

IOP-2 Summary of Operations 18 February 2009, 0200 UTC – 18 February 2009 1800 UTC

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IOP-2 focused on a cyclone that developed in Southeast Colorado and tracked northeastward, with the central low pressure center passing over Northern Missouri on Wednesday 18 February at 0600 UTC, Lincoln, IL at 18 February 1200 UTC and Detroit, MI at 18 February 1800 UTC (Fig. 1a-d).

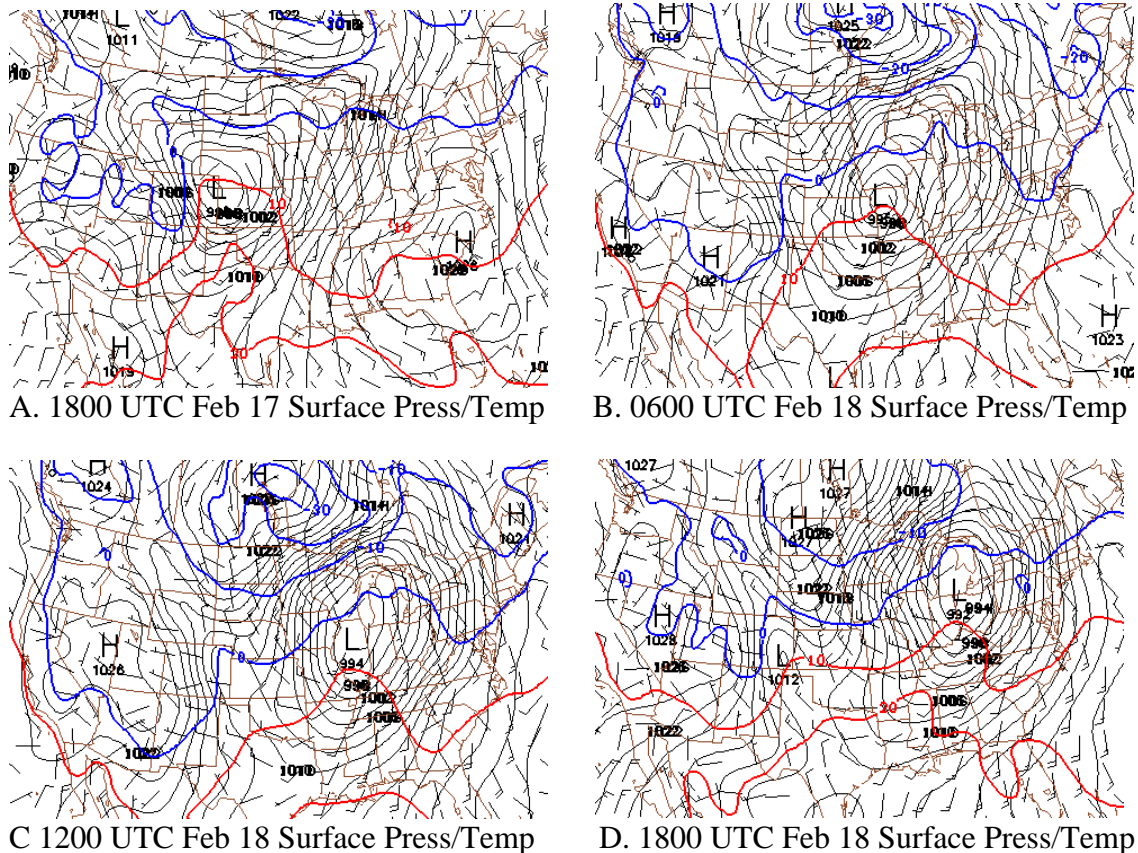


Figure 1A-D Evolution of surface cyclone during IOP-2 from 1800 UTC 17 Feb-1800 UTC 18 Feb 2009.

UAH departed Alabama at 17 February 2100 UTC and stayed overnight on the way to CMI. UAH arrived at CMI at 1600 UTC, 18 February and worked on instrumentation repairs at the CMI airport until 1900 UTC. The MIPS, MAX, and UMR were deployed to the KMKX SSW site, arriving at the site at 18 February 0100 UTC. The UMR deployed to the Econo Lodge site at $42^{\circ} 36' 54.63''$ N $88^{\circ} 34' 24.62''$ W. The MIPS and MAX were deployed to the site at $42^{\circ} 42' 31.11''$ N $88^{\circ} 39' 55.78''$ W. Relative to KMKX, the MAX/MIPS site was 195 deg, 30.25 km.

The cyclone at 0000 UTC on 18 February produced no precipitation (Fig. 2). By 0600 UTC on 18 February (Fig. 3) no warm frontal (WF) precipitation was obvious. No obvious dry slot, or precipitation in the deformation zone west of the dry slot could be seen, although a narrow area of precipitation from a previous event extended from central Kansas, across central Wisconsin and eastward into western Ohio (see also Fig. 2). An area of convection had developed by 0600 UTC centered near Davenport, IA. This area of convection elongated (0900 UTC, Fig. 4) and aligned with the surface cold front, which extended from Davenport to the northeast tip of Illinois by 1200 UTC (Fig. 5). At 0900 UTC, a small area of precipitation associated with the leading edge of the preexisting band across central Wisconsin passed the MAX site (Fig. 5). By 1200 UTC, the narrow band of precipitation across Wisconsin reoriented southwest to northeast and approached the MAX site. (1200 UTC, Fig. 5), passing over between 1200 and 1500 UTC. A weak cold front passed over the MIPS/MAX site at around between 1100 and 1200 UTC.

Following the band passage at 1500 UTC (Fig. 6) everything cleared out to the west of the site. After operating three more hours to 1800 UTC (Fig.7), the decision was made to terminate operations. After the teams were returning to CMI, a final band developed (2100 UTC Fig. 8, 0000 UTC 19 February, Fig. 9) and passed over eastern Wisconsin.

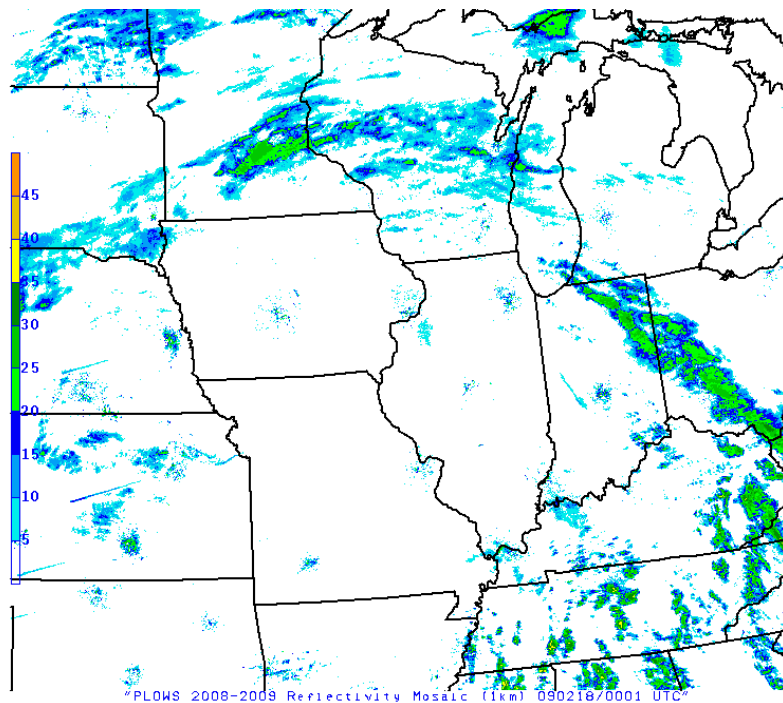


Figure 2: Composite reflectivity from WSR-88D radars at 18 Feb, 0000 UTC

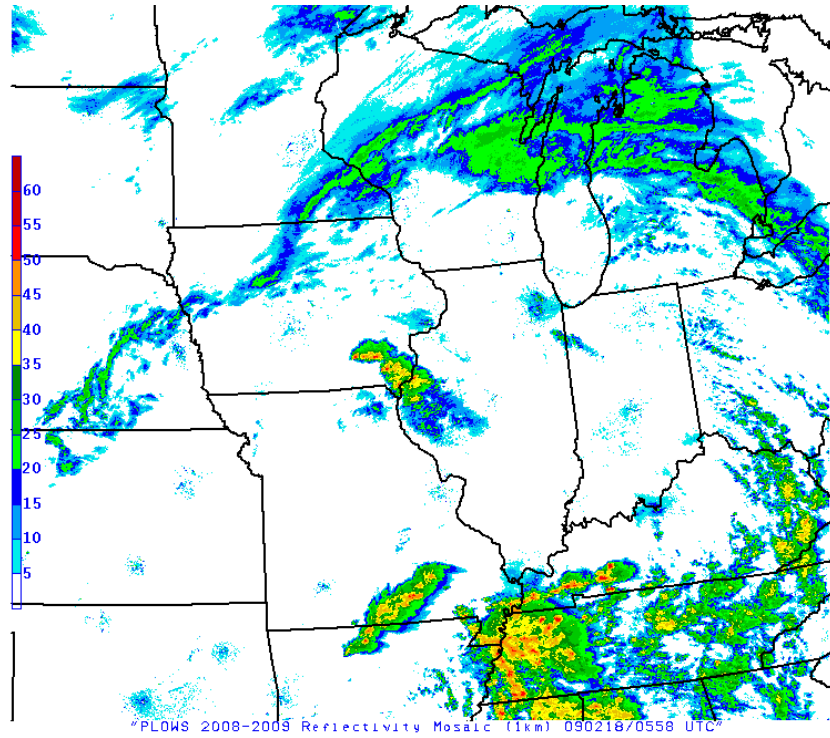


Figure 3: Composite reflectivity from WSR-88D radars at 18 Feb, 0600 UTC

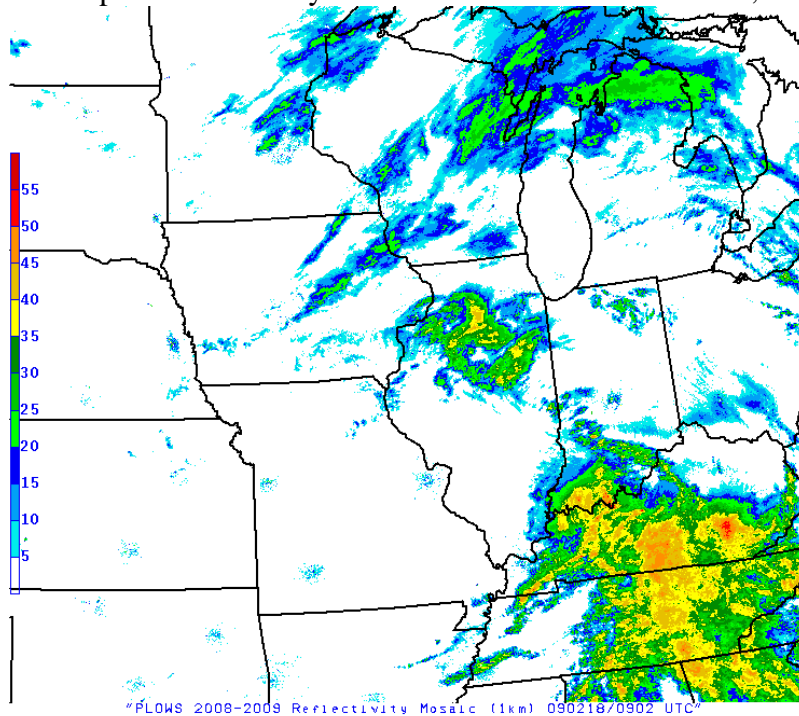


Figure 4: Composite reflectivity from WSR-88D radars at 18 Feb, 0900 UTC

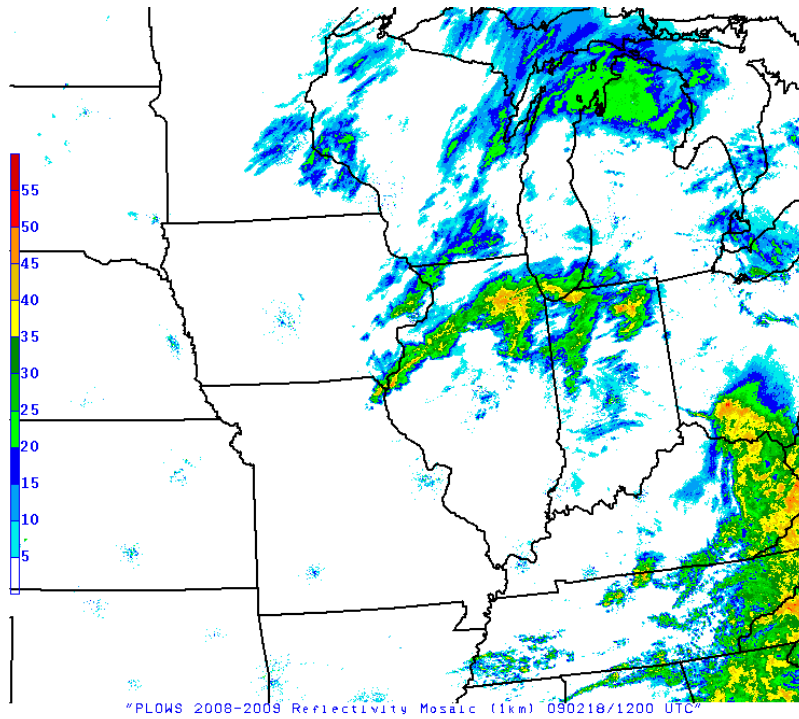


Figure 5: Composite reflectivity from WSR-88D radars at 18 Feb, 1200 UTC

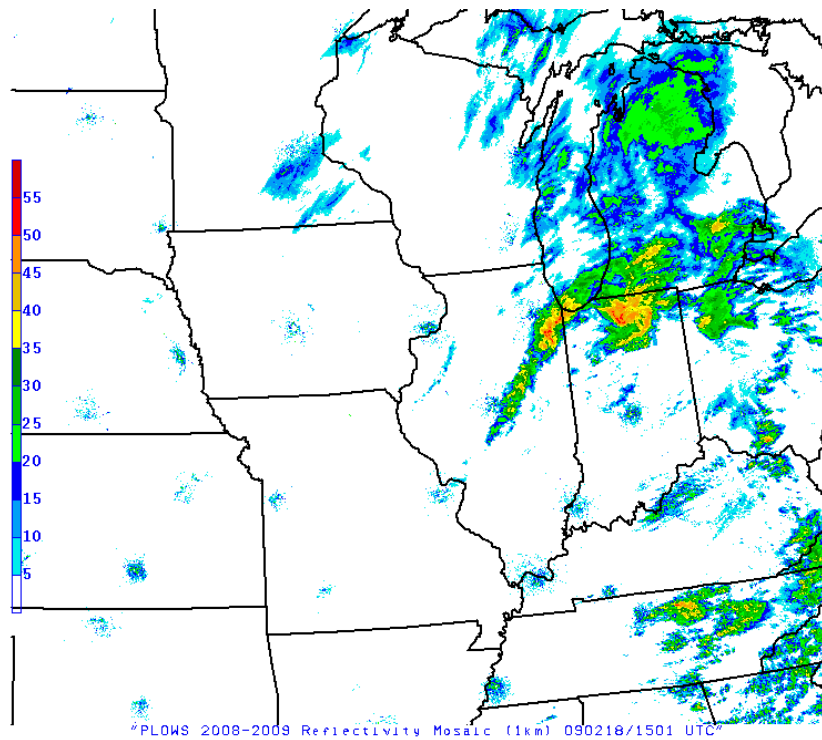


Figure 6: Composite reflectivity from WSR-88D radars at 18 Feb, 1500 UTC

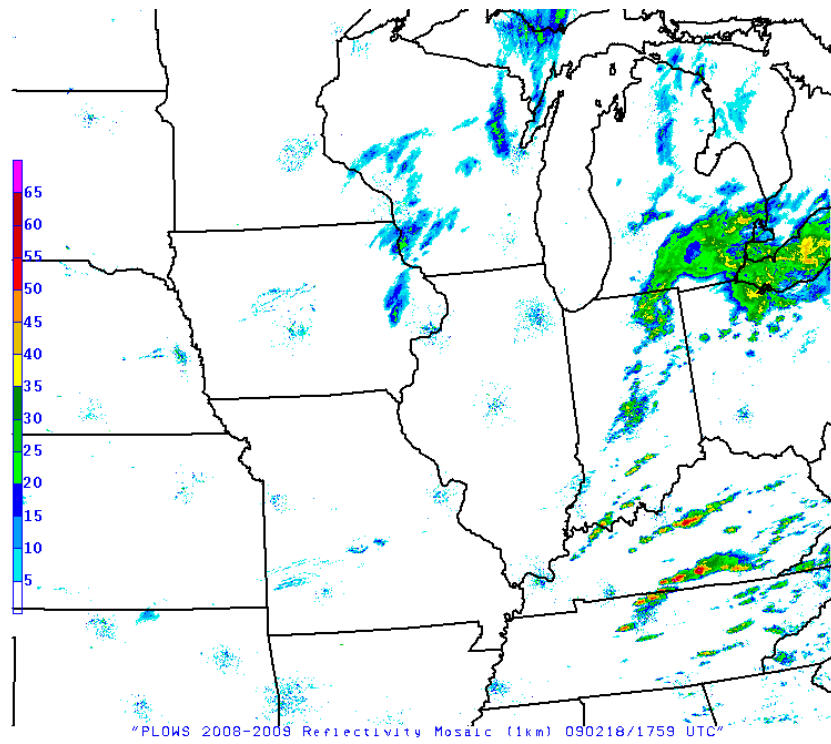


Figure 7: Composite reflectivity from WSR-88D radars at 18 Feb, 1800 UTC

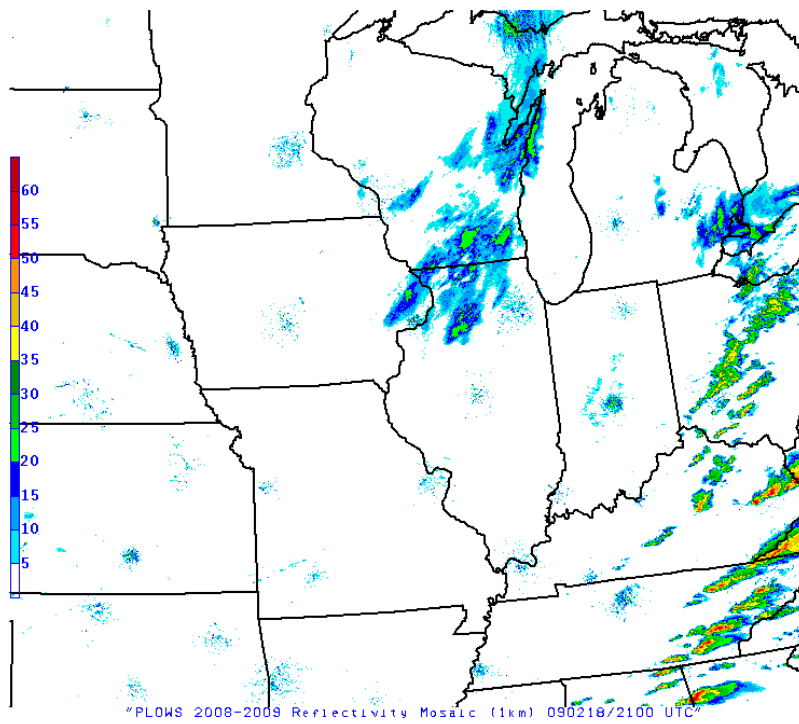


Figure 8: Composite reflectivity from WSR-88D radars at 18 Feb, 2100 UTC

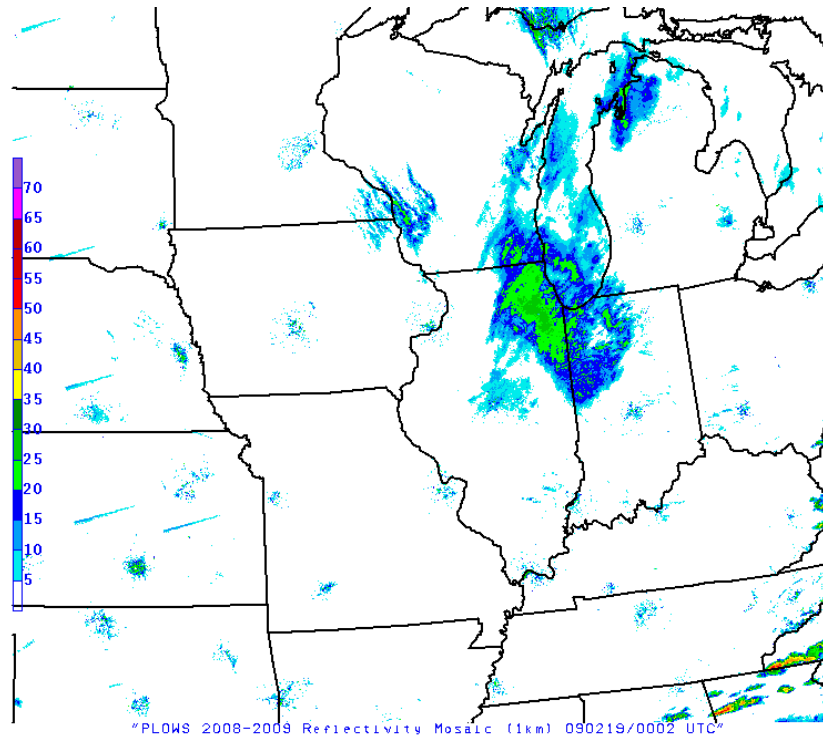


Figure 9: Composite reflectivity from WSR-88D radars at 18 Feb, 0000 UTC

Operations started at the MIPS/MAX site at 0200 UTC. The MAX was up during the entire event, from 18 February 0200 UTC to 18 February 1800 UTC. Three scan types were used for the MAX during the event: VAD volume scans (elevations close to that of VCP 11), RHI scans (nominally normal to precipitation bands, in the sector 280°-330°), and vertically-pointing (moments only for most of the event, time series was only collected briefly in the event at 1200-1400 UTC). The 915 MHz profiler ran continuously through the event, as did other operating instruments. The profiler data, shown below in Figs 10-12, show the event was not significant, with cloud tops not exceeding 4 km and no evidence of strong banding. Three weak precipitation episodes are indicated. The initial was drizzle, the second was very light rain, and the third was snow in the form of aggregates. Interestingly, the radiometer-indicated vertically integrated liquid water dropped to near zero during the final snow event.

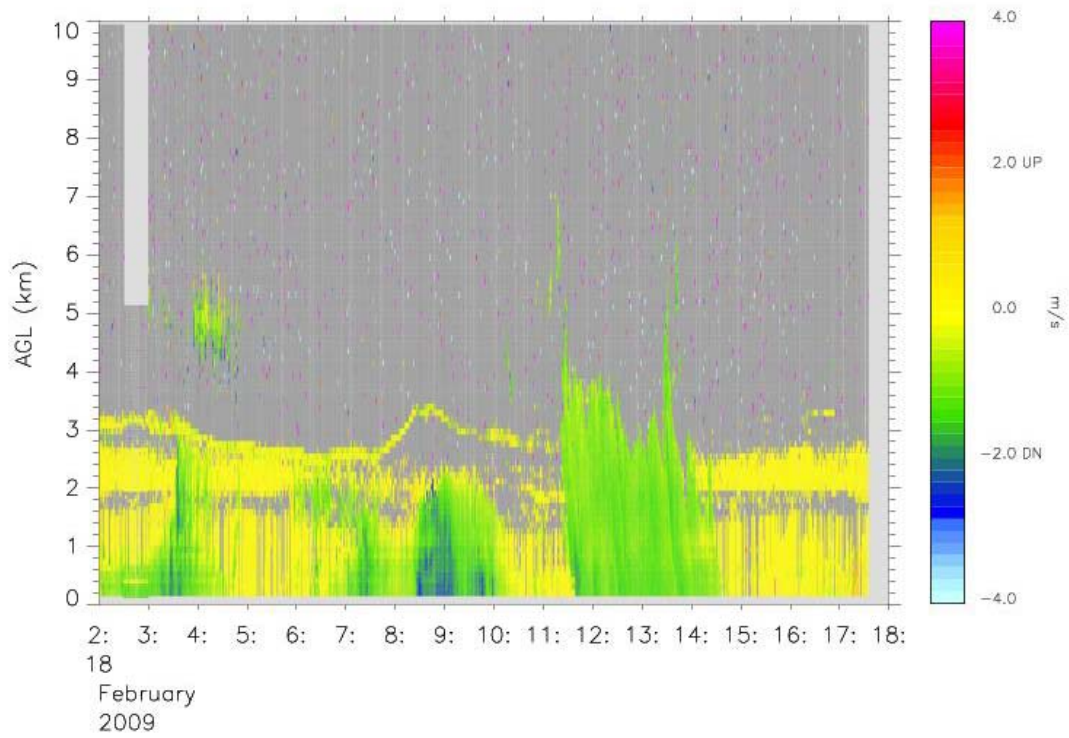


Figure 10: W-field from 0200-1800 UTC 18 Feb 09.

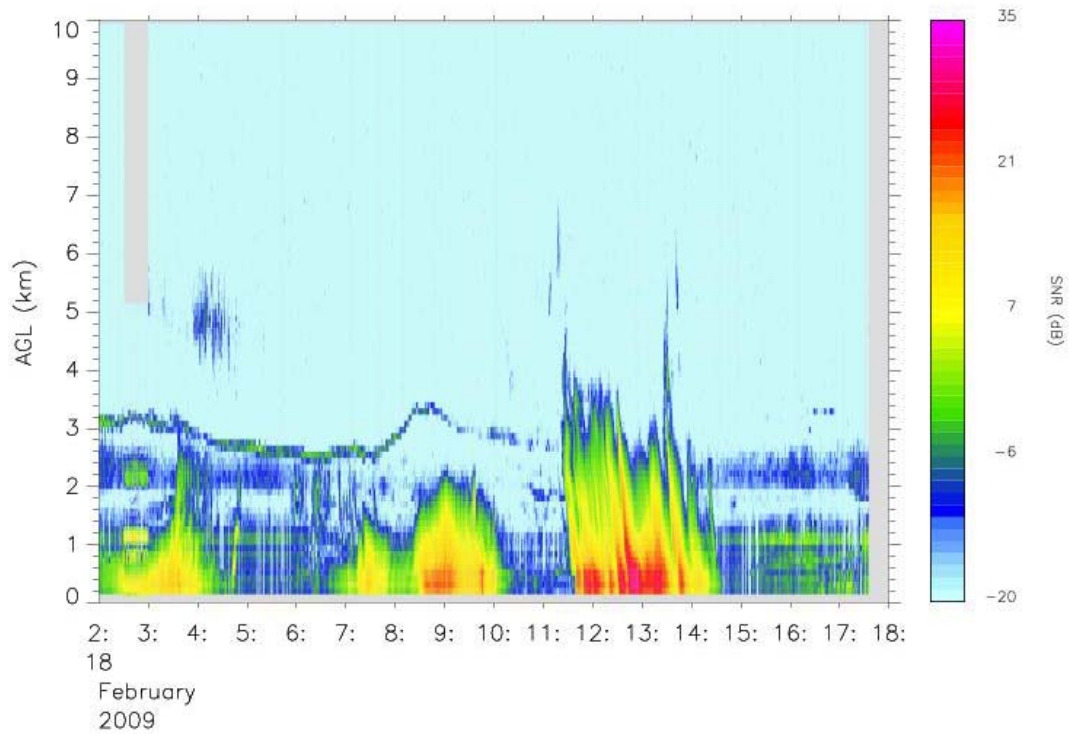


Figure 11: SNR field from 0200-1800 UTC 18 Feb 09.

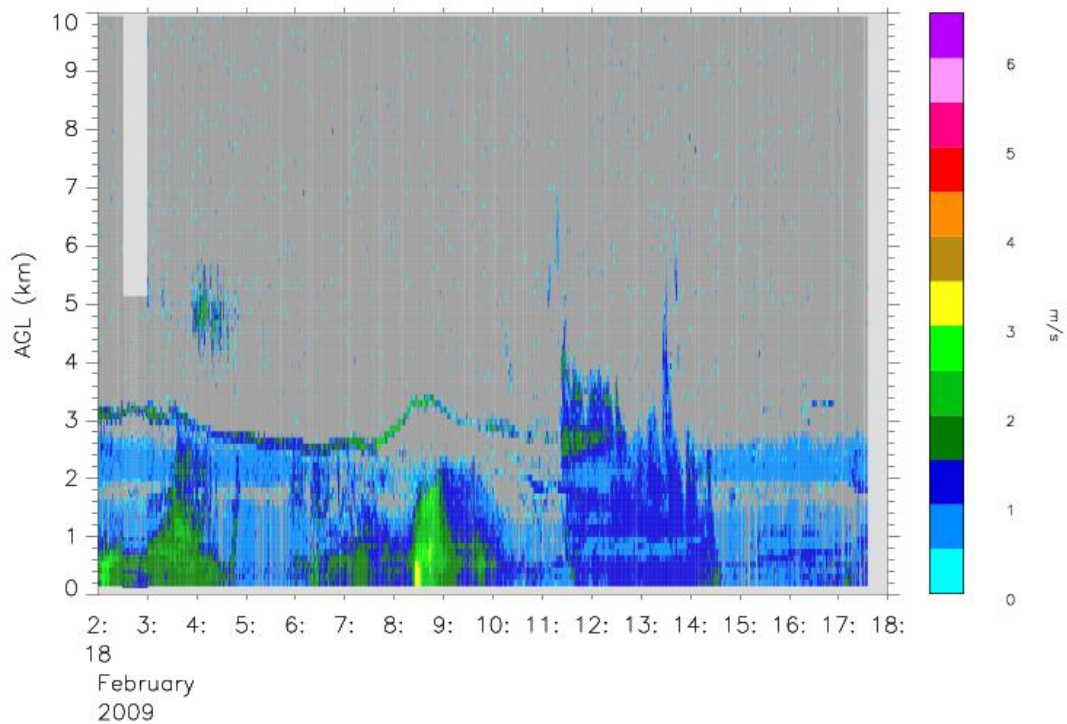


Figure 12: Spectral Width field from 0200-1800 UTC 18 Feb 09.

KEY ISSUES

The MAX site was in a slight depression leading to significant blocking in the lowest two beam elevations. We should consider an alternate site for future operations if at all possible.

INSTRUMENTATION PROBLEMS

All MIPS instruments performed well. There were occasional short-period communications dropouts with the Parsivel disdrometer. UAH will investigate this further.

UM:

No real issues were encountered by the UM team this time out. The site was far better exposed, and there was far less data dropout and spurious signal. However, we do continue to have time-stamping issues with the InterMet software. It continues to subtract only 5 hours from GMT instead of 6, so the data files must still be adjusted after

each flight (which has been done on the uploaded files). The TTAA TTBB files (marked with a “TEM” in the name) continue to be a mess. For now, the most expedient preliminary analysis will likely come from the files marked with “PYS” as a part of the name. Some QC is done on these files at flight time, and they feature data every 10 seconds into the flight (about every ~50m in the vertical, when the ascent rate is near 300 m min⁻¹).

ACTION ITEMS

UAH None

UI:

Need to evaluate new MAX site

UM

Market has contacted John Schewchuk of Environmental Research Services, LLC, the author of the *RAOB* software. Market has asked for a module for *RAOB* that will open and display the “PYS” files from Internet or at least for a program that will turn those “PYS” files into CSV formatted files that *RAOB* can read. In this way, .JPG and .PDF formatted images of the radiosonde data will be able to be generated in the field and uploaded far sooner than we are currently doing. As of this writing, such a module is in development, and is scheduled to be ready by 03 March 2009.

UM Radiosonde Flights

The UM team ran radiosonde operations at the SkyLodge (formerly an Econolodge) in Devalan, WI. We established the temporary station with the following particulars:

Latitude:	42.6151° N.
Longitude:	88.5729° W.
Elevation:	297 m MSL



Figure 13. Photograph of the UM radiosonde system deployed in Devalan, WI, 18 February 2009; looking west. Radiosonde antennae are in the foreground at left.

Launch History - 06 launches, indicated by release time.

18 February 2009	0536 UTC
18 February 2009	0740 UTC
18 February 2009	0929 UTC
18 February 2009	1133 UTC
18 February 2009	1333 UTC
18 February 2009	1524 UTC