

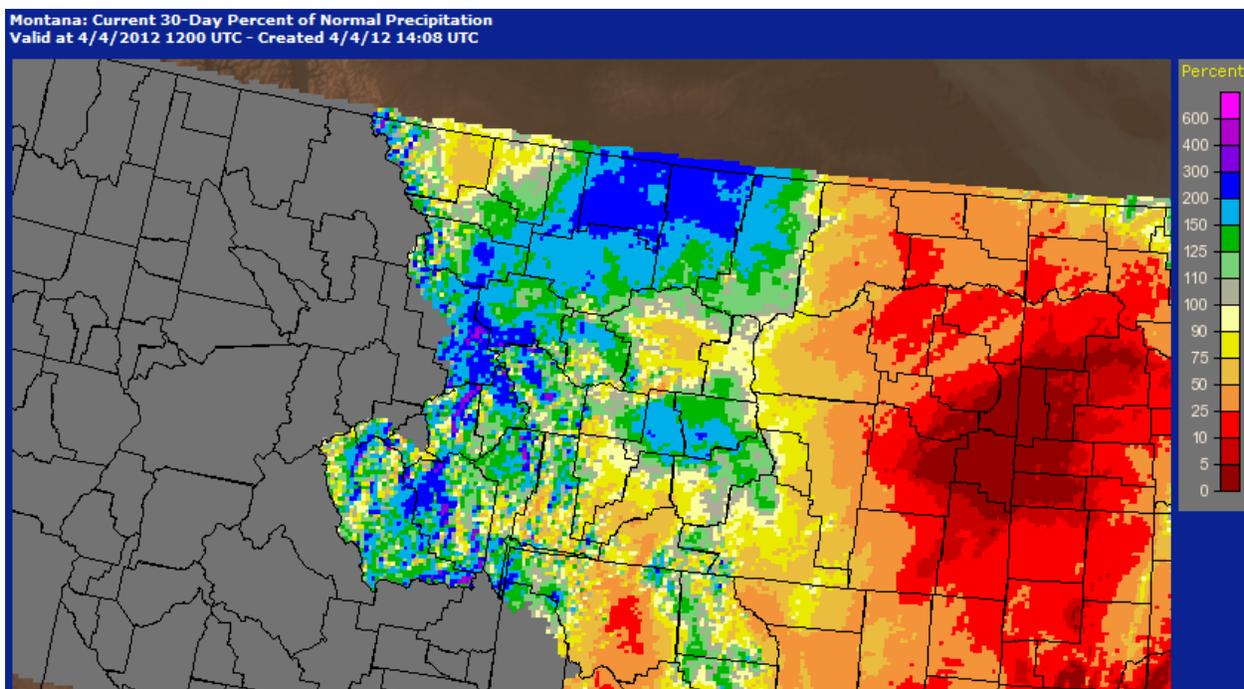
Weather Technology and Wildfires

NOAA/NWS Glasgow Fire Weather Event April 3, 2012

On April 3, 2012, the National Weather Service Glasgow office had an opportunity to utilize our radar and satellite data in viewing a wildfire in western Richland County, Montana. The photographs shared with us were from our weather spotters Wayne and Darci Brown.

We have been dealing with dry conditions for at least 6 months in northeast Montana. Sidney, MT, the county seat, had only 0.05" of moisture in March, and since the start of the water year on Oct 1, 2011 through March 31, 2012, Sidney had only receive 1.3" of moisture, which is 2.21" below normal for that time period. It was also the warmest March on record, beating the previous record set in 1986 by nearly 4 degrees.

The graphic below shows the past 30 days percentage of normal precipitation, and you'll note that the red areas are 0-25% of normal!



As our forecasters were working during the day on April 3rd, they noticed some plumes on satellite imagery, on a day where there weren't any clouds for hundreds of miles in all directions. They called Richland County dispatch to check and see if there were any fires, and were notified that there were at least two fires, one in southwestern Richland County, the other in northeastern Dawson County.

As the day warmed up, the winds increased from a southerly direction, and the humidity dropped from around 68% at 8 am to below 20 percent after 1 pm. According to Rob Gilbert with the Sidney fire department, an area that had been burned during the weekend had reignited and quickly grew out of control as the winds blew the top layer of ash off the old burn. In all, the southwest Richland County Fire burned at least 1000 acres of land, and two abandoned farmsteads, northwest of Richey, MT.

Weather Observations at Sidney on April 3, 2012:

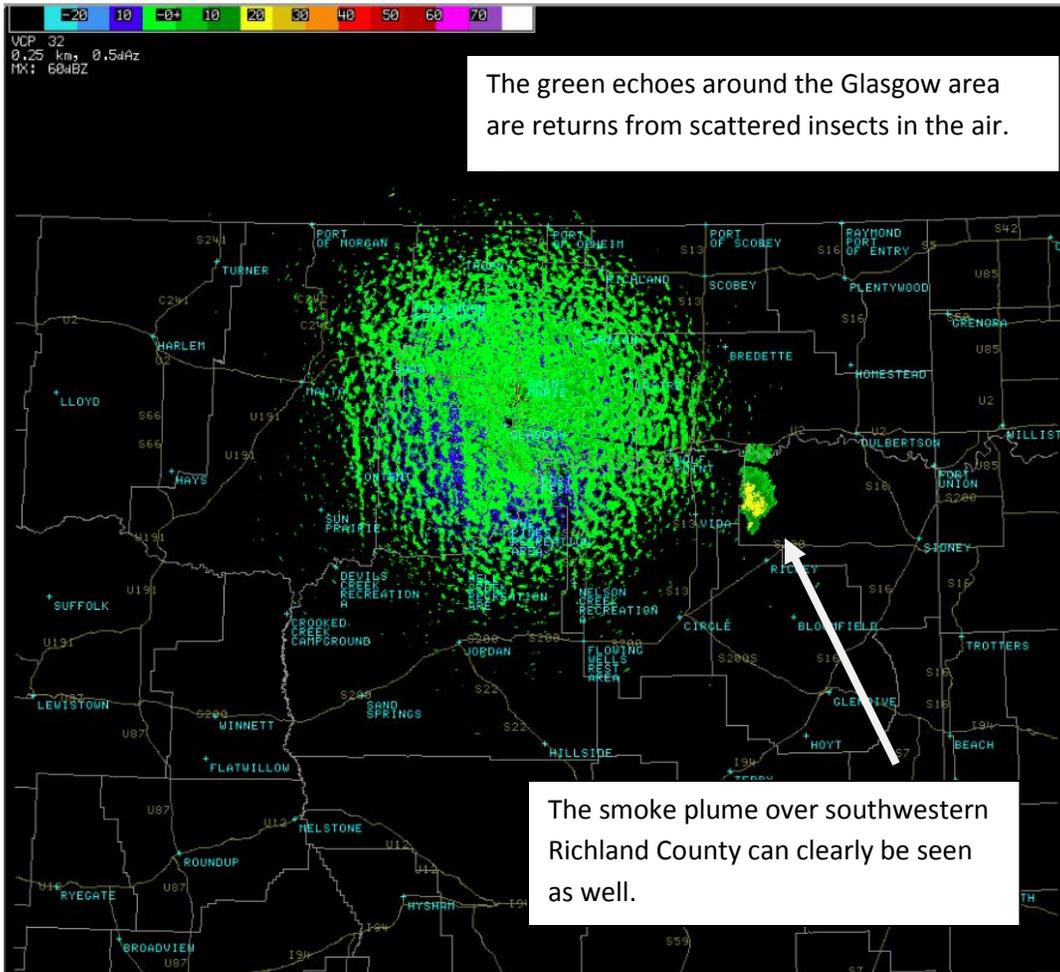
(Date/Time/Temp/Dewpoint/RH/Wind Direction/Wind Speed and Gusts)

03 Apr 7:55 pm MDT	55	18	22	SSE	10	.
03 Apr 7:35 pm MDT	57	18	21	SSE	12	.
03 Apr 7:15 pm MDT	59	18	20	SSE	15	.
03 Apr 6:55 pm MDT	61	18	18	SSE	16	.
03 Apr 6:15 pm MDT	63	19	19	S	16G22	.
03 Apr 5:55 pm MDT	64	19	18	S	18G25	.
03 Apr 5:35 pm MDT	64	21	19	SSE	16G25	.
03 Apr 5:15 pm MDT	64	21	19	S	16G23	.
03 Apr 4:35 pm MDT	66	21	18	S	15G25	.
03 Apr 4:15 pm MDT	66	21	18	S	18G24	.
03 Apr 3:35 pm MDT	66	21	18	SSE	18	.
03 Apr 2:55 pm MDT	64	21	19	SSW	13G24	.
03 Apr 2:35 pm MDT	64	21	19	SE	12G22	.
03 Apr 2:15 pm MDT	63	21	20	SSW	7	.
03 Apr 1:55 pm MDT	63	21	20	S	9	.
03 Apr 1:35 pm MDT	63	21	20	S	8	.
03 Apr 12:55 pm MDT	61	19	20	SSW	8	.
03 Apr 12:35 pm MDT	59	21	23	SSW	9	.
03 Apr 12:15 pm MDT	61	21	22	S	3	.
03 Apr 11:35 am MDT	57	21	24	SSW	8	.
03 Apr 11:15 am MDT	55	21	26	S	8	.
03 Apr 10:55 am MDT	54	23	30	S	8	.
03 Apr 9:55 am MDT	46	23	39	SSE	6	.
03 Apr 9:35 am MDT	43	23	45	S	5	.
03 Apr 8:55 am MDT	37	21	52	S	7	.
03 Apr 8:35 am MDT	36	21	55	S	6	.
03 Apr 8:15 am MDT	34	21	59	S	7	.
03 Apr 7:35 am MDT	28	19	69	S	7	.
03 Apr 7:15 am MDT	27	18	68	S	5	.
03 Apr 6:55 am MDT	21	12	68	S	5	.

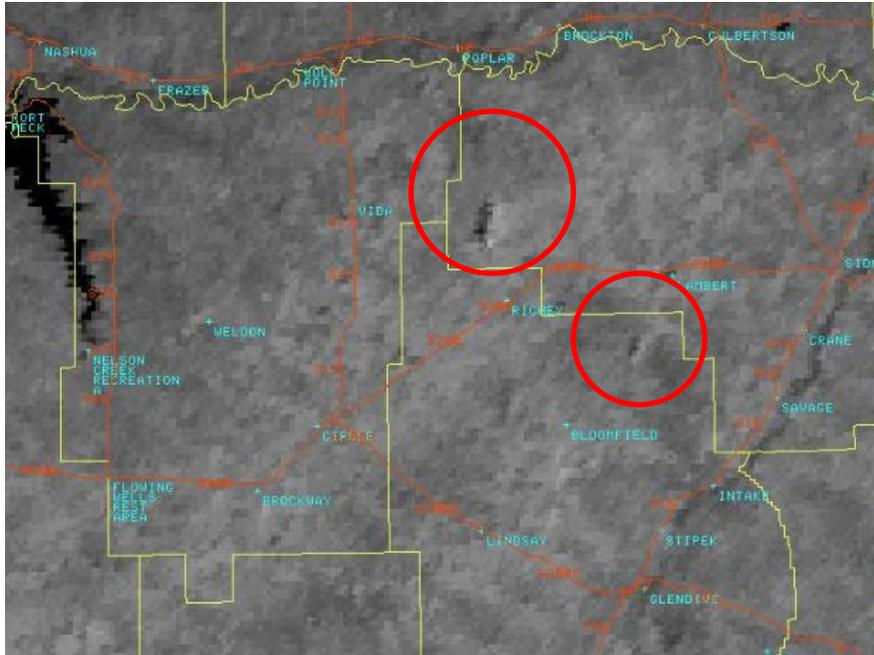
Winds increase into the 10-20 mph range with gusts to 25 mph.

Relative Humidity drops below 20%

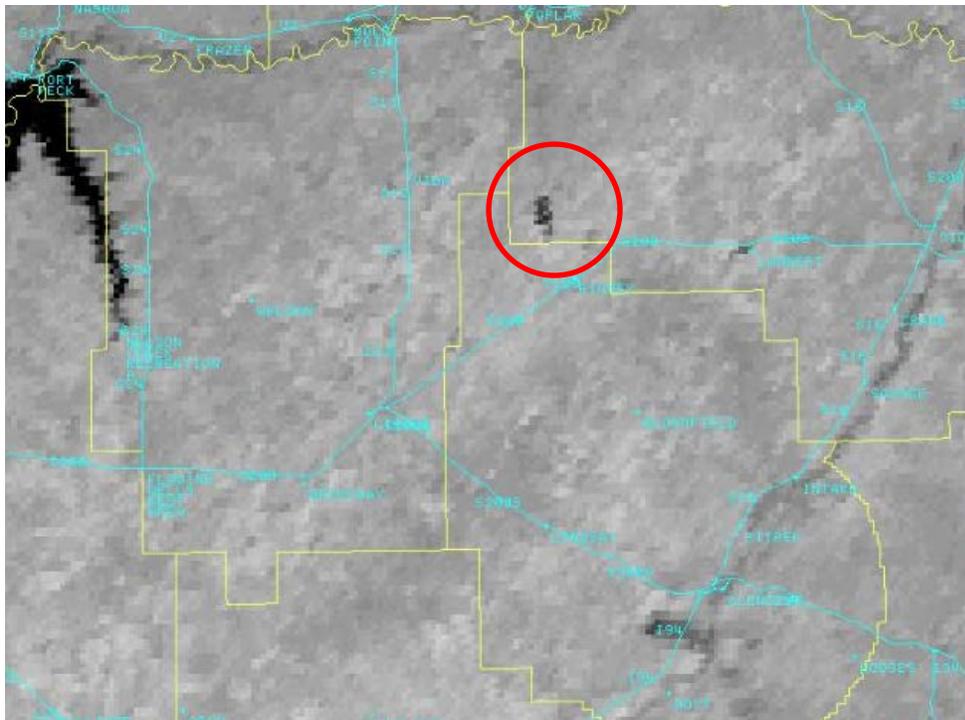
The smoke plume from the Richland County fire was high enough that we were able to detect it on the Glasgow weather radar. The fire was located about 75 miles east-southeast of the radar, and at that distance, the lowest level of the radar beam (0.5 degrees) would put the radar beam at around 7,500 to 8,000 feet AGL. So, the smoke plume rose at least 1.5 to 2 miles high in the atmosphere.



We also have different types of satellite imagery that assist us in looking at wildfires. The first type of image is a “visible” satellite image. This is what you would see if you have super high resolution eye-sight, and were sitting on the GOES satellite ~22,000 miles out in space. While the imagery is a bit pixelated zoomed in, you can make out the Yellowstone River, the Dry Arm of Fort Peck Lake, and two smoke plumes from the two fires in southwestern Richland County and northeastern Dawson Counties.



The next image is from the same GOES satellite, but it is using a different type of sensor, and is called the IR 3.9 um-11 um channel that is good for detecting fires. As the fire died down, we could see the “burn scar” left behind. You’ll notice only one of the two fires was large enough to see the burn the next day.



The last image we have to share with you is from the MODIS Satellite, a polar orbiting satellite that gives us a detailed image once a day. It happened to get a great image of the smoke plume as it passed over the region during the time of the fire, and you can also see a bit from the northeastern Dawson County fire as well:

