IOP-14 Summary of Operations
23 January 2010, 1800 UTC – 24 January 2010 1800 UTC

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1. Summary of storm evolution

The IOP-14 storm was an example of secondary low development (Fig. 1). The first low emerged from the Northern Rockies and propagated northeast over Montana, the wrap-around from the storm completely in Canada. The leading line, associated with an upper level front, moved eastward into western Wisconsin around 0000 UTC, 24 Jan 10. At that time, a second low developed over western Oklahoma under the left exit region of a strong jetstreak at the base of a deep trough over the southern half of the U.S. As the jetstreak propagated eastward, the new low became the dominant circulation and propagated eastward into Illinois by 0600 UTC, 24 Jan 10. The precipitation region along the leading line of the first storm morphed into wrap-around of the second storm, as precipitation echoes spread north and west and the deformation developed aloft north of the low. This precipitation region propagated northeastward over the MIPS site in Whitewater, WI and the MISS site in Fort Atkinson, WI (Fig. 2). The low propagated rapidly northward over Wisconsin, with the precipitation shield moving north of the observation sites by 1700 UTC. Rain fell throughout the event. The C-130 was not available for the event. The MAX radar experienced a failure of the azimuth drive motor early in the event prior to the arrival of the precipitation and was not used. The MKX radar ran VCP-11 for the event.

2. Locations of instrumentation platforms

MIPS Location:	42° 49' 57.52" N 88° 45' 33.34″ W
Profiler Time of Operation MIPS:	01/23/10 2340 UTC to 01/24/10 1640 UTC
MAX Location:	Not used. Drive motor malfunction
MISS Location:	42°56'39.5"N, 88°51'47.75"W
Profiler Time of Operation	01/23/10 1700 UTC to 01/24/10 1830 UTC
MO Location:	42° 50' 03.67" N 88° 45' 35.17″ W
Flight operations:	Not used. Aircraft undergoing repairs

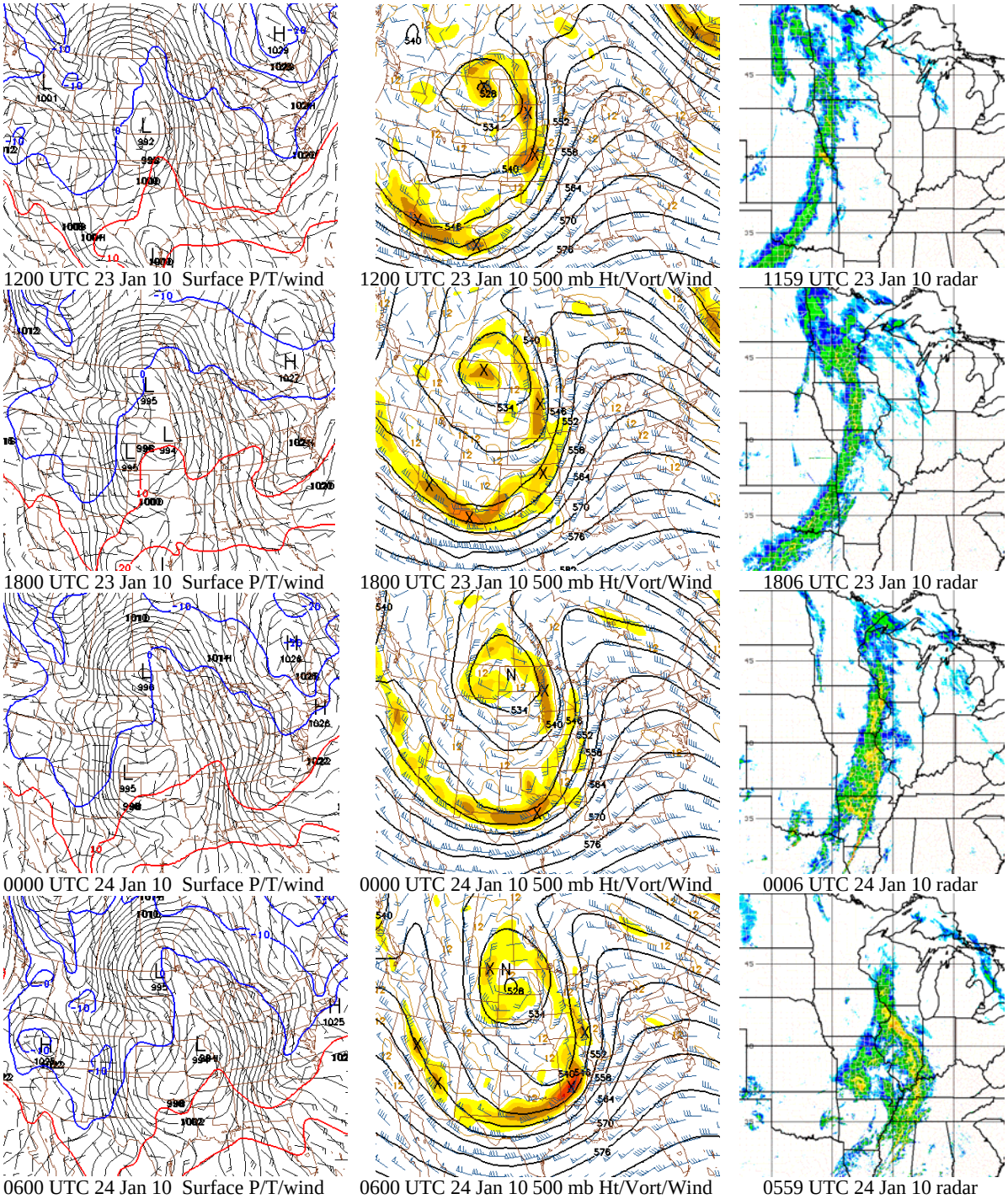


Figure 1: Evolution of the IOP-14 storm at the surface, 500 mb, and radar echoes from 1200 UTC 23 Jan 10 through 0600 UTC 24 Jan 10.

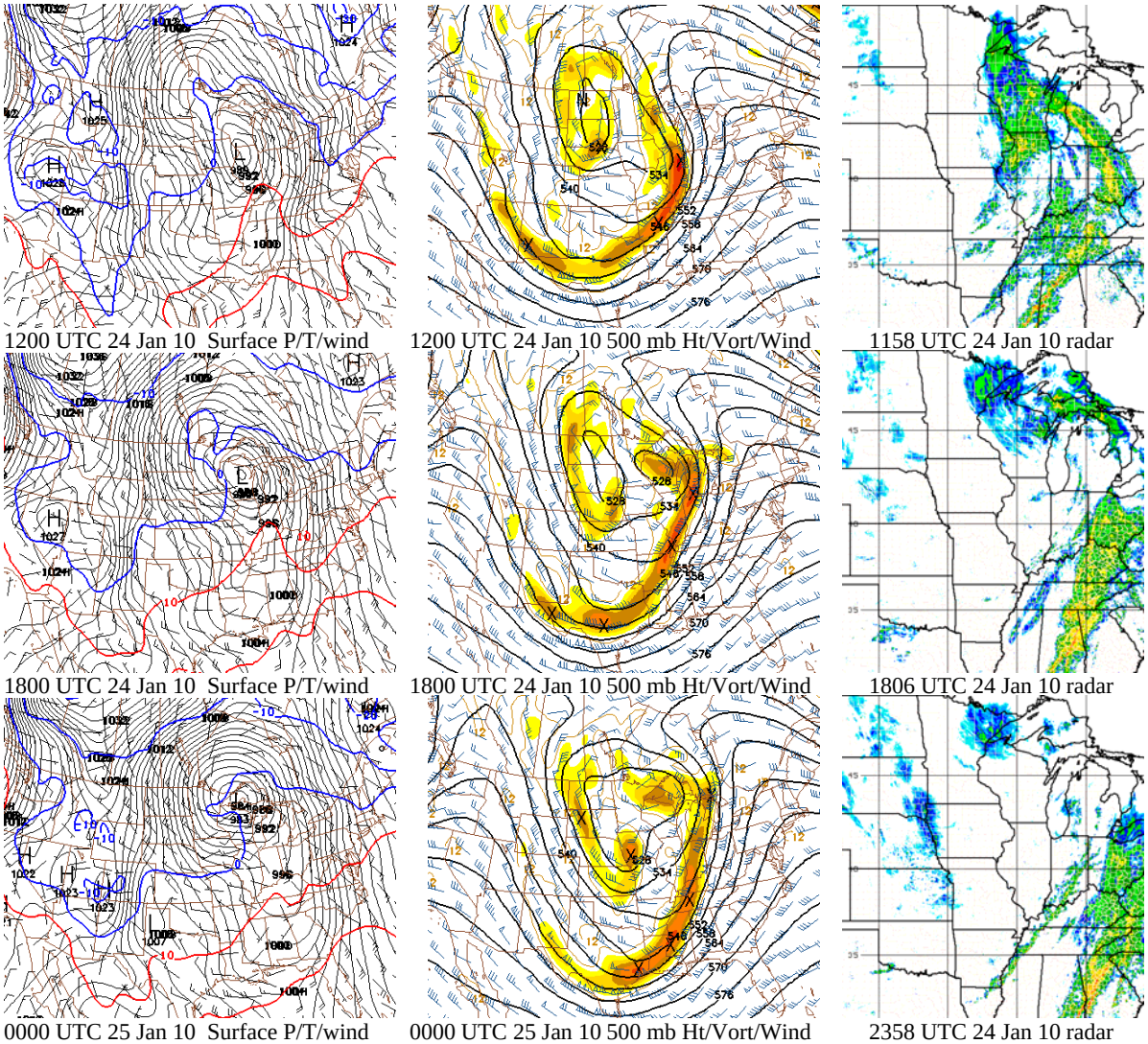


Figure 2: Evolution of the IOP-14 storm at the surface, 500 mb, and radar echoes from 1200 UTC 24 Jan 10 through 0000 UTC 25 Jan 10.

3. Precipitation over research area

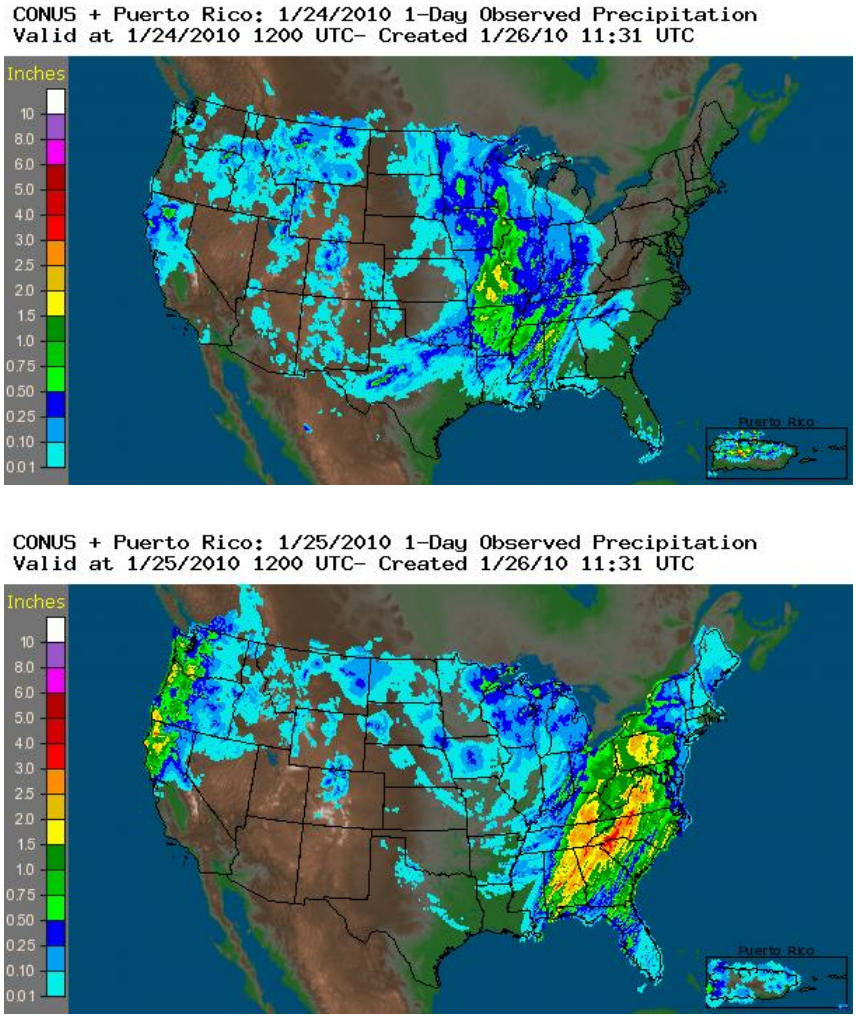


Fig. 3: 24 Hour precipitation ending at 1200 UTC 01/24/10, and 1200 UTC 01/25/10 over the United States

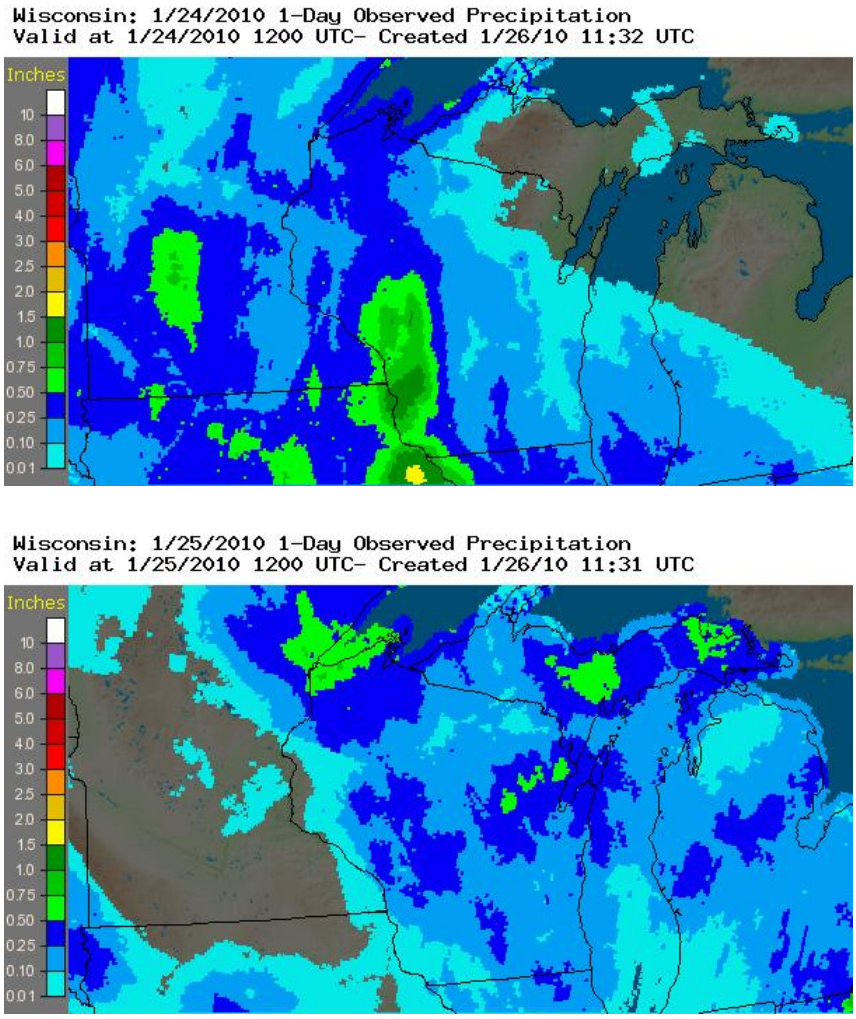


Fig. 4: 24 Hour precipitation ending at 1200 UTC 01/24/10, and 1200 UTC 01/25/10 over Wisconsin

4. Flight Summary

No flight: Aircraft undergoing maintenance in Boulder.

5. MIPS operations

The MIPS was located in a cul-de-sac behind the Baymont Inn and Suites in Whitewater, Wisconsin. Bands of light to moderate rainfall passed over the MIPS site for about 10 hours during the event as the wrap-around precipitation developed and moved over the site. A summary of the data is shown in Fig. 5.

6. MAX operations

None: Azimuth drive motor failed before precipitation arrived.

7. MISS 915 MHz Profiler

MISS was at the Holiday Inn Express in Fort Atkinson, WI. The MISS experienced rainfall over the same approximate time as the MIPS.

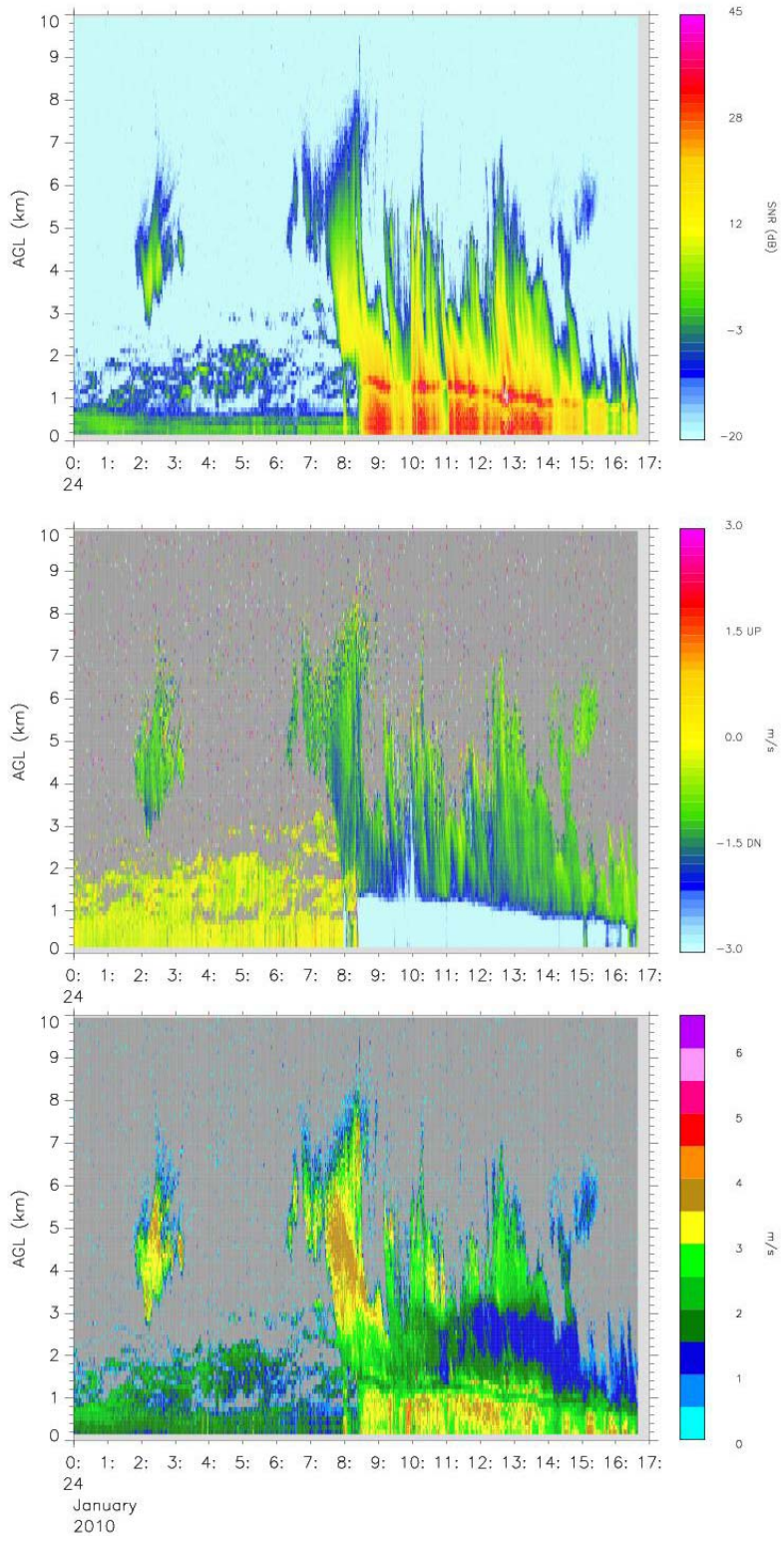


Figure 5: MIPS 915 MhZ Profiler SNR (top), Radial Velocity (center) and Spectral Width (bottom) for the period 0000 UTC 24 Jan 10-1640 UTC 24 Jan 10.

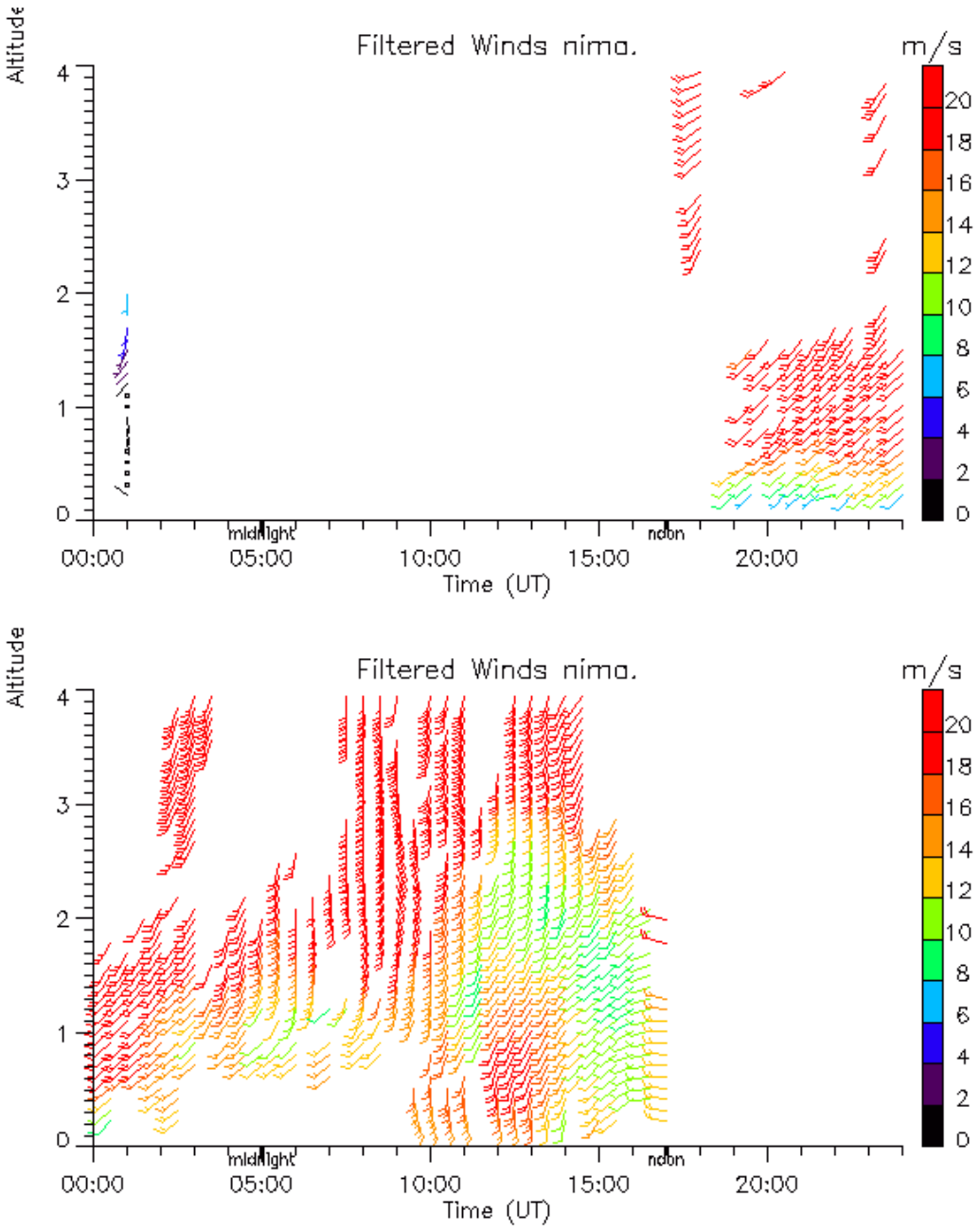


Figure 6: MISS 915 MHz Profiler Winds
for the period of operation 1800 UTC 23 Jan 10 through 1700 UTC 24 Jan 10

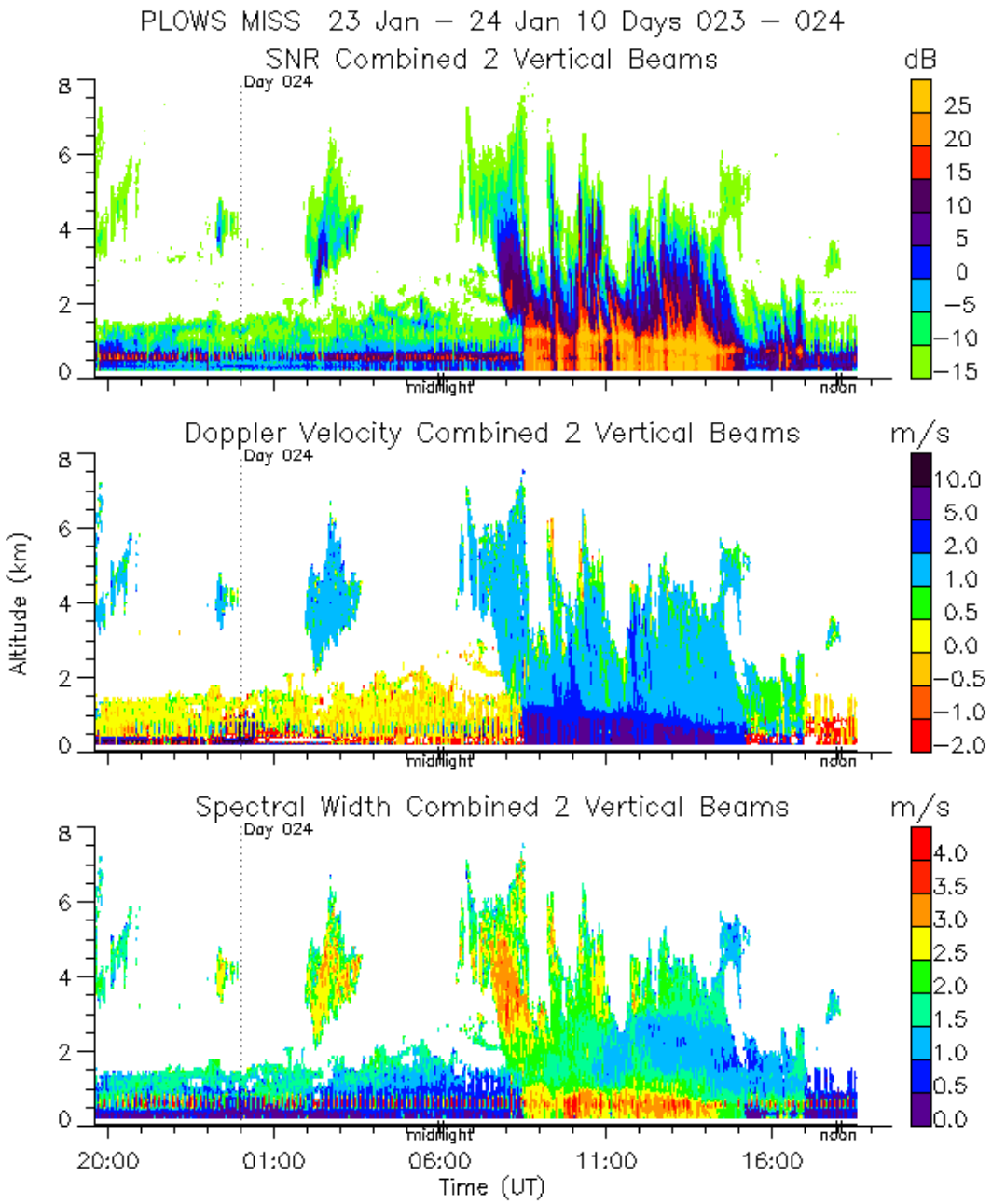


Figure 7: MISS 915 MHz Profiler SNR (top), Radial Velocity (center) and Spectral Width (bottom) for period from 2000 23 Jan 10 to 1820 UTC 24 Jan 10

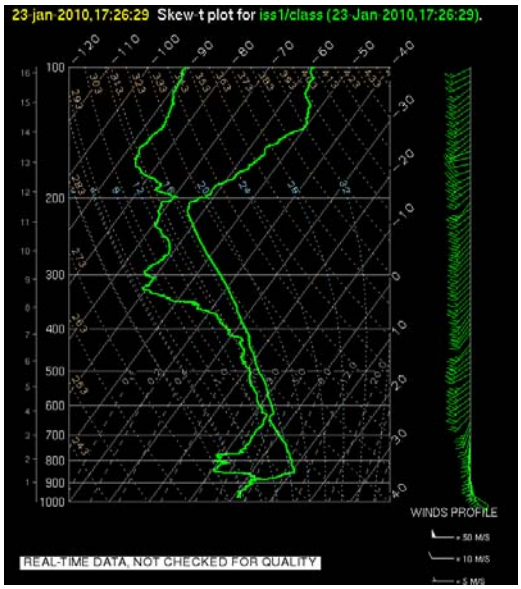
8. Rawinsondes

Rawinsondes were launched at the MISS site in Ft. Atkinson, WI on a 3 hourly schedule. The following soundings were launched

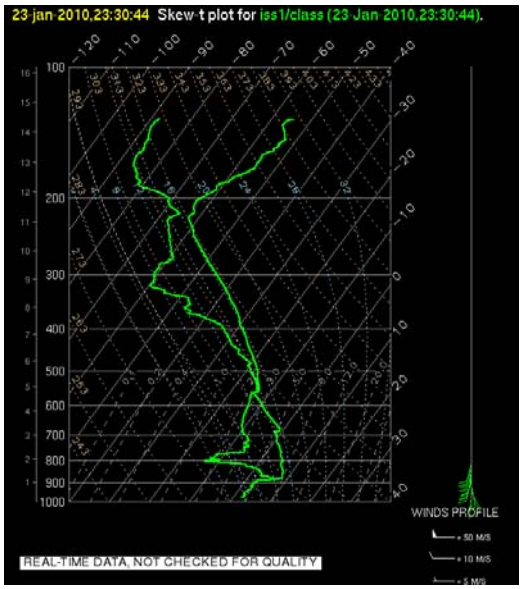
DATE	Launch	Nominal Date and time		Status
2010 01 23	**1726 UTC**	**2010 01 23**	**1800 UTC**	**Good**
2010 01 23	**2330 UTC**	**2010 01 24**	**0000 UTC**	**Good**
2010 01 24	**0228 UTC**	**2010 01 24**	**0300 UTC**	**Good**
2010 01 24	**0538 UTC**	**2010 01 24**	**0600 UTC**	**Good**
2010 01 24	**1126 UTC**	**2010 01 24**	**1200 UTC**	**Good**
2010 01 24	**1429 UTC**	**2010 01 24**	**1500 UTC**	**Good**
2010 01 24	**1726 UTC**	**2010 01 24**	**1800 UTC**	**Good**

Rawinsondes were launched at the MIPS site at Whitewater, WI, by the University of Missouri on a 3-hourly schedule, staggered and offset from the MISS schedule by 1.5 hours. The following soundings were obtained

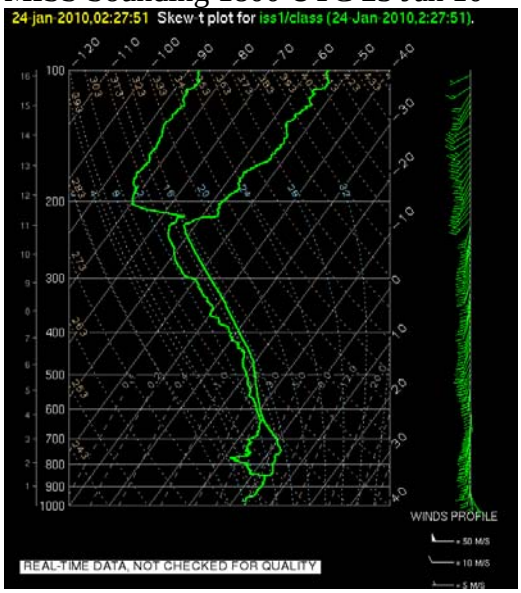
DATE	Launch	Nominal Date and time		Status
2010 01 24	**0110 UTC**	**2010 01 24**	**0130 UTC**	**Good**
2010 01 24	**0415 UTC**	**2010 01 24**	**0430 UTC**	**Good**
2010 01 24	**0707 UTC**	**2010 01 24**	**0730 UTC**	**Good**
2010 01 24	**1010 UTC**	**2010 01 24**	**1030 UTC**	**Good**
2010 01 24	**1308 UTC**	**2010 01 24**	**1330 UTC**	**Good**
2010 01 24	**1609 UTC**	**2010 01 24**	**1630 UTC**	**Good**



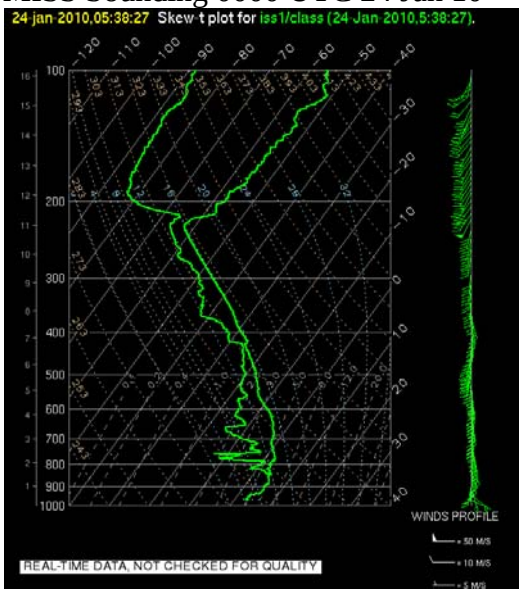
MISS Sounding 1800 UTC 23 Jan 10



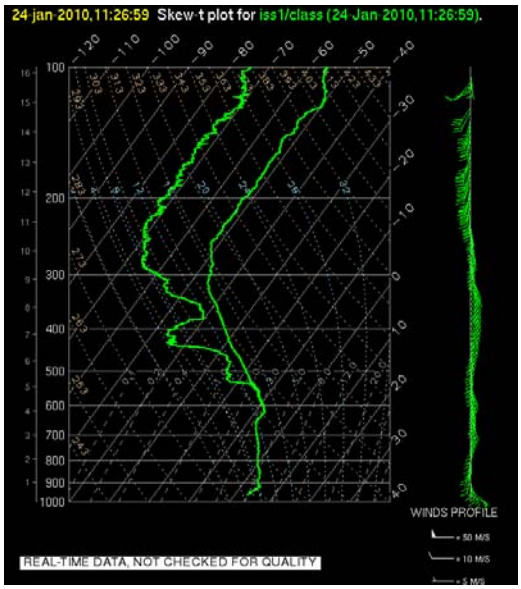
MISS Sounding 0000 UTC 24 Jan 10



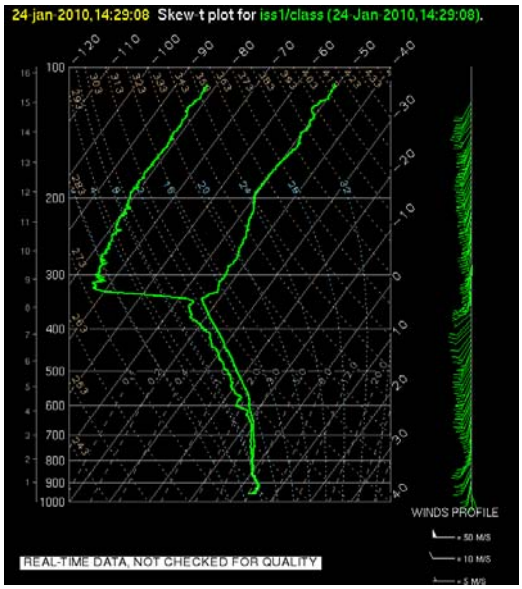
MISS Sounding 0300 UTC 24 Jan 10



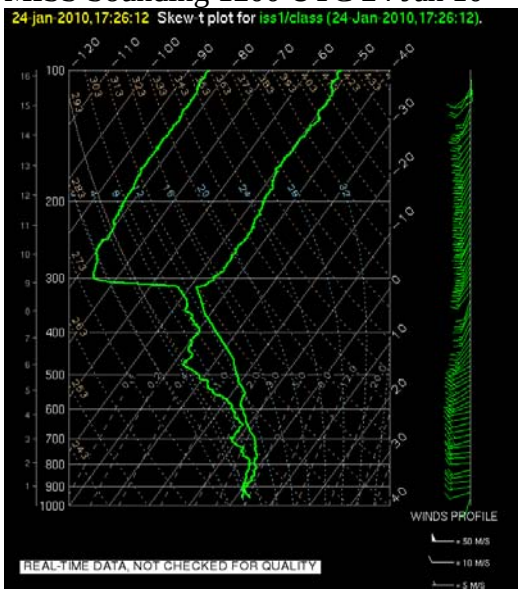
MISS Sounding 0600 UTC 24 Jan 10



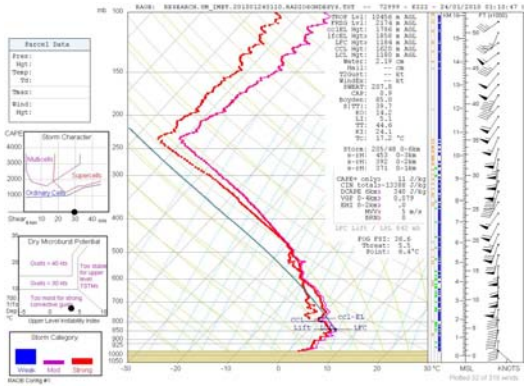
MISS Sounding 1200 UTC 24 Jan 10



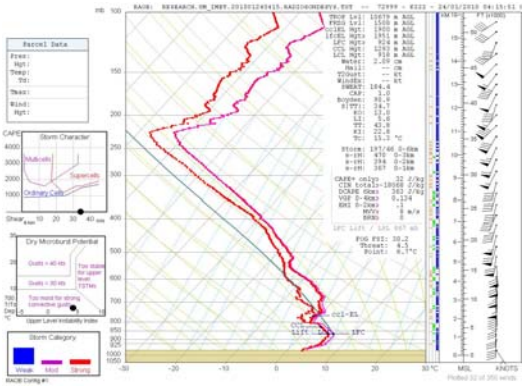
MISS Sounding 1500 UTC 24 Jan 10



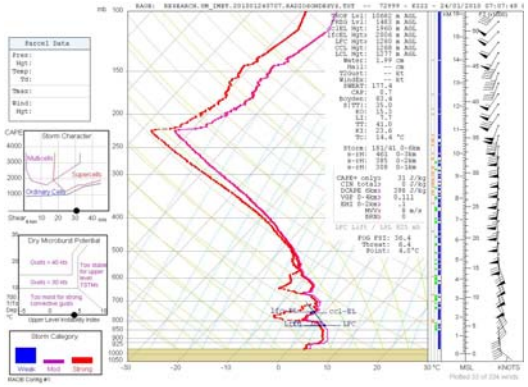
MISS Sounding 1800 UTC 24 Jan 10



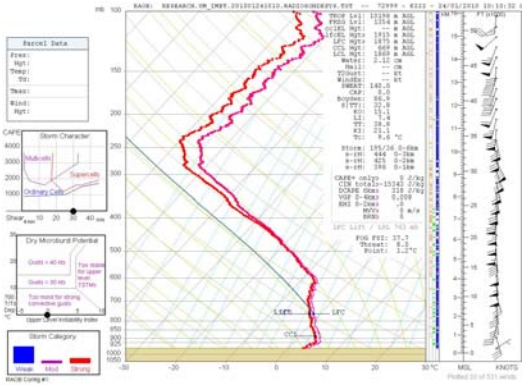
UM sounding 0130 UTC 24 Jan 2010



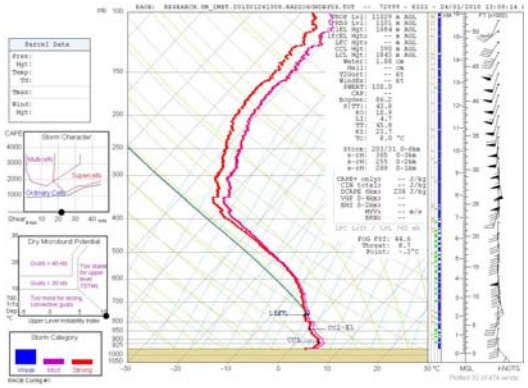
UM sounding 0430 UTC 24 Jan 2010



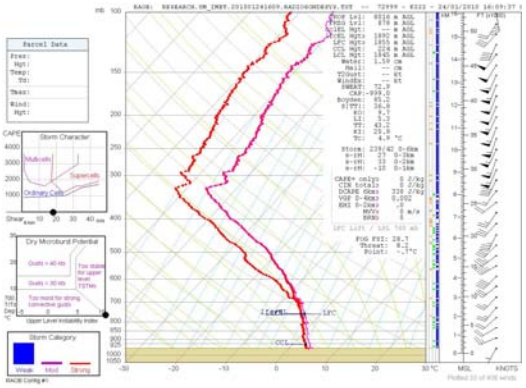
UM sounding 0730 UTC 24 Jan 2010



UM sounding 1030 UTC 24 Jan 2010



UM sounding 1330 UTC 24 Jan 2010



UM sounding 1630 UTC 24 Jan 2010