UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL ENVIRONMENTAL SATELLITE DATA
AND INFORMATION SERVICE
NATIONAL CLIMATIC DATE CENTER
151 PATTON AVE ROOM 120
ASHEVILLE NC 28801-5001

22 September 2009

MEMORANDUM

From: Karsten Shein, Climate Monitoring Branch, CSMD, NCDC
To: Thomas Karl, Director, NCDC
Subject: SCEC: New all-time 24-hr snow fall record for Oklahoma

On 21 September 2009, the ad-hoc State Climate Extremes Committee (SCEC) voted unanimously to approve a new all-time 24-hr snow fall record for the state of Oklahoma. As the National Climatic Data Center (NCDC) voting member, I am requesting that the NCDC director, or designated proxy, approve the decision of the SCEC and recognize the 26.0 inches of snow that fell at both the Cooperative Weather Observation Stations of Woodward (Coop ID: 34-9760) and Freedom (Coop ID: 34-3358) over the 24-hr period preceding the morning observation of 28 March, 2009. A summary of the event and the SCEC deliberation follows.

Arguably the greatest springtime blizzard in living memory for the northwestern regions and the eastern panhandle of Oklahoma occurred on the 27th of March 2009, carrying into the morning hours of the 28th. The storm system contained heavy snow bands and significant convective activity that included hail and thunder snow in places. The heavy snow event in question occurred over western Oklahoma between the afternoon of 27 March and the morning of 28 March, 2009. Reports of over 20 inches of snow fall were received from numerous locations throughout the area, and several reported over 24 inches (the existing state record 24-hr snow fall for Oklahoma is 23.0 inches, set at Buffalo on 21 February 1971). A maximum snow fall report of 27.0 inches was received from a private citizen in Slapout, OK, but, despite significant follow-up effort by NWS WFO Amarillo, the report could not be verified.

Both the 26.0 inches observed at Woodward and the 26.0 inches at Freedom were reported on their respective NWS B-91 Coop Observation forms that were validated by the NWS and submitted to NCDC for processing and archival. Both observers have been trained by the NWS in proper snow measurement techniques (as set forth in NWS Instruction 10-1315 Appendix A), and both are deemed very reliable observers – the Woodward observer has been a COOP observer for nearly 25 years (and is a senior electronics technician for the Oklahoma Mesonet), and the Freedom observer for 6 years.

Because strong winds accompanied the storm system and drifting was a potential bias factor, the two 26.0-inch observations were derived by averaging measurements from several sheltered locations near the observers' meteorological stations. The observation at Woodward is the average of 12 measurements, and the observation at Freedom is based on 10 measurements. The observers both reported that their observations took place at the regular observation times of 7 AM and 8 AM (Local), respectively, and that the snow that was measured had fallen since the preceding observation. The snow was reported as beginning to accumulate in the late afternoon of the 27th (between 1800 and 2000 hours), and tapering off just prior to the observation time on the 28th.

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The only discrepancy between the observations at these two locations (approx. 27 miles apart) is the snow water equivalent (SWE). At Woodward, the SWE was reported as 1.13 inches, while at Freedom, it was 3.00 inches. The three inch amount is more consistent with expected snow to water ratios from this storm, and it is possible that blowing in the vicinity of Woodward resulted in significant undercatch in the rain gauge. However, the SCEC determined that the difference in SWE unlikely affected the snow fall measurements themselves.

The ad-hoc SCEC was convened to evaluate this snow fall value, and followed the protocol set forth in NWS Instruction 10-1004 Appendix E. The committee corresponded by E-mail and conducted a teleconference on 16 September, 2009. Based upon the evidence presented and a discussion amongst the SCEC members, the voting members recommended supporting the two 26.0 inch observations unless the 27.0 inch report from Slapout, OK could be verified. Being unable to verify the 27.0-inch report, the SCEC unanimously supported recognizing the validity of both 26.0-inch snow fall values at Woodward and Freedom, Oklahoma on 28 March, 2009, and after a search of the historical snow fall data for the state, recognizing that 26.0 inches constitutes the greatest all-time recorded 24-hr snow fall total for Oklahoma.

State Climate Extremes Members:

Chris Kimble, NWS WFO Amarillo
Jose Garcia, NWS WFO Amarillo
Mike Foster, NWS WFO Norman
Forrest Mitchell, NWS WFO Norman
Victor Murphy, NWS Southern Region Headquarters
Mike Asmus, NWS Southern Region Headquarters
Gary McManus, Oklahoma Climatological Survey
Mark Shafer, Oklahoma Climatological Survey
Kevin Robbins, Southern Regional Climate Center
Derek Arndt, National Climatic Data Center
Karsten Shein, National Climatic Data Center

NCDC Director Approval/Recommendation:

Approved: _____ Disapproved: _____

Director: _____ Date: _____
(*or proxy*)

Recommendation (if any):

File with NCDC/State Climate Extremes Committee

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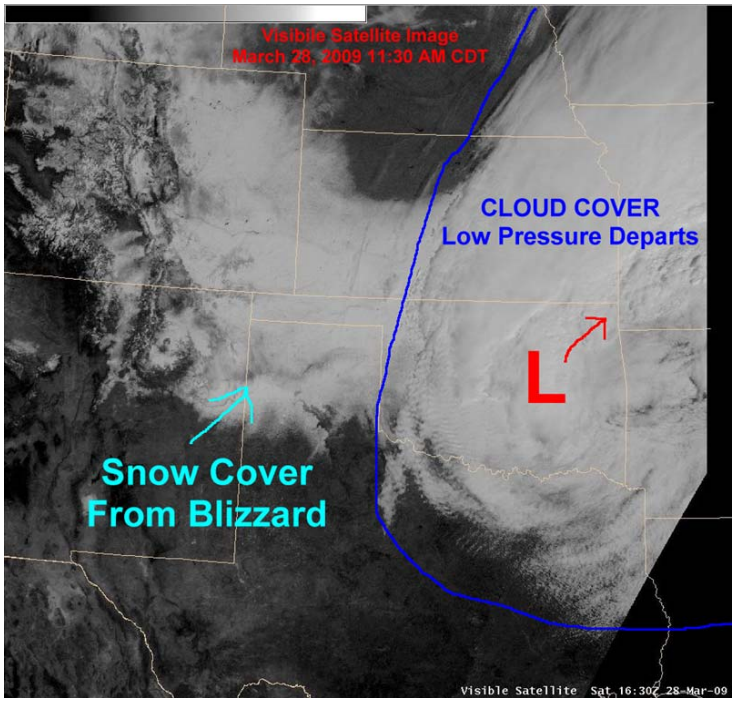
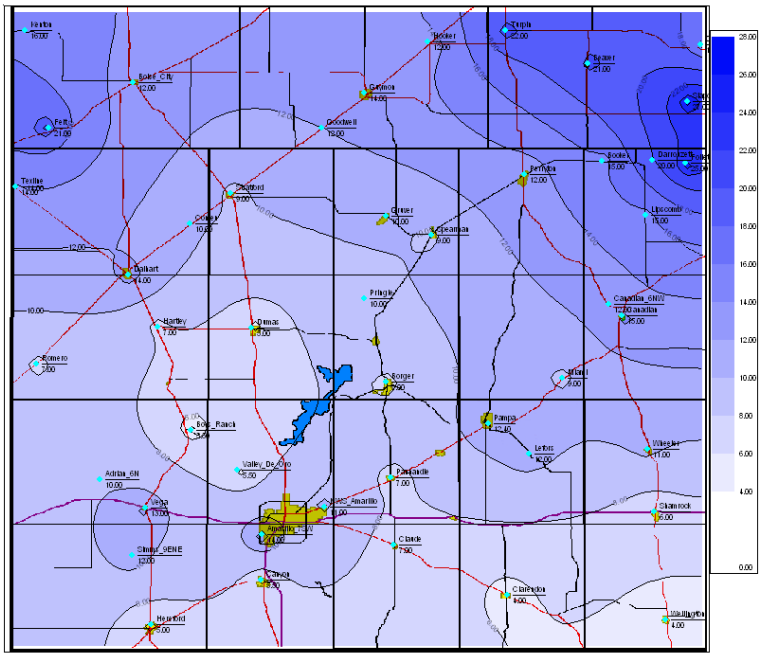


NWS Amarillo
Estimated Snowfall Totals
March 26-28, 2009



Satellite imagery and snow fall total estimates from the 26-28 March 2009 snow storm (Follett, TX – which set a TX state record for snowfall – and Slapout, OK are in the upper right corner of the lower image, while Woodward and Freedom, OK are to the east of Slapout. (Images from NWS WFO Amarillo)

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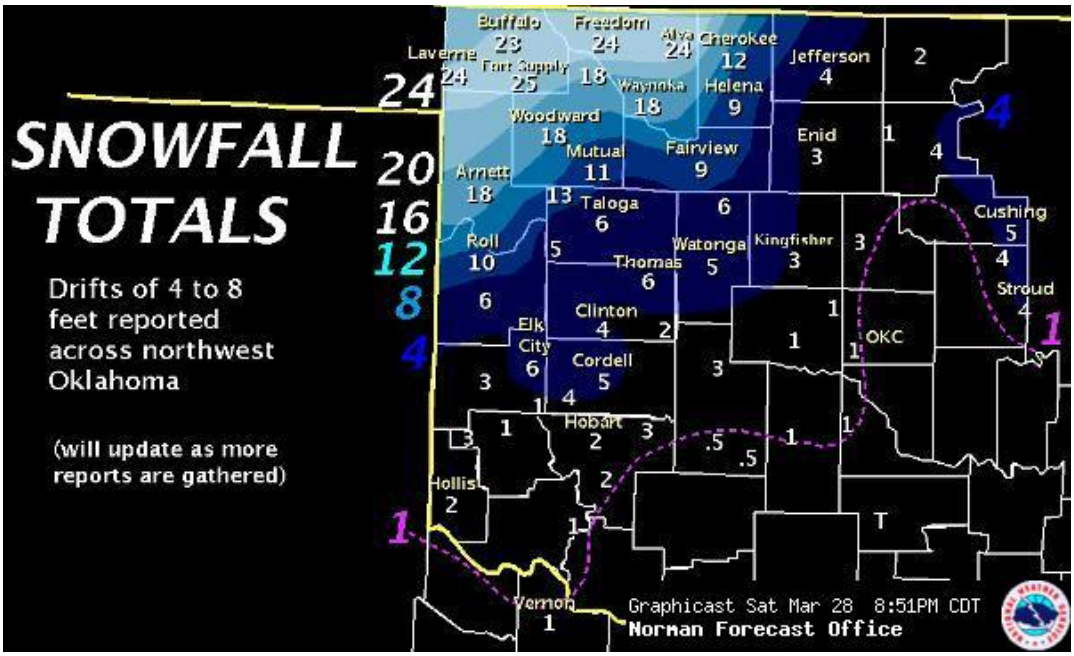
Snow photograph taken in Arnett, Oklahoma (SW of Woodward) after the blizzard.



Preliminary snowfall contour map issued by NWS WFO Norman on the morning of 28 March 2009 (prior to receiving the updated 26.0-inch reports from Woodward and Freedom).