

Storm Data and Unusual Weather Phenomena - March 2011

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
----------	-----------	-------------------	---------------------	------------------------

NORTH DAKOTA, Central and West

(ND-Z001) DIVIDE, (ND-Z002) BURKE, (ND-Z003) RENVILLE, (ND-Z004) BOTTINEAU, (ND-Z005) ROLETTE, (ND-Z009) WILLIAMS, (ND-Z010) MOUNTRAIL, (ND-Z011) WARD, (ND-Z012) MCHENRY, (ND-Z013) PIERCE, (ND-Z017) MCKENZIE, (ND-Z018) DUNN, (ND-Z019) MERCER, (ND-Z020) OLIVER, (ND-Z021) MCLEAN, (ND-Z022) SHERIDAN, (ND-Z023) WELLS, (ND-Z025) FOSTER, (ND-Z034) MORTON, (ND-Z035) BURLEIGH, (ND-Z036) KIDDER, (ND-Z037) STUTSMAN, (ND-Z046) EMMONS, (ND-Z047) LOGAN, (ND-Z048) LA MOURE, (ND-Z050) MCINTOSH, (ND-Z051) DICKEY	03/11/11 11:00 CST 03/12/11 02:00 CST		0 0	Blizzard
---	--	--	--------	----------

(ND-Z031) GOLDEN VALLEY, (ND-Z032) BILLINGS, (ND-Z033) STARK, (ND-Z040) SLOPE, (ND-Z041) HETTINGER, (ND-Z042) GRANT, (ND-Z043) BOWMAN, (ND-Z044) ADAMS, (ND-Z045) SIOUX	03/11/11 11:00 CST 03/11/11 18:00 CST	7	15K 0	High Wind (MAX 53 kt)
---	--	---	----------	-----------------------

A significant severe winter weather event occurred across much of west and all of central North Dakota March 11th through early March 12th.

An Alberta Clipper rapidly intensified as it moved east-southeast into the Northern Plains in response to a strong upper level jet streak amplifying the clipper's associated mid level trough. Warm air advection ahead of the clipper resulted in the initial precipitation type to fall as rain. As the precipitation was mainly orientated along the clipper's cold front, a quick transition from rain to all snow occurred with the frontal passage. Storm total snow accumulations with this storm ranged from two to five inches northwest and central.

The main impact from this storm was the sudden onset and prolonged period of intense winds generated along and behind the cold front. Sustained winds in excess of 40 mph, with gusts to around 70 mph, developed west during the morning and spread east in the afternoon, then persisting through evening. When combined with the snow, severe blizzard conditions quickly became widespread, significantly impacting travel. In addition, temperatures initially above freezing fell into the 20s behind the front, turning wet and slushy roads into ice.

Across southwest North Dakota, very little precipitation fell and the main impact was high wind.

The violent and fast moving nature of this storm, combined with extremely icy road surfaces, resulted in dangerous if not impossible travel conditions in white out conditions. Numerous travel advisories and road closures were in effect, including the closure of Interstate 94 from Dickinson to Fargo, and Highway 83 from Bismarck to Minot. Several hundred motorists were stranded along minor and major roadways. Many accidents occurred. One in Sioux County involved injury. This blizzard caused unprecedented demand on law enforcement and emergency services, and required the North Dakota National Guard to be activated to assist in rescuing stranded motorists.

(ND-Z004) BOTTINEAU, (ND-Z009) WILLIAMS, (ND-Z010) MOUNTRAIL, (ND-Z011) WARD, (ND-Z012) MCHENRY, (ND-Z013) PIERCE, (ND-Z017) MCKENZIE, (ND-Z018) DUNN, (ND-Z019) MERCER, (ND-Z020) OLIVER, (ND-Z021) MCLEAN, (ND-Z022) SHERIDAN, (ND-Z023) WELLS, (ND-Z025) FOSTER, (ND-Z031) GOLDEN VALLEY, (ND-Z032) BILLINGS, (ND-Z033) STARK, (ND-Z034) MORTON, (ND-Z035) BURLEIGH, (ND-Z036) KIDDER, (ND-Z037) STUTSMAN, (ND-Z041) HETTINGER, (ND-Z042) GRANT, (ND-Z045) SIOUX, (ND-Z046) EMMONS, (ND-Z047) LOGAN, (ND-Z048) LA MOURE, (ND-Z050) MCINTOSH, (ND-Z051) DICKEY	03/22/11 10:00 CST 03/23/11 11:00 CST		0 0	Winter Storm
--	--	--	--------	--------------

(ND-Z001) DIVIDE, (ND-Z002) BURKE, (ND-Z003) RENVILLE, (ND-Z004) BOTTINEAU, (ND-Z005) ROLETTE, (ND-Z009) WILLIAMS, (ND-Z010) MOUNTRAIL, (ND-Z011) WARD, (ND-Z012) MCHENRY, (ND-Z013) PIERCE, (ND-Z017) MCKENZIE, (ND-Z018) DUNN, (ND-Z019) MERCER, (ND-Z021) MCLEAN, (ND-Z022) SHERIDAN, (ND-Z023) WELLS, (ND-Z025) FOSTER	03/22/11 13:00 CST 03/22/11 20:27 CST		0 0	Blizzard
--	--	--	--------	----------

An upper level trough swinging into the Northern Plains, combined with a strong low pressure system ejecting out of the Rockies and into the Central Plains, resulted in heavy snow and blizzard conditions across much of west and central North Dakota. This episode occurred from March 22nd into the 23rd.

Warmer air surging north ahead of this storm system resulted in a wintry mix of rain, freezing rain, and sleet across much of the west and south central portions of the state at first, while all snow fell over the north central. Colder air pushing south eventually transitioned the precipitation to all snow. While there were some ice accumulations across the south, ice impacts were minor.

Heavy snow fell from west central North Dakota, through much of the south central and James River Basin region. Storm total snowfall amounts within this band ranged from eight inches to one foot, with locally higher amounts including 18.2 inches near Beulah. In addition

Storm Data and Unusual Weather Phenomena - March 2011

Location	Date/Time	Deaths & Injuries	Property & Crop Dmg	Event Type and Details
----------	-----------	----------------------	------------------------	------------------------

to the snow, wind gusts up to 45 mph developed across far northwest and all of north central North Dakota resulting in several hours of blizzard conditions.

Numerous travel advisories and several road closures resulted from this storm, including the closure of Interstate 94 from Bismarck to Fargo, Highway 83 from Bismarck to the Canadian border, and Highway 2 from Berthold to Rugby.

This was a prolonged and very complicated storm to warn for as potential was high for various types of warning criteria to be met.