



NATIONAL WEATHER SERVICE - BISMARCK, NORTH DAKOTA

Inside this issue:

Welcome Message	1
Winter Weather Terminology	1
Severe Winter Weather Awareness Week	2
Winter Climate Outlook	3
How La Niña Influences North Dakota Weather	3
Summer 2011 High Impact Weather Events	4
Summary of 2011 Spring Flooding Upstream from Lake Sakakawea	4-5
Call for CoCoRaHS observers!	5
Staff Spotlight	5
NWS Mission and History	6
Staff Spotlight	6

DAKOTA SKIES

NWS Bismarck

Building a weather-ready nation

Fall 2011

Welcome Message

by Tony Merriman

Welcome to the Fall edition of the Dakota Skies newsletter! This publication is issued twice each year, one in the spring and one in the fall. The content is produced by a team of meteorologists at the National Weather Service in Bismarck.

This newsletter's purpose is to heighten safety awareness for the coming severe weather season, whether it be summer or winter. Furthermore, other educational and useful information will be provided.

If you have any comments or questions about this publication, please feel free to contact us at 701-250-4224. Enjoy!



Map of the Bismarck County Warning Area (CWA). We issue warnings and forecasts for 36 counties in western and central North Dakota. The office is staffed 24 hours a day, seven days a week.

Winter Weather Terminology

by Patrick Ayd



Snowfall amounts across North Dakota after the snow storm of April 30, 2011. (Source: NOAA)

The following is a list of terms that are typically associated with winter weather in North Dakota.

Blizzard: A blizzard is officially defined as visibilities reduced to less than one quarter of a mile in snow and/or blowing snow with sustained or frequent wind gusts of 35 mph or higher for at least three hours.

Extreme Cold: Temperatures of -30°F or colder, or a combination of temperature and wind that makes it feel like -30°F or colder, over a large geographical area for at least several hours.

Heavy Snowfall Accumulation: Six inches or more of snow in 12 hours or eight inches in a 24 hour period.

Ice Storm: Significant ice accumulation of greater than one quarter of an inch.

Snow Water Equivalent (SWE): The amount of liquid water content in the snow after it has been melted.

Thunder Snow: Instability in the mid levels of the atmosphere that leads to strong updrafts and lightning and thunder. It is not common and occurs most often during heavy/wet snowfall events.



NOAA Weather Radio
All Hazards acts as an alarm clock for severe weather. It alerts you immediately that a warning has been issued for your area.

“It is just as important to be prepared for severe winter weather as it is for severe summer weather.”



Severe Winter Weather Awareness Week: Oct. 31 - Nov. 4

by Jimmy Taeger

The week of October 31st to November 4th, 2011 was proclaimed as “Severe Winter Weather Awareness Week.” Its purpose is to increase awareness about the hazards associated with winter weather. It is just as important to be prepared for severe winter weather as it is for severe summer weather. Listed below is a summary of each day’s topic for the week.

Monday, October 31: Severe Winter Weather Risk Definitions

Severe winter weather risks can be defined as a watch, advisory, or warning. The following are the weather risk definitions in order of severity:

Watch - Issued when the risk of a hazardous winter event has increased, although the occurrence, location, and/or timing is uncertain.

Advisory - Issued when a hazardous winter weather event has a high probability of occurrence, is imminent, or is occurring. An advisory is issued for conditions that could cause inconvenience and if caution is not used, could lead to a situation that may threaten life and property.

Warning - Issued when a hazardous winter weather event has a high probability of occurrence, is imminent, or is occurring and poses a threat to life and property.

Tuesday, November 1: Winter Travel

Vehicles should be winterized and equipped with a winter survival kit. Useful items to include in a survival kit are: extra clothing, blankets, high energy foods, a flashlight with new batteries, sand, and a shovel. If taking a trip, let someone know your departure time, estimated arrival time, and the route you will take. Bring a cell phone, and obey road closure and detour signs. Call 5-1-1 for road information from the North Dakota Department of Transportation.



Typical Winter Survival Kit (Source: NOAA)

Wednesday, November 2: Indoor Preparedness

To prepare at home for a winter storm, assemble a disaster supply kit of drinking water, canned food, a non-electric can opener, first aid kit, battery-operated radio, fresh batteries, rock salt, and snow removal equipment. Have sufficient heating fuel and heating equipment in case the electricity is cut off. Multiple heating sources pose an additional risk for house fires, so keep fire extinguishers on hand.



(Source: NOAA)

Thursday, November 3: Outdoor Recreation

The outdoors can be fun in the winter months, but safety must still be practiced. Be cautious when ice fishing on lakes or rivers. Ice does not freeze evenly. Conditions such as water current, schooling fish, water depth, temperature fluctuations, and wind can all affect ice thickness. Dress appropriately for harsh North Dakota winters.

Friday, November 4: Actions to take if Stranded

If stranded in the snow tie a brightly colored cloth to the vehicle’s antenna. Make sure snow is clear of the vehicle’s exhaust pipe. Conserve gas by only running the engine for brief periods at a time. Stay inside the vehicle. Do not fall asleep. Stay awake!



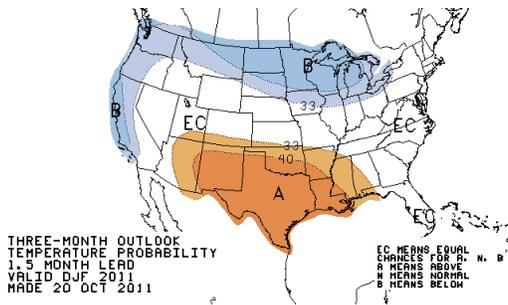
Stranded Vehicle (Source: NOAA)

Winter Climate Outlook

by Lindsay Tardif-Huber

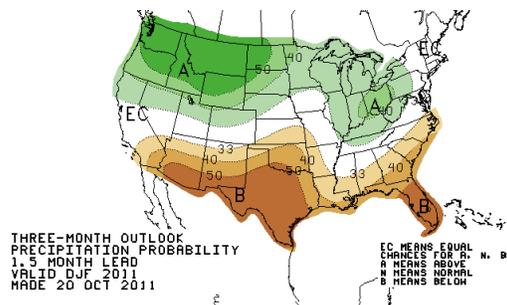
The Climate Prediction Center issued a La Niña Advisory on September 8th. Due to the expected La Niña conditions, the 2011-2012 Winter Climate Outlook produced by the Climate Prediction Cen-

ter (www.ncep.cpc.noaa.gov) on October 20th indicates the greatest probabilities for a colder and wetter than normal winter for North Dakota from December through February.



For North Dakota: (Source: NOAA)

78% Chance of Below Normal to Normal Temperatures.



For North Dakota: (Source: NOAA)

83% Chance of Above Normal to Normal Precipitation.

Bismarck Normals

	Avg. Temps	Monthly Snowfall
December	16.2°F	9.3"
January	12.8°F	8.9"
February	18.1°F	8.1"

Williston Normals

	Avg. Temps	Monthly Snowfall
December	13.9°F	9.5"
January	11.0°F	10.0"
February	16.9°F	5.7"

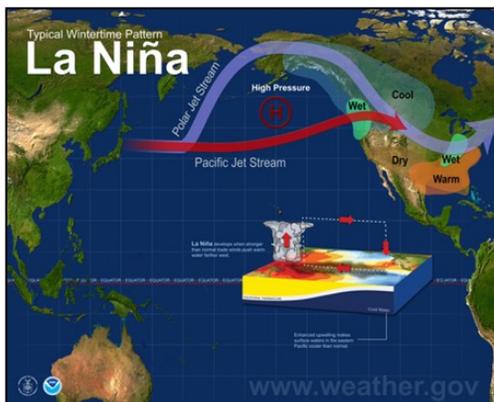
How La Niña Influences North Dakota Weather

by Lindsay Tardif-Huber

During the late summer and early fall, ocean waters across the Equatorial Pacific cooled resulting in cooler than normal conditions, signaling the onset of another La Niña episode. Historically, a strong wintertime La Niña episode (such as the event last winter) is typically followed by a weaker La Niña episode the following winter. It is expected that this La Niña episode will be of weak to moderate strength and will persist through the winter and into spring. Also, this La Niña episode will be enhanced by the current negative phase of the Pacific Decadal Oscillation (PDO), which also impacts the Equatorial Pacific with cooler than normal ocean water temperatures.

La Niña influences the weather patterns over North America, especially during the winter and spring seasons. During a typical La Niña winter the Polar Jet Stream is diverted southeast over western Canada and into the Northern Plains. This allows for arctic air to more easily penetrate into the Northern Plains. This is why colder than normal conditions are favored across North Dakota during December, January, and February. When considering the effects of the current PDO episode, the favored region for wetter than normal conditions, across the Northwest during a typical La Niña event, will be

extended eastward into the Northern Plains. This is why North Dakota is favored for wetter and colder than normal conditions this winter.



(Source: NOAA)

Looking forward into the spring of 2012, where La Niña and the negative phase of PDO are expected to continue, the cooler and wetter than normal conditions will continue to be favored across North Dakota during March, April, and May.

“North Dakota is favored for wetter and colder than normal conditions this winter.”



Summer 2011 High Impact Weather Events

by JP Martin and Nathan Heinert

In addition to the unprecedented and devastating spring and summer floods in west and central North Dakota in 2011, thunderstorms brought their share of destruction as well.

Some of the worst flash flooding occurred in Wells, Foster, and Stutsman counties where thunderstorms with torrential rain in July and August flooded fields and closed down roads. The area between Harvey, Carrington, and Jamestown was hit repeatedly.

A few of the worst tornadoes in 2011 included an EF2 in Grant County on June 12 that significantly damaged a farmstead south of Elgin. Another EF2 tornado did significant damage to no fewer than three farmsteads and tore out shelter belts in Logan County on July 10. What would have to be classified as the worst tornado of the year tore a 16 mile long path through LaMoure County on July 17. It injured one person, completely destroyed several farmsteads, killed animals, tossed vehicles, mangled trees, and tore out miles of power lines.

As is the norm, reports of large hail were plentiful. The largest stones, baseball size, fell in LaMoure County with that tornado on July 17, and the same day in McHenry County from near Velva to Balfour.

Tremendous thunderstorm wind damage occurred this year with the worst on July 10 in Dickey County. No part of the county was spared with damage over a 45 mile long path. The highest wind speeds were estimated at 125 mph between Merricourt and Oakes.



Tornado near the Burleigh/Sheridan County Line on July 16, 2011 (Source: Jackie Lundstrom, Game Warden)

A prolonged period of excessive heat and humidity struck in mid July with heat index values close to 120 degrees, not common in North Dakota. There were no reports of human life lost, however, an estimated 700 livestock were killed.

Preliminarily there were 34 tornadoes in west and central North Dakota in 2011 with a statewide total of 59. This was the third highest number of tornadoes in North Dakota back to 1950. There were 60 from last year, 2010, and 61 in 1999. The only other year with more than 50 was 1976 with 52.

Summary of 2011 Spring Flooding Upstream from Lake Sakakawea

by Brian Nieuwenhuis



Overview of flooding within the Missouri River floodplain near Williston, ND (Source: NOAA)

The spring and summer of 2011 saw one of the most significant flooding events along the Missouri River in recorded history. Numerous record high water marks were reached on the Missouri River

and on many of its tributaries upstream from Lake Sakakawea, as well as record water releases from reservoirs along the basin.

During the past few years, the Northern Plains has experienced a wet period, as evidenced by the rising lake levels from the preceding dry years. The result of the wet seasons was a large area of saturated soils and reservoirs at near capacity. Following this,

the winter of 2010/2011 produced near-record to record snowfalls, and subsequently near-record to record snowpack and liquid water equivalent precipitation. A large area of the Missouri basin, stretching from Williston, ND through Glasgow and Havre, MT broke snowfall records, which in some cases was almost four times the normal amount of seasonal snowfall.

(continued on next page)

Seasonal Snowfall

City	2010/2011	Normal	% of normal
Glasgow, MT	108.6*	30.0	362.00
Havre, MT	73.3*	45.4	161.45
Williston, ND	107.2*	43.4	247.00

*Record Seasonal Snowfall

Summary of 2011 Spring Flooding Upstream from Lake Sakakawea (continued from page 4)

by Brian Nieuwenhuis

The wet winter preceded a wet spring. The wet spring combined with the seasonal melt produced enormous amounts of runoff. Overall, from October 1, 2010 through June 23, 2011, most points within the Missouri basin upstream from Lake Sakakawea received 125-250% of normal precipitation. In some cases, the precipitation amounts exceeded normal yearly precipitation by significant amounts. Between May 18 and 26, some areas of Montana received 5 to 7 inches of rain or more, with some locations receiving more rain during the month of May than what normally falls within an entire year.

Total Precipitation from Oct. 1, 2010 to June 23, 2011

City	Precipitation	Normal	% of Normal
Billings, MT	17.60	10.92	161.17
Glasgow, MT	16.97	6.73	252.15
Havre, MT	11.93	7.30	163.42
Helena, MT	11.60	7.25	160.00
Lewistown, MT	19.40	11.87	163.44
Miles City, MT	16.21	9.01	179.91
Williston, ND	17.26	8.33	207.20

Call for CoCoRaHS observers!

by Tony Merriman

The western and central North Dakota CoCoRaHS rainfall network has 87 observers! The National Weather Service in Bismarck would like to thank everybody who has joined and report their rain and snow amounts. We really appreciate the time and effort you put into measuring and reporting your rain and snow amounts. The data you supply is very valuable not only to meteorologists, but also to researchers.

We would like to continue expanding the network. If you have any friends or relatives who would like to participate, please tell them about the program and have them sign up. Once your friends or

relatives fill out the short application at the following website:

<http://www.cocorahs.org/Application.aspx>

they will receive a **free** rain gauge from the National Weather Service.

If you have any questions about the program, please email me at Tony.Merriman@noaa.gov

Thanks again for all your hard work and dedication! We at the National Weather Service really appreciate it!



“Because every drop counts.”

Staff Spotlight

by Rich Kinney



Lindsay Tardif-Huber has been a Meteorologist Intern at the Bismarck NWS since January 2011. Lindsay, a New England native, was born in Maine and lived most of her childhood and early adult life only a few miles from the Gulf of Maine and the Atlantic Ocean. Nathan, Lindsay’s husband, is also a native New Englander and is from the same hometown of Wiscasset. They enjoy hunting, cross country skiing, being near the ocean, hiking and camping. She loves to cook, bake, and entertain; and enjoys reading books ranging from the classics to science fiction. Lindsay and her husband have a dog named Miss Daisy and a cat named Bamboo.

Lindsay’s interest in meteorology was sparked as a child, when she experienced Nor’easters, ice storms, and the “Perfect Storm”. She says her parents would literally have to drag her inside during thunderstorms and snow events.

Lindsay received her undergraduate degree from Plymouth State University. While at PSU, she was chosen as a NOAA Hollings Scholar and spent the summer between her junior and senior years at the National Severe Storms Laboratory in Norman, OK. During vacations she volunteered at the NWS in Gray, Maine. Lindsay graduated from PSU with summa cum laude honors in May 2007. She received an M.S. in meteorology this past May from the University of Oklahoma. While at OU, Lindsay worked as a graduate research assistant at the Oklahoma Climatological Survey/Oklahoma Mesonet and volunteered at the NWS in Norman, OK for two years. She also spent the summers of '09 and '10 as a Meteorological Technician at the Alaska-Pacific River Forecast Center. Her future goals include becoming an Incident Meteorologist and eventually a Science and Operations Officer (SOO) with the NWS to further her interests in operational research and teaching/training others.



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Building a weather ready nation

National Weather Service Mission Statement:

The National Weather Service (NWS) provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.

Brief National Weather Service History:

The National Weather Service has its beginnings in the early history of the United States. Weather has always been important to the citizenry of this country, and this was especially true during the 17th and 18th centuries. The beginning of the National Weather Service we know today started on February 9th, 1870, when President Ulysses S. Grant signed a joint resolution of Congress authorizing the Secretary of War to establish a national weather service.

ON THE WEB!

<http://www.weather.gov/bis>

Staff Spotlight

by Rich Kinney



Jimmy Taeger is a Meteorologist Intern at the Bismarck NWS, and arrived in January 2011. He was born in Phoenix, Arizona, and grew up in Wellington, Florida. Jimmy wanted to become a Meteorologist since the 6th grade. The thunder-

storms and hurricanes in Florida sparked his interest in weather. Jimmy was very excited to witness blizzards and supercell thunderstorms for the first time in North Dakota this past year. He earned his Bachelor's and Master's degrees in Meteorology from Florida State University. His Master's thesis focused on using higher statistics to compare global maps of sea surface temperatures between two high resolution data sets.

Prior to beginning his career with the NWS in Bismarck, Jimmy had volunteer opportunities with ENSCO, an aviation Meteorology company, the Florida Division of Emergency

Management, and the NWS Weather Forecast Office in Tallahassee, FL. He enjoyed skim boarding at the beach while living in Florida, and is now getting into snowboarding in North Dakota. Jimmy is an avid runner, and just completed the Bismarck half-marathon in September, his fourth such race.

