

THE ATMOSPHERIC RESERVOIR

Examining the Atmosphere and Atmospheric Resource Management

Improved Radars Offer New Opportunities

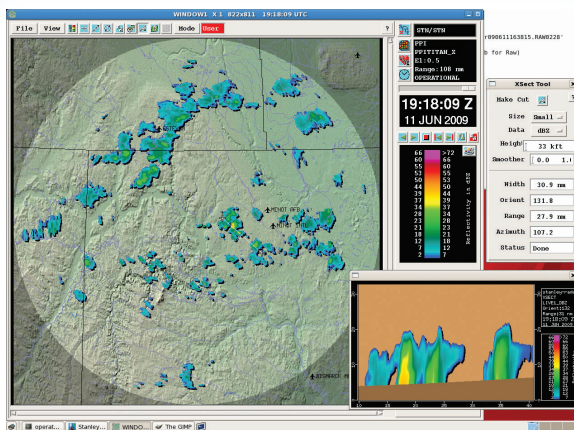
By Darin Langerud

Last fall, the North Dakota Atmospheric Resource Board (NDARB) chose Vaisala, Inc. to upgrade its weather radars in Bowman and Stanley. Vaisala is one of the world leaders in radar technology, and its components are a major part of the current NEXRAD Doppler radar network operated by the National Weather Service (NWS). Installation was completed in April and the radars began operations in support of the North Dakota Cloud Modification Project (NDCMP) on June 1.

NDARB has owned and operated weather radars at the airports in Bowman and Stanley dating back to 1997. They were previously operated by the NWS and were acquired when the NEXRAD Doppler weather radars were installed at sites in the Northern Plains. Until recently, the radars were essentially unchanged from when they were built in the 1970s: the only significant change being the addition of a computer software program for radar display and data storage.

These recent upgrades change all that. Sophisticated components have replaced some of the older hardware making for a greatly improved, more functional system. Updated electronics improve the sensitivity of the radars, allowing them to detect precipitation sooner, and at greater distances than before. Doppler capability will provide the

means to detect wind motions in the atmosphere, improving our ability to detect severe storms, especially those that may spawn a tornado.



Radar image from the Stanley, ND radar, with a vertical cross-section inset (lower right).

Perhaps the biggest change is the new capability to operate and monitor the radars remotely. Prior to the upgrades, meteorologists were required on-site to control and monitor operations. Now all radar functions can be controlled from a central location, such as the NDARB offices in Bismarck. While on-site meteorologists will remain during NDCMP operations, this opens the door to operating the radars beyond the summer months, perhaps even year-round.

As those in western North Dakota are aware, the existing coverage of the NWS Doppler radar network over parts of the state, especially southwest North Dakota is marginal. While towering summer thunderstorms are detectable, lower clouds that produce rainfall or snow are typically not observed from the

NWS radar in Bismarck.

NDARB has partnered with Bowman County to test the radar system's new data sharing capabilities. Real-time data from the Bowman radar are being sent to a dedicated computer in their Emergency Operations Center (EOC), assisting Bowman County storm spotters during summer severe weather episodes. "Having access to a local radar in southwestern North Dakota has enabled Bowman County to provide enhanced alerts to our citizens", said Dean Pearson, Bowman County Emergency Manager. "This will greatly improve

advanced warning time and storm analysis as it crosses the region. Data provided by these enhancements can then be sent to neighboring counties for a 'heads-up' on storms." If testing goes well, the potential exists for other counties in the area to also be linked to the Bowman radar.

To view live radar data from Bowman and Stanley, visit the NDARB website at <http://www.swc.nd.gov/arb>. Images are updated every six minutes, 24 hours a day, seven days a week.

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