



Under the Big Sky August 20, 2010

Sheridan County Tornado: A deadly EF-3 tornado struck in Sheridan County on July 26th. This is only the 4th EF-3 tornado in the state of Montana, and the deadliest tornado since 1923. In doing the damage survey, it was amazing how much damage there was. I had never seen anything like it, and hope to not see anything like it again. Our hearts go out to the family who was impacted. The final report is available at: <http://www.wrh.noaa.gov/ggw/SheridanTornSumm.pdf>

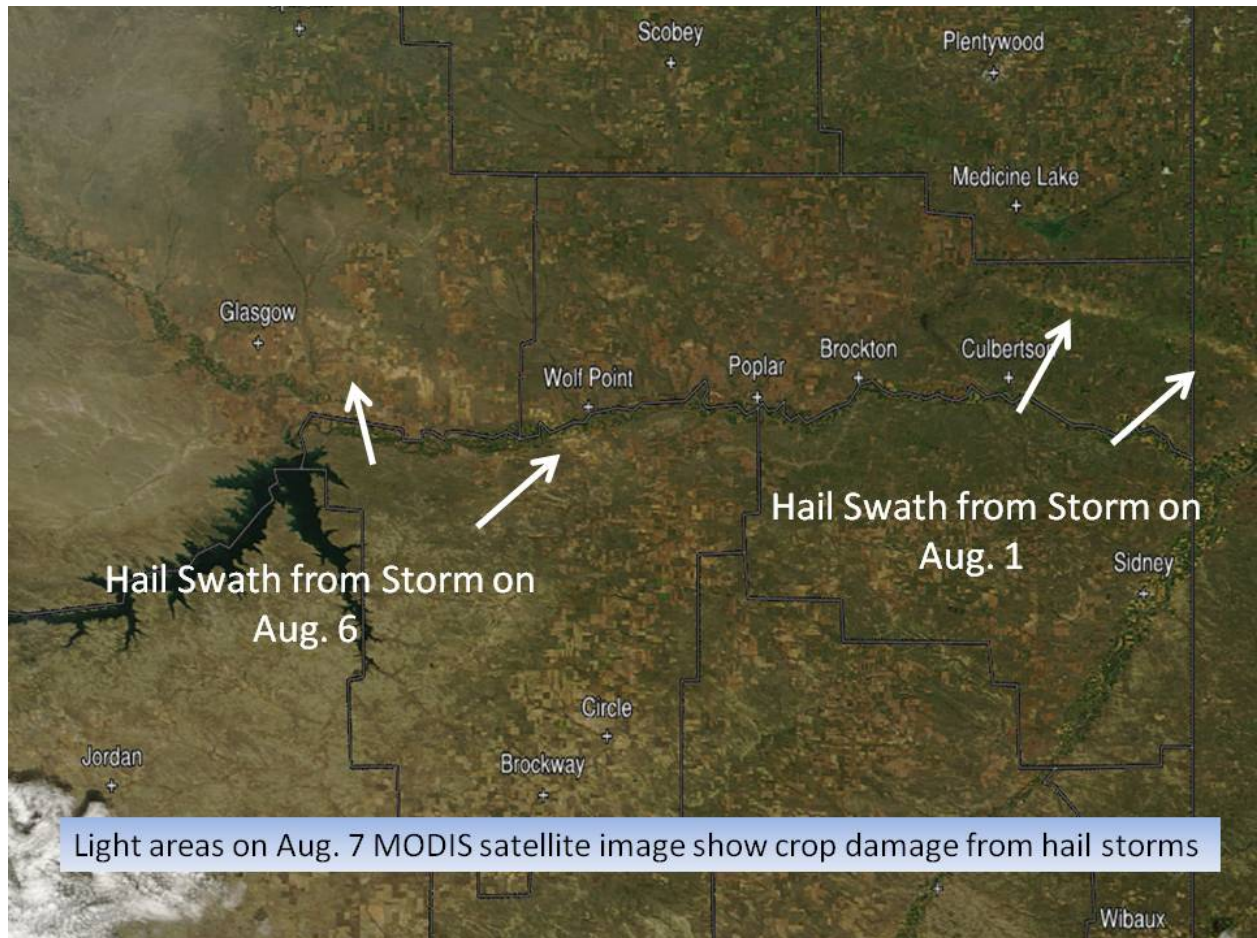
To see the satellite imagery from this storm, go to:

<http://cimss.ssec.wisc.edu/goes/blog/archives/6268>

Nashua North Microburst: On the evening of August 6th, several severe thunderstorms came through northeast Montana. The photo above was taken by Brian Sewell from Helena while doing work in the Scobey area that afternoon. It shows a nice supercell thunderstorm with a wall cloud (that was rotating) below it. Then, as the sun was coming down, a long line of storms came across northeast Montana stretching from Malta to Winnett, and later Glasgow to Jordan and eastward. These storms produced significant winds, especially north of Nashua where a home had a roof blown off, 44 power poles were snapped, and many other buildings were damaged. The crop loss due to the very large hail was also significant, with estimates currently at over 15,000 acres lost. The hail swath was visible from satellite images taken 900 miles above the earth! (There's also a swath visible from the Sunday, August 1st storm that started northwest of Medicine Lake and ended up hours later in the Bismarck area with tornado warnings on it)!

The report from the macroburst is available at:

http://www.wrh.noaa.gov/ggw/pdf/macroburst_aug_6_2010.pdf



Hail Swaths from satellite from August 1 and August 6, 2010 storms.

Record Hailstone: The new world record for hail was set a few weeks ago in Vivian, SD. The hailstone fell on July 23, 2010. It was 8 inches in diameter (18.62" in circumference) and weighed 1.9375 pounds. These measurements displace the previous hailstone record for weight, previously 1.67 pounds for a stone in Coffeyville, Kan., in 1970. They also surpass the record for diameter, which was 7 inches for a hailstone found in Aurora, Neb., in 2003. The Aurora hailstone still holds the record for circumference of 18.75 inches. Former Glasgow Meteorologist Steve Apfel (now in Cheyenne) got to meet NWS staff from the Aberdeen, SD office in Valentine, NE, where he carried it back to Cheyenne, and then the staff at the National Center for Atmospheric Research took it back to Boulder, CO. NOAA's National Climate Extremes Committee members tested the hailstone, and then declared it the largest in diameter. Interestingly, it may have been bigger, but a power outage during the storm may have led to some melting while it was being stored in a freezer.



Circumference of the hailstone measured before it left for its journey to Colorado to be certified as the largest in the world.



Steve Apfel, former Meteorologist in Charge in Glasgow with the record hailstone at his office in Cheyenne, WY.

July Climate Report: July was the 2nd warmest on record globally, and the warmest Jan-Jul on record! July was also hotter and wetter than normal across the US, but for Montana it was cooler than normal and near normal temperature wise.

Delaware and Rhode Island had their hottest July on record, while Wisconsin had its second wettest July, Texas had its fourth wettest, and Iowa its 5th wettest.

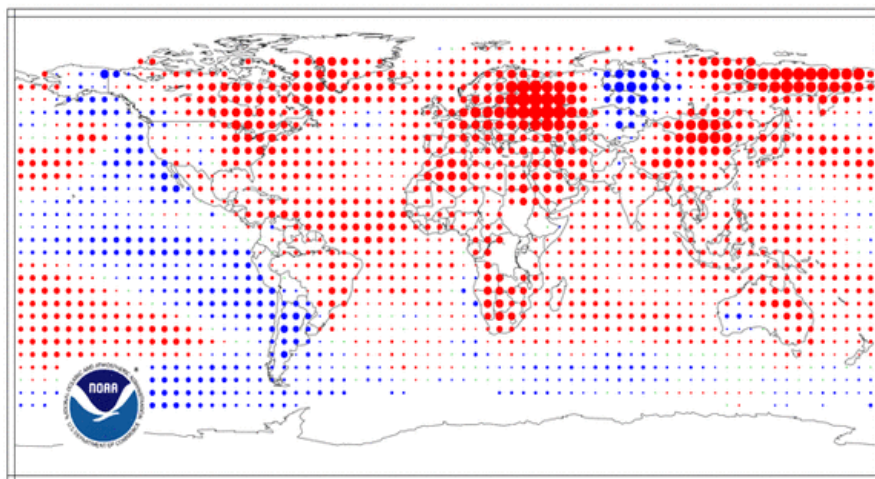
Global: http://www.noaanews.noaa.gov/stories2010/20100813_globalstats.html

US: http://www.noaanews.noaa.gov/stories2010/20100809_julytemps.html

Temperature Anomalies July 2010

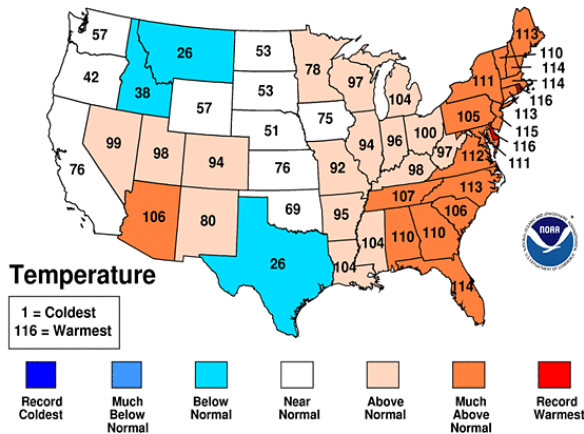
(with respect to a 1971-2000 base period)

National Climatic Data Center/NESDIS/NOAA



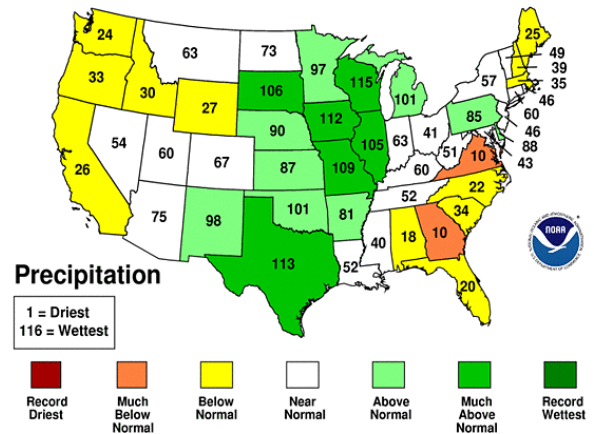
July 2010 Statewide Ranks

National Climatic Data Center/NESDIS/NOAA



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Upward Lightning: Tom Warner, from ZTRResearch in Rapid City, SD captured this video of upward lightning in early July. It shows 9,000 frames in one second of time, so it's a great slow-motion look at lightning. <http://www.youtube.com/watch?v=-bvmEYxEYiA>

NWS Glasgow Happenings:

I'm a bit late with the newsletter because of weather, but also because I took some time off to host a family reunion here in Montana. The week started out great with a few early birds staying at our house, but the day the reunion kicked off, the temperatures didn't even get to 70 degrees! It rained on us, and we never got anyone out on the lake because of the wind. The day most everyone left, the sun came out, and we actually got my dad and his wife on the lake for a few hours. At least the Alaska relatives felt like they were at home. ☹️

Otherwise, we've been pretty busy with weather, following up on warnings and reports. We have had a lot of false reports of funnel clouds and tornadoes this year (I think psychologically people are a bit worried considering the events we've had this year). We're developing a guide to put online for people to look at and get a better feel for what a funnel cloud and tornado look like, vs. scud clouds, wall clouds and shelf clouds. Several of the staff participated in the Northeast Montana Fair here in Glasgow, and we had hundreds of current spotters, and general public stop by and visit the booth we had. We also kicked off our research project on developing a heat health warning system for rural areas. This is a project with the same folks who helped us develop the Cold Advisory for Newborn Livestock, and we look forward to having an experimental warning system in place next summer.

I did two Severe Weather/Skywarn training sessions this week, one in Poplar, the other in Wolf Point. We had a great turnout, and excellent questions were asked. Thank you to the folks in Poplar who had to put up with my computer password issues, I was horrified to have had to make you all wait!

NOAA in the NEWS:

Oscillating Cloud Patterns: NOAA scientists at the Earth Systems Research Laboratory recently released a study on rain clouds, finding that individual clouds in a cloud field respond to signals from other clouds. “My first reaction was what??” But, then reading the article, I’ve seen patterns in clouds on satellite imagery as well. The meat of the article is about half way down, explaining why these cloud patterns occur. http://www.noaanews.noaa.gov/stories2010/20100811_clouds.html

Gulf of Mexico Dead Zone: I’ve been commenting over the past few years in this newsletter about the “Dead Zone” in the Gulf, but there are many more around the globe. The current Gulf of Mexico dead zone is the 5th largest on record. From the article below, the dead zone is explained as: “The dead, or hypoxic, zone is fueled by nutrient runoff from agricultural and other human activities in the Mississippi River watershed, which stimulates an overgrowth of algae that sinks, decomposes and consumes most of the life-giving oxygen supply in bottom waters. The Gulf of Mexico dead zone is of particular concern because it threatens valuable commercial and recreational Gulf fisheries that generate about \$2.8 billion annually.” To read more, go to: http://www.noaanews.noaa.gov/stories2010/20100809_deadzone.html

Weather in the NEWS:

Several major events have occurred over the past month. Wildfires and heat waves (worst in 130 years!) in Russia have led to respiratory illnesses, doubled mortality rates in Moscow, wrecked a quarter of their grain crop, and impacted \$14 Billion of their GDP. China continues to see major flooding problems with over 1300 deaths this season, , 150,000 acres of crops lost and a billion dollars in direct economic losses. The most serious event right now is the flooding in Pakistan in the past 6 weeks which is leading to a globally supported response to help up to 20 million people impacted. Over 1500 people have died and 1.7 million acres of wheat, sugar cane and rice is under water.

Great article on “What’s Behind the Weather Chaos?”

<http://www.cnn.com/2010/WORLD/weather/08/12/heat.floods.extremes/index.html>

Russia Heat/Fire Articles:

http://www.usatoday.com/weather/wildfires/2010-08-20-russia-rain-wildfires_N.htm

http://www.msnbc.msn.com/id/38736448/ns/world_news-europe/

<http://www.reuters.com/article/idUSTRE67J2N220100820> (Interesting article on climate change impacts in northern climates, mostly on Russia, but some comments globally)

China Flooding Articles:

http://www.usatoday.com/weather/storms/2010-08-19-china-storms_N.htm

<http://www.msnbc.msn.com/id/38686311/ns/weather/>

<http://www.cnn.com/2010/WORLD/asiapcf/08/20/china.mudslides.toll/index.html>

Pakistan Flooding Articles:

http://www.usatoday.com/weather/floods/2010-08-17-pakistan-aid_N.htm

http://www.msnbc.msn.com/id/38750467/ns/world_news-south_and_central_asia/

http://www.msnbc.msn.com/id/38710445/ns/world_news-south_and_central_asia/

Weather Humor:

