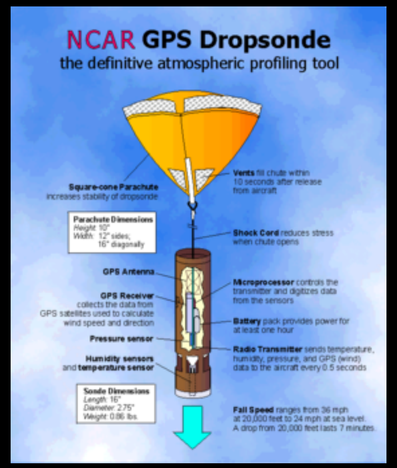
Real-time dropwindsonde data at NHC

What NHC receives, what is transmitted, and the future



Goals:

1. To optimize the data NHC receive in real time
2. Help those processing data better understand what data are needed and how they are used

What NHC currently receives

TEMP DROP messages

Mandatory and significant levels in wind and thermodynamic variables

No longer supported by the WMO

Example from Hurricane Ian:

```
UZNT13 KWBC 281027
XXAA  78108 99259 70832 08153 99967 23612 33124 00798 ///// /////
92385 21210 34144 85117 18402 35640 88999 77999
31313 09608 81011
61616 NOAA2 2809A IAN           OB 03
62626 EYEWALL 270 MBL WND 33638 AEV 30407 DLM WND 35131 966767 WL
150 32635 082 REL 2585N08323W 101123 SPG 2575N08321W 101407 =
XXBB  78108 99259 70832 08153 00967 23612 11850 18402 22757 15414
21212 00967 33124 11965 33122 22961 33138 33957 33142 44950 31633
55944 33141 66936 33638 77927 34144 88911 34138 99898 34644 11879
35135 22850 35640 33767 01117
31313 09608 81011
61616 NOAA2 2809A IAN           OB 03
62626 EYEWALL 270 MBL WND 33638 AEV 30407 DLM WND 35131 966767 WL
150 32635 082 REL 2585N08323W 101123 SPG 2575N08321W 101407 =
```

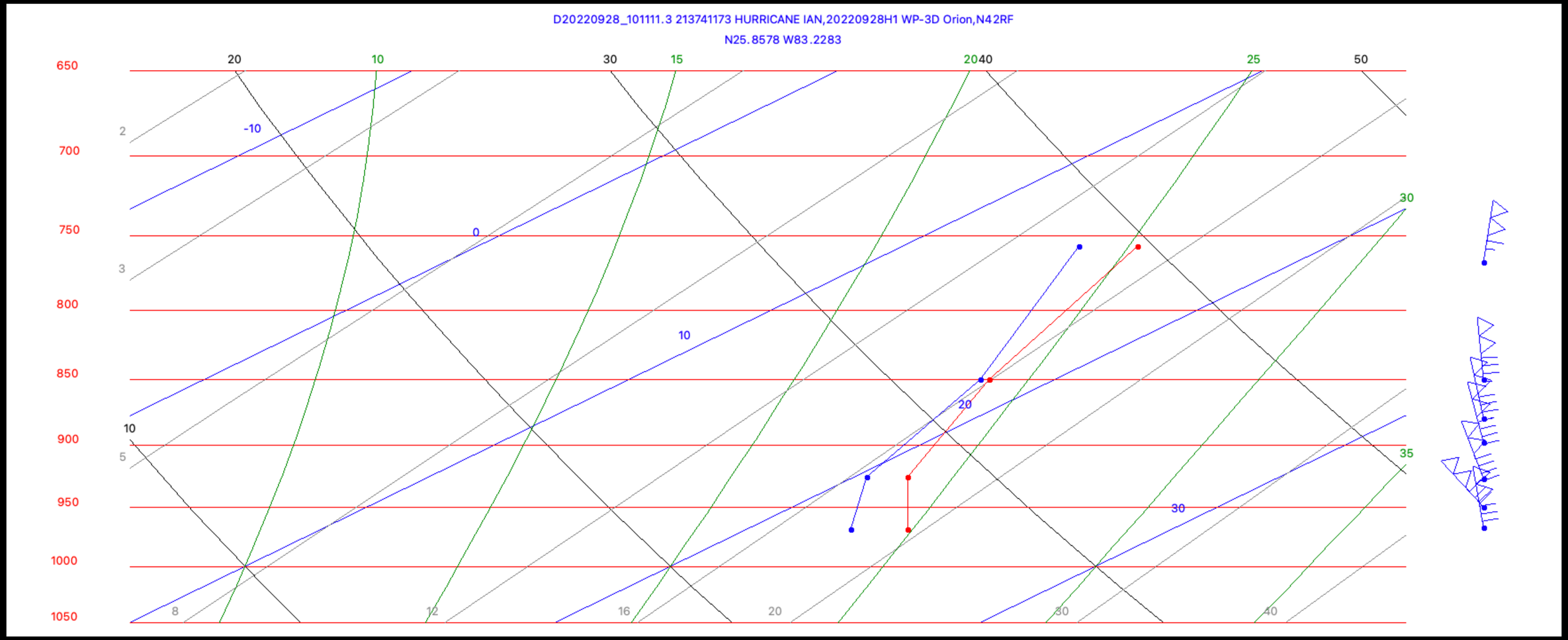
Wind at 16 levels
- Sonde-average wind
- Lowest 15-m wind

Thermo at 6 levels

Location in system

Locations of first and last wind to nearest 0.01 degrees

Skew-t diagram from TEMP DROP



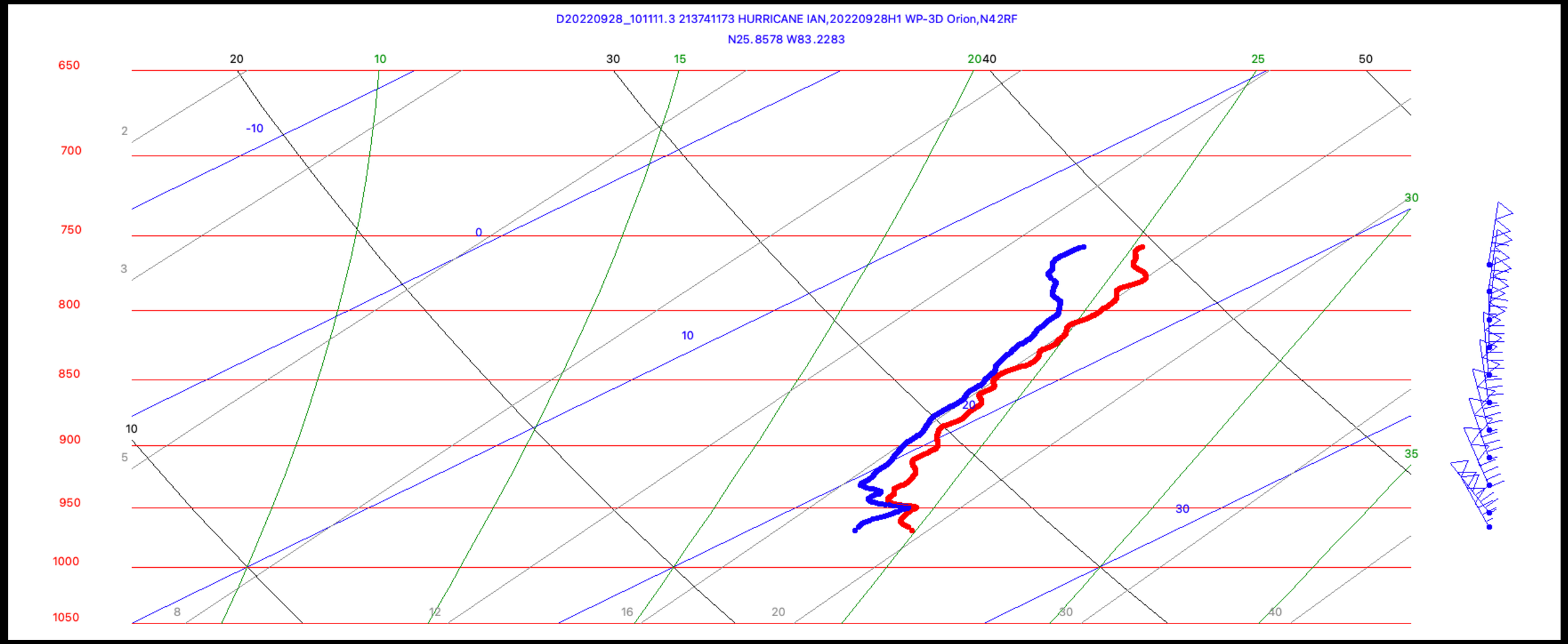
What EMC currently receives

BUFR (Binary Universal Format for the Representation of meteorological data) messages

Data at resolution up to 1 Hz
10 to 30 times as much data as TEMP DROP
Supported by the WMO

	TEMP DROP	BUFR
Wind	16 levels	164 levels
Wind	Sonde average	
Wind	Lowest-150 m	
Thermo	6 levels	177 levels
Location	Release and splash to nearest 0.01 degrees	Location of each observation
Location	Center, eyewall, rainband, quadrant	

Skew-t diagram from BUFR



Other realtime data available

	TEMP DROP	BUFR[4,5]	NetCDF/FRD[1,5]	Skew-t log-p[2]	Synoptic plots[3]
Wind	16 levels	164 levels	549 levels	549 levels	mandatory
Wind	Sonde average		Can be added	can be added	
Wind	Lowest-150 m		Can be added	can be added	
Thermo	6 levels	177 levels	708 levels	708 levels	
Location	Release and splash to nearest 0.01 degrees	Location of each observation	Location of each observation	Release to nearest 0.01 degrees	
Location	Center, eyewall, rainband,		Can be added	Can be added	

[1] Text meta-data can be added to these data files
[2] Text meta-data can be added to the graphical files
[3] Currently earth-relative coordinates only
[4] Available in NAWIPS for rawinsonde data?
[5] Items like WL150, DLM, MBLWND, or any user-defined variable can be calculated, and user can view all the data that went into the calculations

Note: NOAA aircraft currently send bufr operationally. The plan is for the AF to have broad-band on two aircraft during this season to test sending bufr.

Questions

What dropwindsonde data do Hurricane Specialists want to see in real time?

In what form do Hurricane Specialists want to see that data? (Bufr? AWIPS? Other?)

Can we eventually stop sending TEMP DROP? Sending both types is time-consuming, especially when there is a shortage of people to do the processing.

How to proceed? HOT?