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
NOAA	
NESDIS	
-- OSPO	Mr. Vincent Tabor
-- NCEI/CWC	Vacant
NWS	
-- NCEP/EMC	Mr. Jeffrey Ator
	Mr. Dennis Keyser and Mr. Christopher Hill
-- NCEP/NCO	Mr. Walter Smith
-- NCEP/SWPC	Vacant
-- Office of Intnl. Affairs	Mr. Fred Branski
-- Office of Observations	Ms. Alix Rolph
--- NDBC	Mr. Rex Hervey
-- Office of Dissemination	Mr. Robert Bunge
OAR	Dr. Stephen Piotrowicz
JCSDA	Dr. James Yoe
IOOS	Mr. Derrick Snowden

WG/Observational Data

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

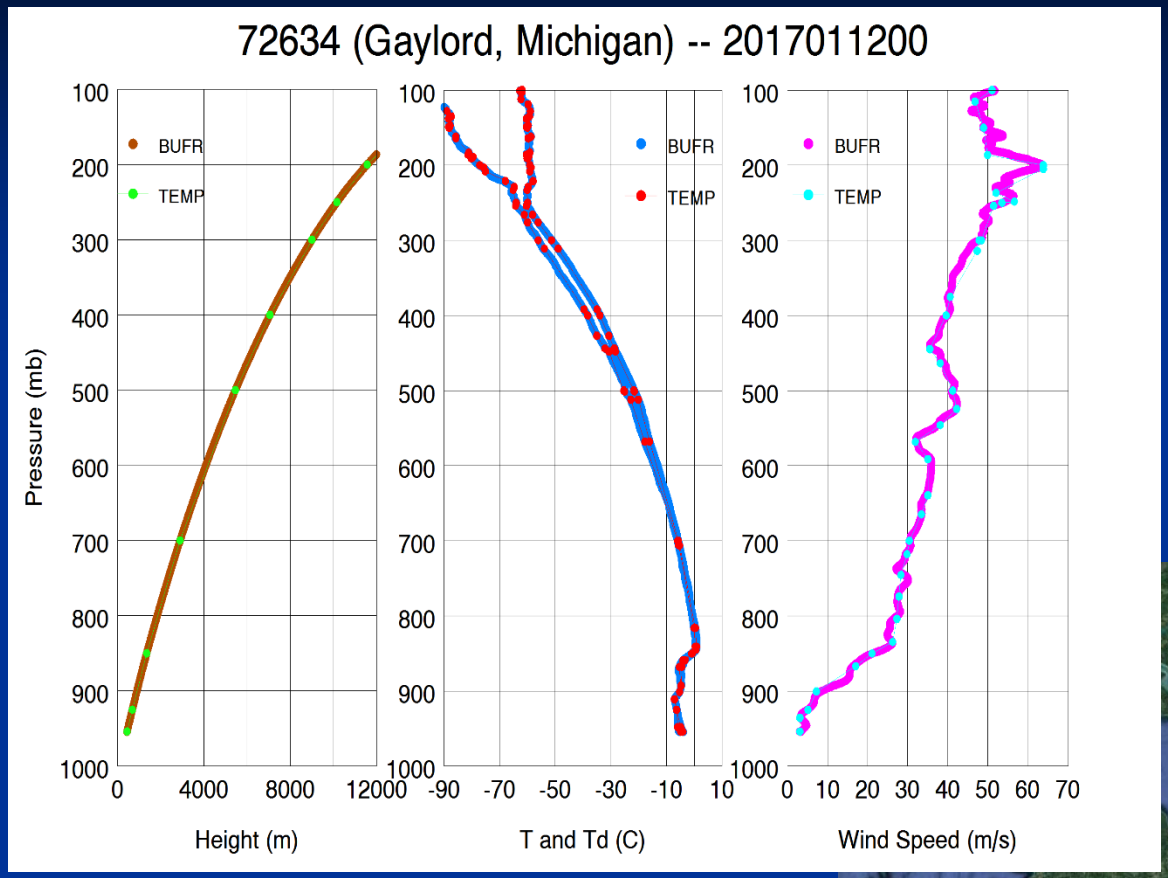
Ongoing Activities

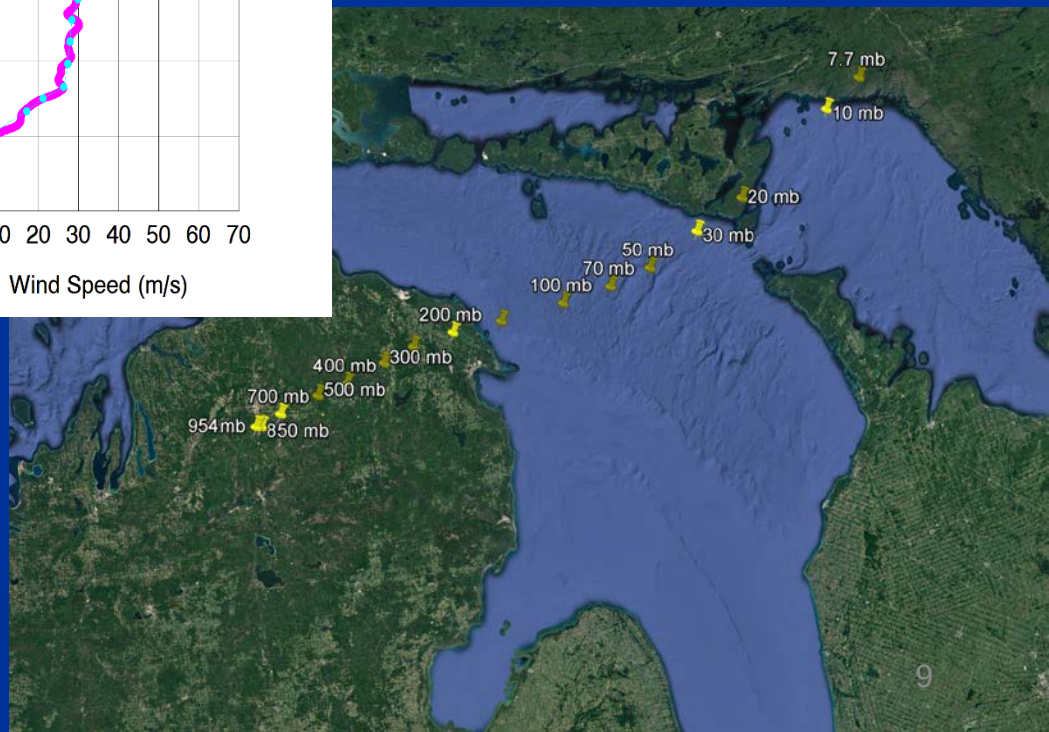
Interagency implementation of WMO data management procedures

- 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





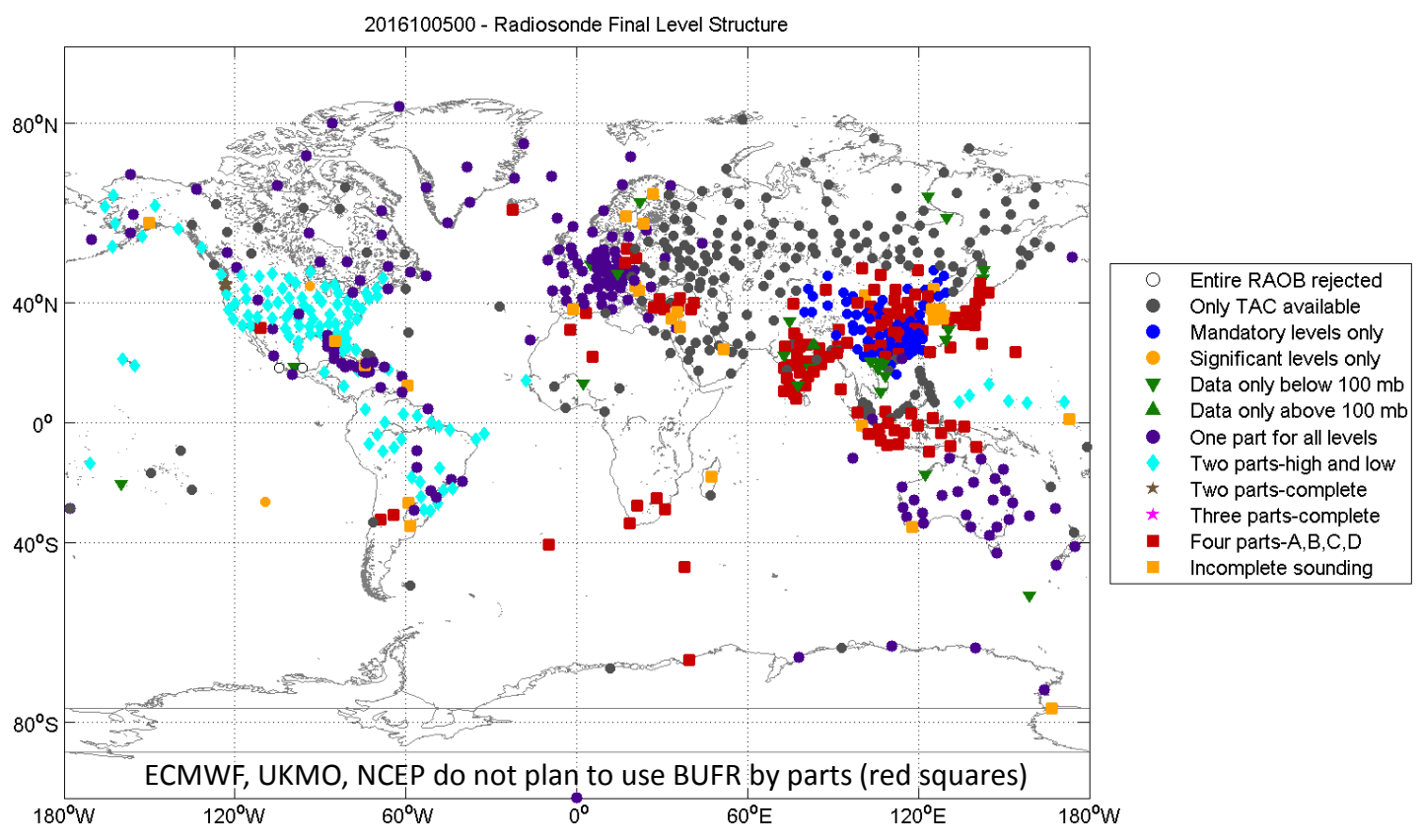
Operational high-resolution sounding for 72634 (Gaylord, MI) at 2017011200

-- 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 summer 2017

The Reality of BUFR



Structure of BUFR radiosonde data received at FNMOC

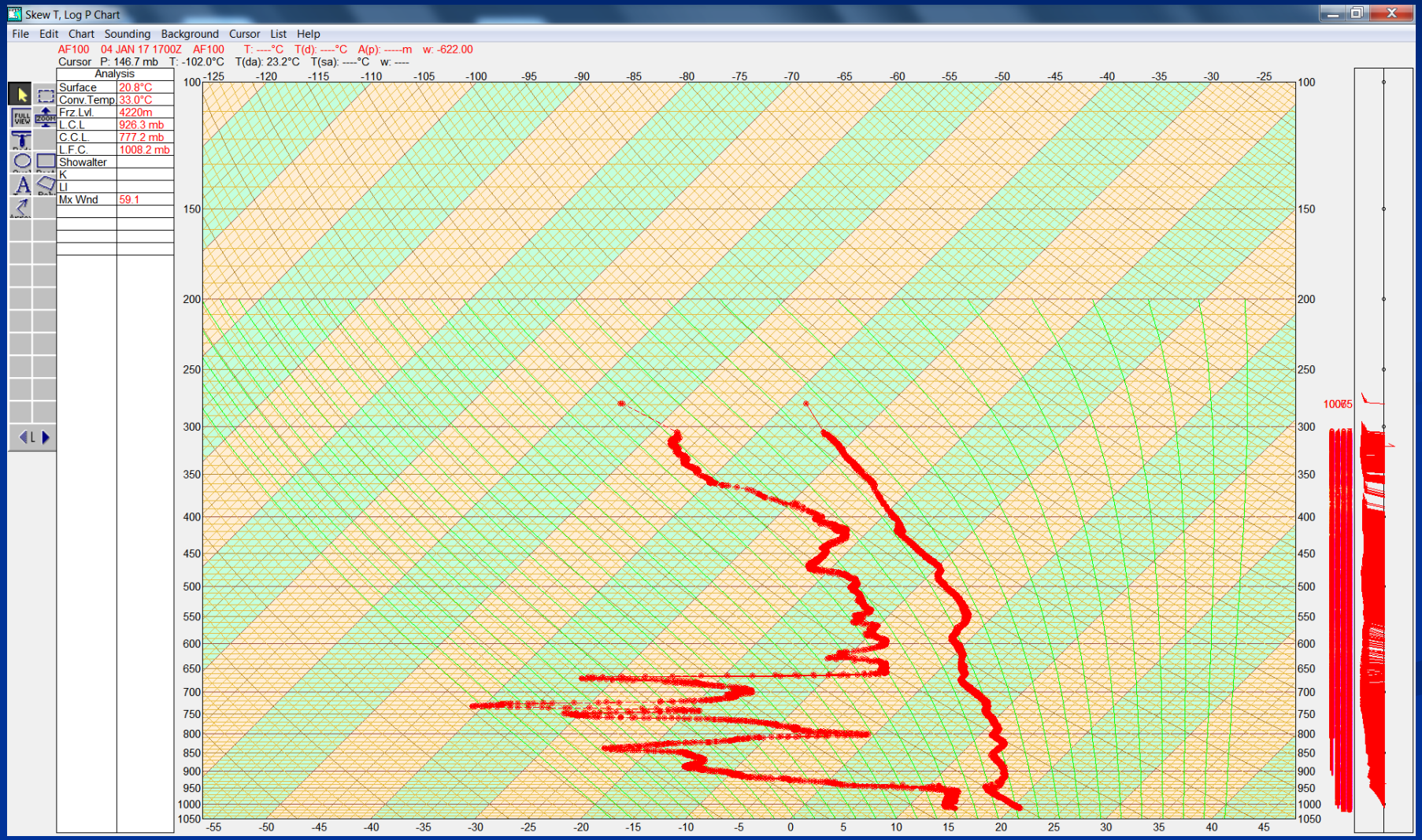
- "Proper" BUFR—one message containing the full sounding (purple dots)
- "BUFR by parts"—one message for each of the four TEMP parts (red squares)
- NCO's BMT BUFR provides multiple messages for the U.S., some of which are proper BUFR

BUFR Migration Monitoring and Collaboration

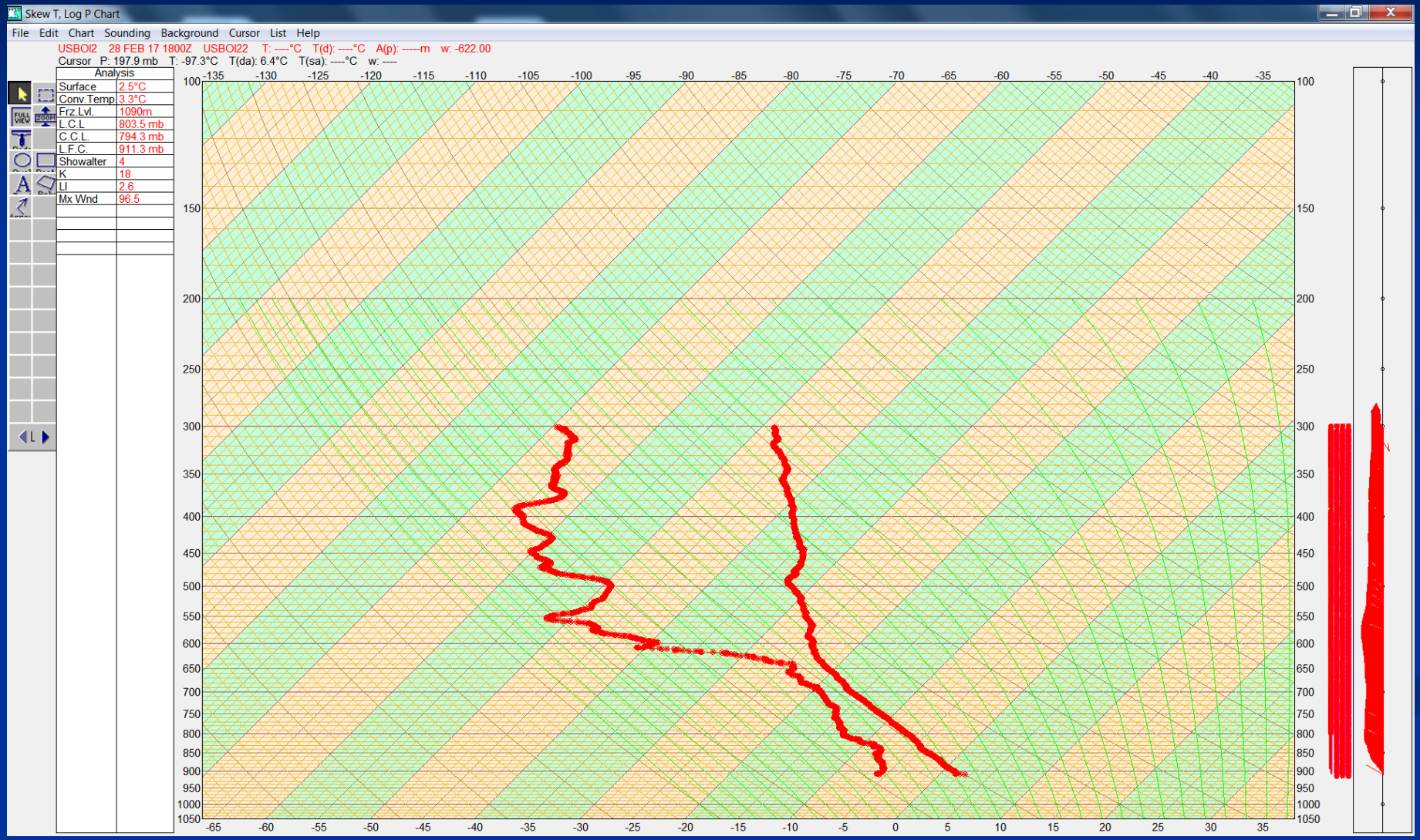
- FNMOC, NRL, NAVO, NCEP, AF/A3W – Metadata Subgroup
  - Weekly conference calls continue – very active since January 2015
  - Consulting with NCEP/NCO to discontinue GTS transmission of:
    - Canadian TUABUFR radiosonde data
    - BMT radiosonde data for French station 78897
    - SYNOP converted from 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
  - Near real-time dropsonde data
    - Establish OPC data requirement and meet WMO BUFR guidelines
    - ASPEN software now capable of generating the high-res BUFR messages
    - Need to be transmitted from aircraft w/ TEMP DROP messages
    - Will address at April 25-26 AVAPS (NCAR) meeting (NRL attending) and next National Hurricane Operations Plan meeting

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



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 – Dec 16 to Present
- Upgraded software deployment to WFOs - Oct 2016 to Aug 2017
- Project doesn't include U.S. military (block 70,72,74) radiosonde sites, since those sites don't have 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 OT&E for high-res radiosonde 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?