Jet Stream Jargon

National Weather Service
Billings, MT

April 2016 Spring Issue

Inside this issue:

Special points of interest:

- Skywarn Spotter Training
- Runoff and Water Supply Outlook
- Winter Review

From the Desk of the Meteorologist in Charge

In the Fall Jet Stream Jargon, I mentioned that I hoped that we would be filling the remaining two (2) staff vacancies (General Forecaster positions). Within a few short weeks, these two vacant positions will be filled. Shawn Palmquist will be joining us in late April and Ryan Walsh in early May. Upon their arrival, this will be the first time since February 9th, 2013 that our office will be fully staffed (over 3 years of vacant positions).

Shawn has worked the last 4 years at the Weather Forecast Office (WFO) in Eureka, California and previously had been a student intern here in Billings (he worked the Billings Father's Day tornado event). Shawn is a native of northern Minnesota, has his Bachelor's of Science degree in Meteorology from the University of North Dakota, and is looking forward to getting back to the Northern Rockies/ Plains.

Ryan joins us after spending nearly 2 years at the Jacksonville, Florida WFO and also spent significant time as a student intern at the Tallahassee WFO. Ryan is a native Floridian, has both his Bachelor's and Master's degrees in Meteorology from Florida State University. Ryan is eager to experience the diversity of weather forecasting challenges presented by the Northern Rockies/Plains. Ryan recently got married and both he and his wife are looking forward to living in the Northern Rockies/Plains, an area in which they have frequently enjoyed vacationing.

In looking back over the "Winter," it appears that the strong El Nino certainly impacted the weather over much of the Northern Rockies and Plains, with above normal temperatures and much below normal precipitation. As with many things there are pros and cons to this. On the "upside," contending with icy, snowy roads was at a minimum, demands on heating were reduced and impact of wet/cold conditions on young livestock were lessened (at least thus far). However, on the "downside," the lack of snow cover across the Plains and snowpack in the mountains created strain on industries that rely on typical wintry weather. Ski resorts had a difficult time in many areas maintaining quality snow conditions, and water supply prospects for the growing season are behind where we'd like to see the numbers. I recently spoke to a fence installer who said he did not encounter any frost in the Billings area this winter while getting his work done.

Obviously, we look to April, May and June, as our climatologically wettest months, for some potential relief from the dry conditions. As you may have heard from us before, Spring one to three month precipitation forecasts have very little skill in the Northern Rockies/Plains. Consequently, the 90 day outlook for precipitation does not indicate anything specific (Equal chances of Normal, Above or Below Normal precipitation), while suggesting better odds for warmer than normal conditions.

No matter which direction the Spring months evolve, we continue to rely on our spotter network and Cooperative Weather Observers to provide some ground truth to whatever conditions are thrown at us so that we can provide the best service to all of our customers and partners. Keep in mind that the information you provide to us, allows us to serve those that are "down the line". Even though we can't undo the impacts of severe weather, any information provided may help a "neighbor" downstream of a storm.

Thanks in advance for all the timely ground truth you provide!

Keith W. Meier

WCM Notes

Tom Frieders—Warning Coordination Meteorologist

It's Time Again to Prepare For the Impacts of Spring and Summer Weather

Are you "Weather-Ready" for this upcoming spring? Spring hazards in the Northern Rockies include severe thunderstorms, flash floods and lightning.

Here are some things you can do to ensure you are Weather-Ready:

Know Your Risk: Check our website each and every morning. It is a simple action that will ensure that you're ready for the day's weather. Don't leave home without knowing the forecast.
Take Action: It's always important to have an emergency supply kit, no matter what type of emergency impacts us. This includes a 72 hour supply of food and water. Also, develop a plan to ensure family and friends know how they can reach you in an emergency. This plan would include meeting places, and alternate ways to communicate in case of an emergency.
Be A Force of Nature: Inspire others by sharing your preparedness activities with family and friends.

For more information, visit our severe weather preparedness website at: http://goo.gl/xbljh

Skywarn Spotter Training

Become a volunteer severe storm spotter and learn how to identify and report severe weather to your local National Weather Service Office, keeping your local community informed of potentially hazardous weather! Learn how you and your community can stay safe from these hazards.

We rely on trained volunteers to supplement Doppler Radar information. Storm spotter reports are an important step in the warning decision process for our forecasters regarding severe thunderstorms that produce damaging hail, high winds, tornadoes and flash floods.

The training is free and anyone interested in severe weather or becoming a trained severe storm spotter is invited to attend. Our current volunteers already registered for the program are also encouraged to attend as a refresher and to stay updated on the latest reporting procedures.

Training will be conducted through May, and thanks to some great hosts willing to sponsor our training this year, we have a full schedule with classes available throughout the region. If you can't make a show in person, we are once again offering a webinar; online training from the comforts of your home or business. View our entire schedule, including how to register for our webinar training, at:
http://www.wrh.noaa.gov/byz/local_news/2016/spotter16.php

Hydrological Outlook

Todd Chambers – Senior Forecaster/Hydro Focal Point

Spring-Summer 2016

The water year, for hydrologic purposes, runs from October 1st to September 31st. The reason for this is that snow pack, which stores much of the water for summer river flows, is considered to be melted out by late summer, and fall storms begin the water cycle anew, adding snow back into the mountains. For the current water year which started October 1, 2015, most of the area is pretty near average for precipitation, which may come as a surprise to many. However, the above normal temperatures and lack of precipitation from mid-January to mid-March has resulted in year-to-date precipitation (from January 1st) being about half of normal. Through mid-March, the lack of winter snowfall in the mountains has resulted in historic or near historically low snow pack conditions in the Bighorn Mountains and along the Beartooth Mountain Front Range. Although, some late March snow has resulted in some recovery. El-Nino fueled Pacific storms have had the opposite effect on interior mountains of western Montana and Wyoming, where normal to above normal snow conditions currently exist. What this means for the spring and summer is that with normal precipitation from now through the spring, rivers west of Billings (Yellowstone, Shields, Musselshell, Boulder, Clarks Fork of the Yellowstone, and Stillwater) should see close to normal runoff, while those to the east of Billings (Rock Creek, Tongue, Bighorn, Little Bighorn, and Powder) will see significantly reduced runoff. Water managers across the region are already planning for reduced runoff by holding more water in area reservoirs.

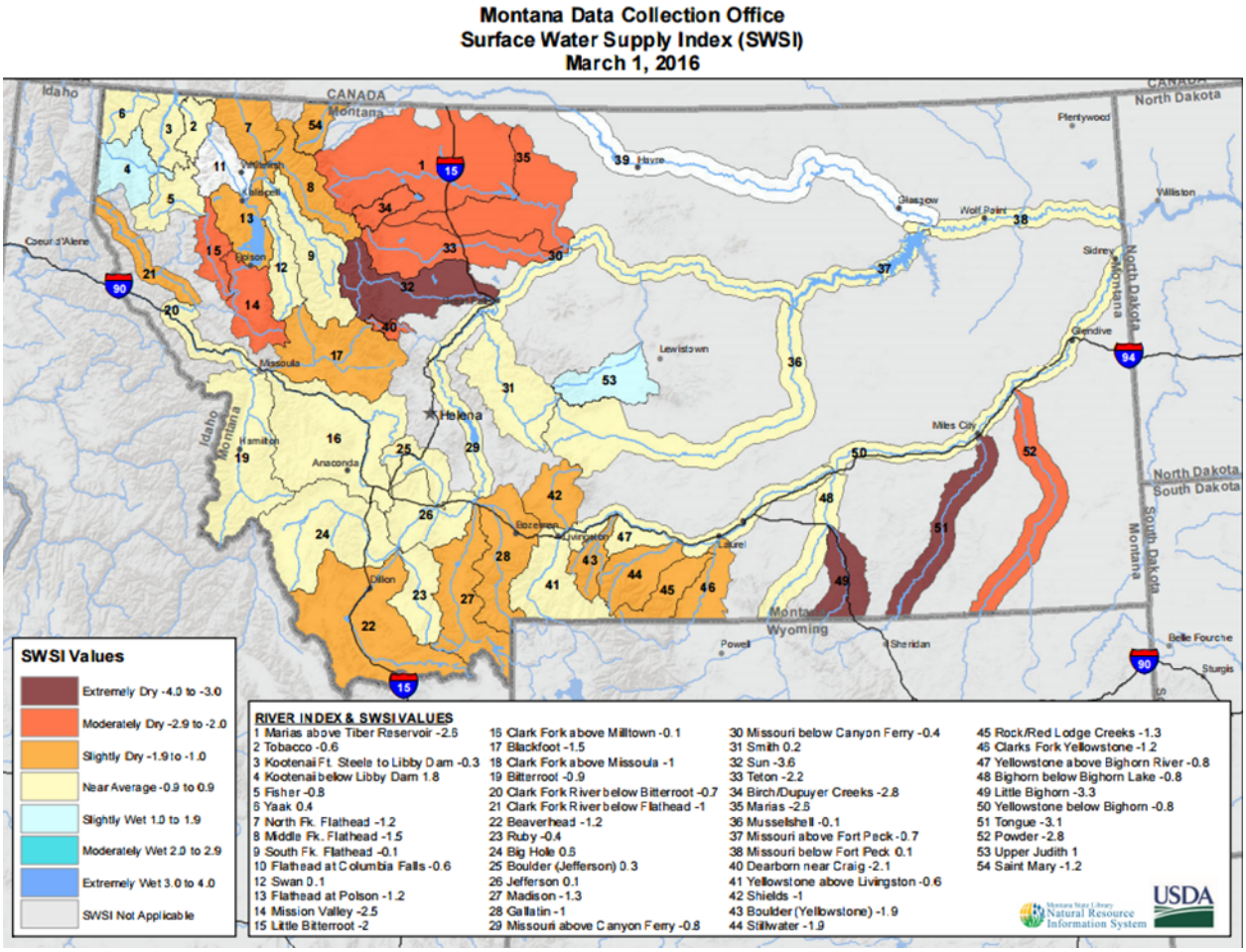


Figure 1:NRCS Water Supply Forecast

Hydrological Outlook con't

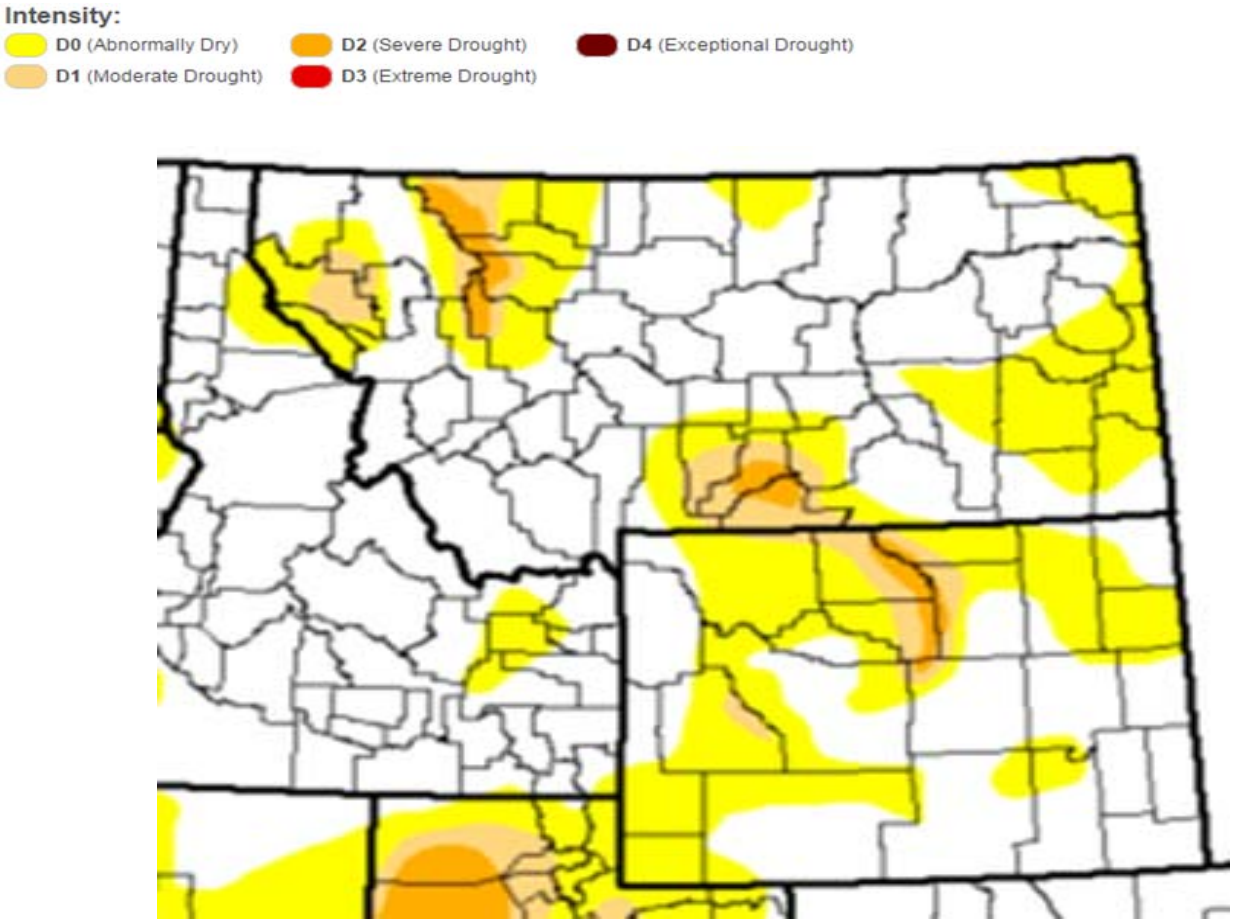


Figure 2: Current Drought Monitor Northern Rockies

One caveat to the current runoff picture is that we are heading into our wettest months of the year (April-June). Also, the very strong El-Nino that has persisted since early last year is weakening, leading to better chances of spring precipitation. The climatology of the northern Rockies shows several years in which a dry winter gave way to a very wet spring and early summer. The winter of 1990-1991 was a year that was very similar to this year going into March, but turned very wet in April and ended up with 11 inches in the Billings area from April through June, just a few inches off of average yearly precipitation in just a few months. 2011 saw a similarly wet spring and early summer with historic flooding across the area. So, there is always a chance that conditions will improve quickly, and we will just have to see how the spring plays out.

Winter Recap

Joe Lester – Senior Forecaster

2015-2016 Recap of Meteorological Winter (December - February)

The 2015-16 winter will be remembered mostly for it's very warm weather and drier than normal conditions. While the winter was quite warm overall, it did not begin in such extreme fashion. December and the first half of January saw only slightly warmer than normal temperatures, and snowfall was near or above normal in western areas. While Miles City tied its record for driest December on record, Livingston was 5th wettest. Remarkably, starting in mid December, Billings experienced a snow depth of at least 1" on 39 consecutive days, the 11th longest such streak on record. A lack of significant downslope wind events and a series of modest snowfalls allowed for the snow cover to persist for over six weeks. That all changed in mid January.

Very warm temperatures persisted over the last two weeks of January through February, with little snowfall across the region. In fact, Miles City had its warmest February on record (average temp of 37.5 degrees), and Billings tied its warmest (average temp of 41.0 degrees). Also, Billings received only 0.2 inches of snow during the month of February, making it the least snowy February on record (previous record was 0.3 inches in 1977). Late January and February were also noted to be generally windy, with dry and warm west winds being dominant.

While lower than normal snowfall occurred across the plains, mountain locations saw snow water deficits increase through the latter half of winter. By the end of February, below normal snowpack existed over the Crazy, Beartooth/ Absaroka and Bighorn Mountains. Driest areas were the north and east slopes at only 50-60 percent of normal.

Statistics from meteorological winter (December 1st through February 28th):

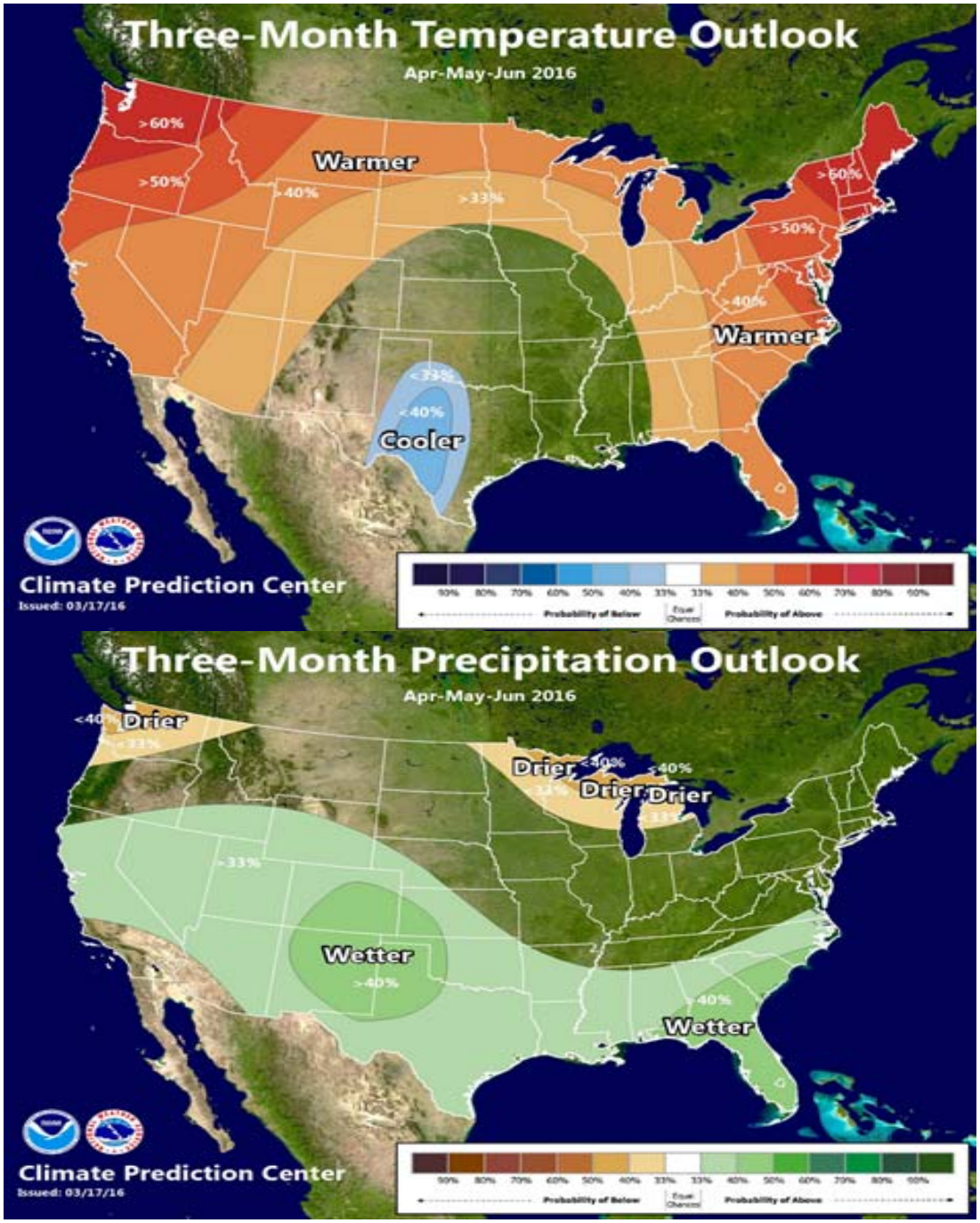
	Avg. Temp (°F)	Departure from Normal	Total Precip (inches)	Departure from Normal	Total Snow-fall (inches)	Departure from Normal
Billings	**33.2** (5th warmest)	**+ 5.4**	**1.10** (18th driest)	**- 0.36**	**20.3** (25th lowest)	**- 2.5**
Livingston	**32.6** (8th warmest)	**+ 4.0**	**1.29** (27th driest)	**- 0.22**	***Records go back to:***	
Miles City	**28.9** (2nd warmest)	**+ 6.9**	**0.83** (30th driest)	**- 0.01**	***1934 @ Billings***	
Sheridan	**29.7** (7th warmest)	**+ 4.9**	**1.69** (38th driest)	**+ 0.03**	***1948 @ Livingston*** ***1937 @ Miles City*** ***1907 @ Sheridan***	

Summer Outlook 2016

Joe Lester – Senior Forecaster

Outlook for the Spring and Early Summer (April through June)

April through June represents the wettest time of year for our region, with nearly half of our normal annual precipitation falling during this 3-month period. El Nino conditions in the equatorial Pacific Ocean, partly responsible for our mild winter, are weakening. Current indications are that there are equal chances for wetter, drier and near normal precipitation from April through June. There is an elevated probability for warmer than normal temperatures. Here are the official temperature and precipitation outlooks from the Climate Prediction Center.



Spring and Summer Data Tables

Spring Averages

Meteorological spring is classified as the months of March, April and May. Here are the average temperatures and precipitation for the Billings Airport, the Miles City Airport, and the Sheridan Airport for the spring season. Averages are calculated using a 30-year period of record: 1981 to 2010. All temperatures are in degrees Fahrenheit and all precipitation amounts are in inches.

Billings					
Date	**High**	**Low**	**Average**	**Precipitation**	**Snowfall**
3/1 – 3/31	48.6	26.9	37.7	1.06	10.2
4/1 – 4/30	57.6	34.7	46.2	1.66	8.3
5/1 – 5/31	67.5	43.6	55.6	2.18	2.0
3/1 – 5/31	57.4	35.1	46.3	4.90	20.5

Miles City				
Date	**High**	**Low**	**Average**	**Precipitation**
3/1 – 3/31	46.5	22.8	34.7	0.60
4/1 – 4/30	58.8	33.2	46.0	1.37
5/1 – 5/31	68.6	43.1	55.9	2.18
3/1 – 5/31	58.4	34.2	46.3	4.15

Sheridan				
Date	**High**	**Low**	**Average**	**Precipitation**
3/1 – 3/31	48.4	22.0	35.2	0.98
4/1 – 4/30	57.4	29.8	43.6	1.60
5/1 – 5/31	66.7	38.2	52.5	2.35
3/1 – 5/31	57.8	31.4	44.1	4.93

"In the Spring, I have counted 136 different kinds of weather inside of 24 hours."

Mark Twain

Spring and Summer Data Tables con't

Summer Averages

Meteorological summer is classified as the months of June, July and August. Here are the average temperatures and precipitation for the Billings Airport, the Miles City Airport, and the Sheridan Airport for the summer season. Averages are calculated using a 30-year period of record: 1981 to 2010. All temperatures are in degrees Fahrenheit and all precipitation amounts are in inches.

Billings				
Date	High	Low	Average	Precipitation
6/1 – 6/30	77.2	52.1	64.7	2.12
7/1 – 7/31	86.8	58.8	72.8	1.32
8/1 – 8/31	85.7	57.3	71.5	0.75
6/1 – 8/31	83.3	56.1	69.7	4.19

Miles City				
Date	High	Low	Average	Precipitation
6/1 – 6/30	78.6	52.6	65.6	2.51
7/1 – 7/31	88.3	59.5	73.9	1.64
8/1 – 8/31	87.2	58.0	72.6	0.91
6/1 – 8/31	85.2	57.8	71.5	5.06

Sheridan				
Date	High	Low	Average	Precipitation
6/1 – 6/30	76.7	46.4	61.6	2.12
7/1 – 7/31	87.1	53.0	70.0	1.18
8/1 – 8/31	86.3	51.6	69.0	0.72
6/1 – 8/31	83.3	51.4	67.4	4.02

Last Hard Freeze, Freeze and Frost Dates in the Spring/Summer

Many people will start planting their crops and gardens over the next few months. To keep crops and plants protected from the cold, it is important to know when the ***average*** last hard freeze, freeze and frost typically occur in the spring/ summer. It is also important to know the dates of the ***latest*** hard freeze, freeze and frost. The following are the ***average*** last hard freeze, freeze and frost dates and the ***latest*** hard freeze, freeze and frost dates for ***Billings, Miles City and Sheridan***. The hard freeze temperature is based on 28 degrees Fahrenheit, the freezing temperature is based on 32 degrees Fahrenheit and the frost temperature is based on 36 degrees Fahrenheit. Averages are based on a 30 year period of record: 1981 to 2010. Recordkeeping began at the Billings Airport in 1934, at the Miles City Airport in 1937 and at the Sheridan Airport in 1907.

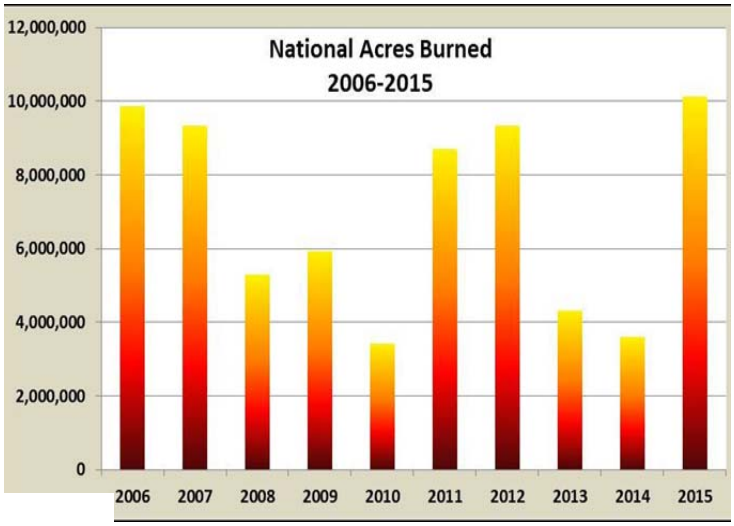
City	Average Last Hard Freeze	Latest Hard Freeze on Record	Average Last Freeze	Latest Freeze on Record	Average Last Frost	Latest Frost on Record
Billings	Apr 23	May 28	May 7	Jun 13	May 18	Jun 13
Miles City	Apr 27	May 28	May 9	Jun 8	May 18	Jun 18
Sheridan	May 8	Jun 3	May 19	Jun 24	Jun 5	Jun 30

Fire Weather

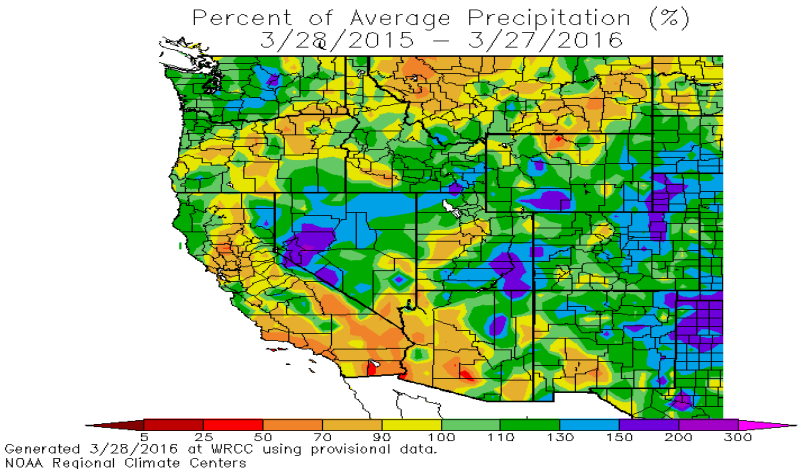
Dan Borsum- Incident Meteorologist/Senior Forecaster

68,151 and 10,125,149: Record Numbers

What do those numbers mean? Those are the number of wildland fires and acres burned in 2015 which was a record setting wildfire season across the nation. The effort to fight these fires exceeded 2 billion dollars just accounting for federal agency spending, which does not include county or state spending. Alaska accounted for half of the acreage, but had only 750 fires. Montana had 2400 fires accounting for 351,000 acres and Wyoming was relatively quiet with only 512 fires accounting for 36,000 acres.



In the lower 48, the hardest hit state was Washington, which saw more than 2000 fires burn 1.1 million acres. Washington unfortunately was the site of the deadliest wildfire when the Twisp Fire claimed 3 lives and seriously hurt another US Forest Service firefighter.



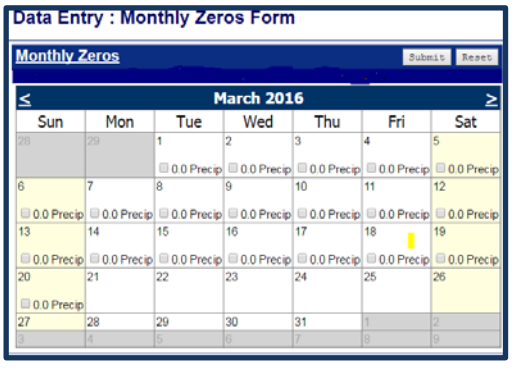
Weather patterns this winter have been generous to Washington and they have caught up on rainfall this winter. This map showing percent of normal precipitation the past 12 months, indicates Montana and northern Wyoming are on the drier side but the track of spring storms can catch up our region in a hurry. So, it's too early to tell how this summers fire season will play out.

CoCoRaHS

Vickie Stephenson– CoCoRaHS Coordinator

Community Collaborative Rain, Hail & Snow Network

Happy Spring Everyone! Already Spring… Wow! I would like to thank all of you for your continued support and dedication in reporting your daily precipitation, especially snow measurements throughout the winter, for what little snow we've had. Reporting daily, including ZERO reports, is a simple but necessary task, though sometimes difficult to remember when you go through a long dry spell. However, if you access your computer each day, it takes just a second to open your account and click "Submit Data" for a zero report. The date, time and zero precipitation are already defaulted for you! We here at the National Weather Service receive your report in minutes! And here's the best part …the "Monthly Zeros" link takes you to a monthly calendar where you can checkmark all the "zero precipitation" days of the month and submit them at one time!



CoCoRaHS con't

The arrival of spring means it won't be long before you can return your tubes and funnels to your rain gauges, usually around the end of May. We can expect more snow in the months ahead! But, if you replace the funnel & tube to the gauge and snow piles up, don't fret, just remove them again and measure the best you can.

Our Severe Weather (Spring/Summer) season will be here before we know it, so please take a few moments to brush up on the "Significant Weather" and "Hail" forms on the CoCoRaHS website to refresh or familiarize yourself with them. www.cocorahs.org

THANKS AGAIN....FOR YOUR TIME & FOR ALL YOU DO!

CCRHS Coordinator – Vickie Stephenson vickie.stephenson@noaa.gov
Work Phone: 406-652-0851 ext 225

CCRHS Additional Contact- Tom Frieders tom.frieders@noaa.gov
Work Phone: 406-652-0851 ext 3

The NWS Billings office CoCoRaHS Network in southeast Montana continues to excel at reporting precipitation on a daily basis across our area of MT and Sheridan County, WY. The search continues for more volunteer CoCoRaHS observers across our area. If you are interested in becoming part of a great network that helps to collect historical climate data for Montana & Wyoming, please click here to visit the CoCoRaHS website to learn all about it or you can contact me, CCRHS Coordinator Vickie Stephenson, at the number/email above.

COOP Corner

Larry Dooley-Cooperative Program Manager

What is the COOP Program?

The National Weather Service (NWS) Cooperative Observer Program (Coop) is truly the Nation's weather and climate observing network of, by and for the people. More than 8,700 volunteers take observations on farms, in urban and suburban areas, National Parks, seashores, and mountaintops. The data are truly representative of where people live, work and play.

A cooperative station is a site where observations are taken or other services rendered by volunteers. A cooperative station may be collocated with other types of observing stations such as standard observations stations, Flight Service Stations, etc. In these cases, that portion of the station observing program supporting the cooperative program's mission is treated and documented independently of the other observational and service programs.

Observers generally record temperature and precipitation daily and electronically send those reports to the NWS. Many cooperative observers provide additional hydrological or meteorological data, such as evaporation or soil temperatures. Data is transmitted via telephone or computer. Equipment used at NWS cooperative stations may be owned by the NWS.

The first network of cooperative stations was set up as a result of an act of Congress in 1890 that established the Weather Bureau, but many Coop stations began operation long before that time. John Campanius Holm's weather records, taken without the benefit of instruments in 1644-45, were the earliest known observations in the United States. Subsequently many persons, including George Washington, Thomas Jefferson, and Benjamin Franklin, maintained weather records. Thomas Jefferson maintained an almost unbroken record of weather observations between 1776 and 1816, and George Washington took his last observation just a few days before he died.

COOP Corner con't

There are 26 stations in the state of Montana that began records before 1900 and are still taking observations today. In the Billings area of responsibility we have four stations that began service before 1900. Harlowton started taking daily observations in 1892, Red Lodge and Big Timber started in 1894, and Ekalaka started in 1897.

The data collected through the COOP program has numerous uses not only in the NWS, but industry and other parts of society. The following link is to a poster that shows some the uses of our COOP data.

http://www.nws.noaa.gov/om/coop/reference/climate%20data%20poster.pdf

Within the NWS COOP network is an additional network called the U.S. Historical Climatology Network (USHCN). The U.S. Historical Climatology Network is a high-quality moderate sized data set of monthly averaged maximum, minimum, and mean temperature and total monthly precipitation developed to assist in the detection of regional climate change. The USHCN is comprised of 1221 high-quality stations from the U.S. Cooperative Observing Network within the 48 contiguous United States. An additional data set containing 46 stations for Alaska is also available. The period of record varies for each station but generally includes the period 1900-1995. The stations were chosen using a number of criteria including length of period of record, percent missing data, number of station moves and other station changes that may affect the data homogeneity, and spatial coverage. Included with the data set are metadata files that contain station history information about station moves, instrumentation, observing times, and elevation.

There are eight stations in the U.S. Historical Climate Network in the NWS Billings forecast area.

2016 Length of Service

Each year the National Weather Service (NWS) recognizes members of our NWS Cooperative Weather Observer Program (COOP) family who meet certain pre-established length of service anniversary awards. These awards are given to observers in each of two categories: individuals and institutions. A station information report identifies an observer as either an Individual or an Institution. The individual award is first granted after 10 years of service and every 5 years thereafter. Observers who are descendants of observers having taken observations at the same site for 100 or more years are qualified to receive the ***Family Heritage Award*** every 25 years. The Honored Institution award is first granted for 25 years of service and then every 25 years thereafter. Last year was a special year. We had an observer in the Billings area receive a 65 year ***Length of Service Award***.

Following are the awards scheduled to be presented this year:

Station Name	Observer Name	Years of Service	Service Date
Webster	Jean Tronstad	50	04/01/1966
Gardiner	Dick Herriford	25	02/13/1991
Gardiner	Irene Herriford	25	02/13/1991
Powderville	Stacy Brown	15	01/01/2001
Biddle	David Mader	15	07/01/2001
Wilsall	Mitch Mather	15	09/17/2001
Melville	Perry Anderson	15	10/20/2001
Judith Gap	Neil Glennie	10	08/16/2006
Judith Gap	Carla Glennie	10	08/16/2006

In the News

How Will You Stay Informed On The Weather This Spring and Summer?

Here are some of your options to help you stay informed regarding incoming hazardous weather:

NOAA Weather Radio: This is your direct link to NWS warnings! Specially built receivers will alert you when watches and warnings are issued for your area, and also keep you informed on the latest forecast 24/7. Weather Radio receivers can be purchased in most electronic and many department stores for $30 dollars or less.

More information at: http://www.wrh.noaa.gov/byz/nwrhome.php

Wireless Emergency Alerts: If you have a newer smartphone that is Wireless Emergency Alert Capable, you are already signed up. Your phones will alert you for Tornado Warnings, Flash Flood Warnings, Amber Alerts or critical Presidential Alerts during national emergencies.

More Information: https://www.fema.gov/frequently-asked-questions-wireless-emergency-alerts

Red Cross Apps: The Red Cross has numerous apps available for emergencies. Specifically for severe weather, a Tornado App is available. This app will alert you for both Tornado and Severe Thunderstorm watches and warnings. Check out the wide variety of apps available.

More information: http://www.redcross.org/get-help/prepare-for-emergencies/mobile-apps

Forecast On The Go? Point your iphone's web browser to "mobile.weather.gov"

Did You Know….

Five Things You Probably Didn't Know About The Summer Solstice

Kurt Hooley– General Forecaster

1. This Year It's June 20th.

The summer solstice always occurs between June 20 and June 22, but because the calendar doesn't exactly reflect the earth's rotation, the precise time shifts slightly each year. This year, the sun will reach its greatest height in the sky for the Northern Hemisphere on Monday, June 20th at 4:34 PM MDT.

2. The Earth Is Actually At Its Farthest From The Sun During The Solstice.

You might think that because the solstice occurs in summer that it means the Earth is closest to the sun in its elliptical revolution. However, the Earth is actually closest to the sun when the Northern Hemisphere experiences winter and is farthest away during the summer solstice. The warmth of summer comes exclusively from the tilt of the Earth's axis, and not from how close it is to the sun at any given time.

3. The Hottest Weather Follows The Sun By A Few Weeks

You may wonder why, if the solstice is the longest day of the year, and thus gets the most sunlight, the temperature usually doesn't reach its annual peak until a month or two later. It's because water, which makes up most of the Earth's surface, has a high specific heat, meaning it takes a while to both heat up and cool down. Because of this, the Earth's temperature takes about six weeks to catch up to the sun.

4. The World's Biggest Bonfire Was Part Of A Solstice Celebration.

Celebrations have been held in conjunction with the solstice in cultures around the world for hundreds of years. Among these is Sankthans, or "Midsummer," which is celebrated in Scandinavian countries. In 2010, the people of Alesund, Norway, set a world record for the tallest bonfire with their 132.71 foot celebratory bonfire.

5. In Alaska, The Solstice Is Celebrated With A Midnight Baseball Game.

Each year on the summer solstice, the Alaska Goldpanners of Fairbanks celebrate their status as the most northerly baseball team on the planet with a game that starts at 10:30 and stretches well into the following morning, without the need for artificial light, known as the Midnight Sun Game. The tradition originated in 1906 and was taken over by the Goldpanners in their first year of existence, 1960.

Weather Watch

Severe Weather Awareness Week April 18-22, 2016

Follow us on Facebook and Twitter to learn more about severe weather!

Know Your Risk, Take Action and Be a Force of Nature.

Severe Weather Definitions and Safety:

WATCH - Potential exists for severe weather to occur within the next several hours but the exact location and timing aren't known. **Action can be taken to protect property such as putting your vehicle in the garage, putting away patio furniture, etc.**

WARNING - Severe weather is occurring or will occur shortly. **Immediate action should be taken to protect yourself by going to the lowest portion of a sturdy building, or into a closet, hallway or room without windows. When Thunder Roars, Go Indoors!**

Tornado: A violently rotating column of air, in contact with the ground, that extends from the base of a thunderstorm to the ground. This is often visible with swirling dust or debris near the surface.

- You may have only minutes to find shelter before a tornado strikes. Practice a family tornado drill at least once a year.
- In 2015, Montana had 3 tornadoes confirmed.

Severe Thunderstorm: A thunderstorm that produces hail of 1 inch or larger (quarter size) and/or a wind gust to 58 mph or higher.

- In 2015, Montana had 157 high wind and damaging wind events, 165 large hail reports.
- Sheridan County, WY had 3 high wind reports and 2 large hail reports.
- In 2015, there were 26 lightning fatalities nationwide.
- Plan outdoor activities to avoid thunderstorms.
- Check to see if officials in charge of sports have a written lightning safety plan.

Flash Flood: A sudden inundation of water in low-lying areas, usually brought on by heavy rain, dam break, rapid snow-melt or ice jams.

- In 2015, Montana had 9 Flash Floods.
- Sheridan County, WY had 2 Flash Floods.
- It only takes 12 inches of water to carry off a small vehicle.
- Whether driving or walking, any time you come to a flooded road, Turn Around Don't Drown®.
- Get to higher ground as quickly as possible.

Extreme Heat:

During a heat wave, reschedule strenuous outdoor activities for the coolest time of the day.

Wildfires:

If you live near wildland areas, make sure you home is Firewise and firesafe.

Information Stop

Advanced Hydrologic Prediction Services (Rivers and Lakes):

http://water.weather.gov/ahps2/index.php?wfo=byz

Severe Weather Preparedness:

http://www.wrh.noaa.gov/byz/severe/index.php?wfo=byz

Lightning Safety for You and Your Family:

http://www.nws.noaa.gov/os/lightning/resources/lightning-safety.pdf

NOAA Weather Radio:

http://www.wrh.noaa.gov/byz/nwrhome.php

Play Time For Kids:

http://www.nws.noaa.gov/om/reachout/kidspage.shtml

Flood Safety:

http://www.nws.noaa.gov/floodsafety/

Lighting Safety:

http://www.lightningsafety.noaa.gov/