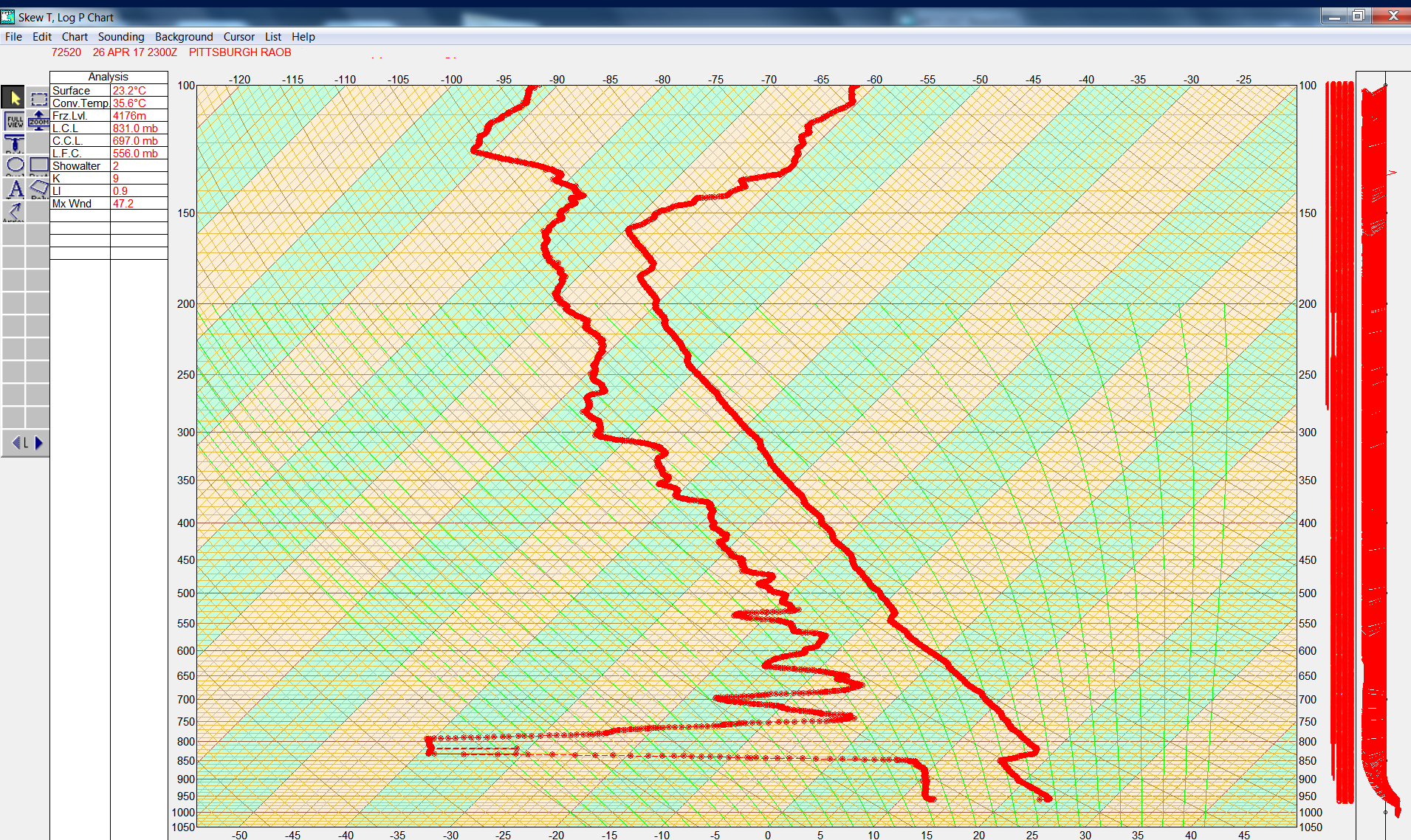
OPR: FNMOC/NRL , NAVO, AF 557th, NWS/NCEP/NCO, NWS/Office of Observations, NWS/Office of International Affairs

2015-2.6 Track to implementation, High resolution BUFR radiosonde (RRS) data made available in real time on the GTS for U.S. stations.

- NWS project ongoing to transfer High Resolution native BUFR files from WFOs directly to NCEP/NCO for dissemination to all OPCs
- OT&E completed Apr 19 w/recommendation to proceed (early May) to full deployment -- estimated completion: 30 Sep
- Project doesn't include U.S. military (block 70,72,74) radiosonde sites (no RRS installed)
- Project doesn't include Transitional Radiosonde Observing System (TROS) sites – 8 sites that were changed to 403MHz transmission to avoid interference with GOES-16 downlinks
- Through participation in OT&E, OPCs have validated the data and are able to use it

OPR: NCEP/NCO-SS and NWS/Office of Observations

2015-2.6 (continued) – FNMOC JMV visualization



Next Immediate Steps

- Resolve critical metadata errors in collaboration with NCEP/NCO and WMO
- Collaborative high-res radiosonde full implementation.
- Establish a requirement for near real time high res, Dropsonde data on the GTS for NWP assimilation to be transmitted from aircraft w/TEMP DROP messages
- Establish separate entries in OSCAR/Sfc for each location at dual location stations

Thank you -- questions?