TOP 5 WEATHER EVENTS OF

2024

Granite Lake in the Crazy Mountains in July (Lester)

National Weather Service – Billings, MT

It wasn't an overly active year of weather, but these events were voted upon by several of our meteorologists and deemed the five most intriguing in our forecast area in 2024. Enjoy!

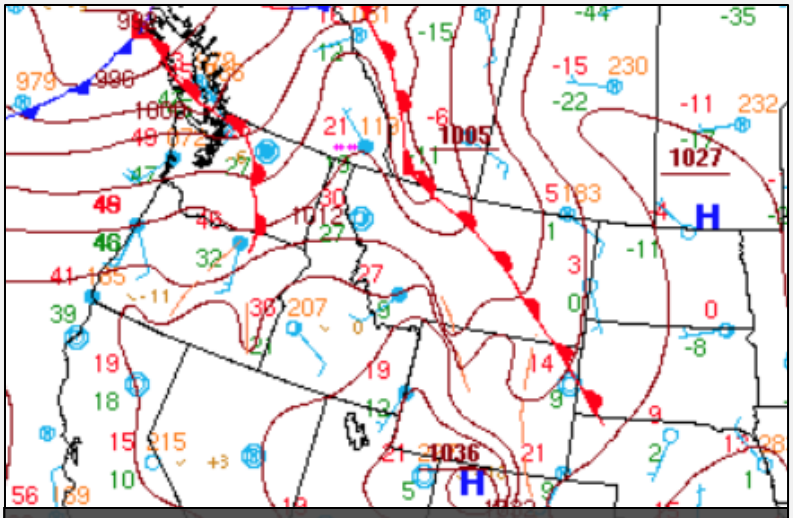
#5: February 28: Livingston Airport Gusts to 92 mph

A peak wind gust of 92 mph was measured at the Livingston airport at 7:53am. This was the 2nd strongest gust on record at Livingston, behind only the 94-mph gust that occurred on 12/21/1978. The strong winds produced blowing and drifting snow as well, affecting travel on Interstate 90.

Strong winds at Livingston (Livingston Enterprise)

Strong southwest winds are very common at Livingston during the winter, a result of cold air draining the high plateau of Yellowstone National Park combined with strong westerly flow aloft and a tight pressure gradient on the lee side of the mountains. Hazardous crosswinds frequently impact travel on the interstate for high-profile vehicles. When there is a fresh snow cover, blizzard conditions due to blowing and drifting snow can develop. Here are the top 10 wind gusts on record at the Livingston airport, dating back to 1973.

Top 10 Peak Wind Gusts at Livingston	
DATE	**PEAK GUST**
12/21/1978	94 mph
2/28/2024	92 mph
12/3/1982	89 mph
12/19/2021	87 mph
11/30/1992	86 mph
12/1/2021	85 mph
12/29/2018	85 mph
1/31/2009	85 mph
1/10/2006	84 mph
11/13/2020	83 mph



2/28/24 Surface analysis showing a tight pressure gradient

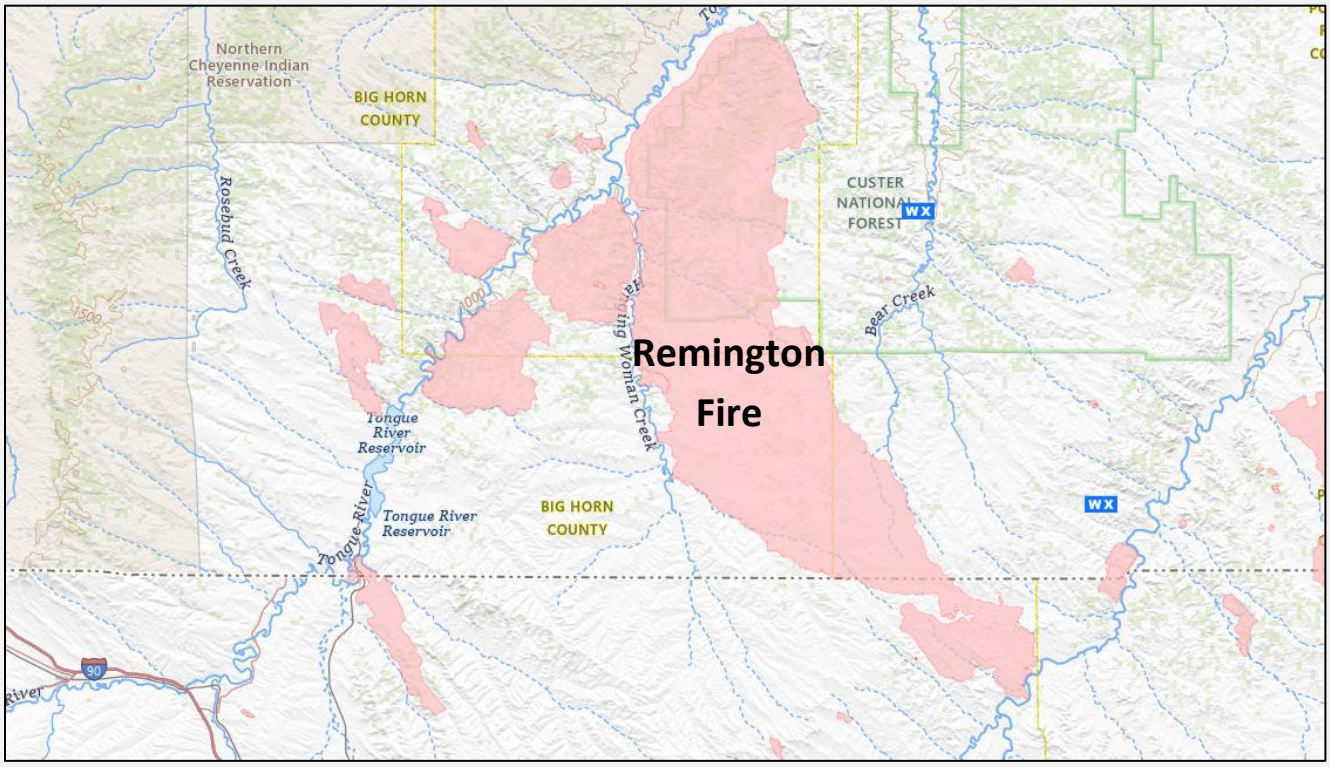
#4: August 22: Remington Fire

As a warm and dry summer led to increasing fire danger, the Remington Fire was discovered 20 miles north of Leiter, WY on August 22nd. It spread rapidly across the Montana border on the night of the 23rd, staying east of the Tongue River as it tracked toward Birney. By August 30th, the fire had burned just under 200,000 acres over multiple counties. The cause was officially undetermined.

Pyrocumulus over the Remington Fire at sunset (Inciweb)

View from Tongue River Reservoir (Inciweb)

Below is a map of the Remington Fire's perimeter, as well as those of other smaller fires in the vicinity.

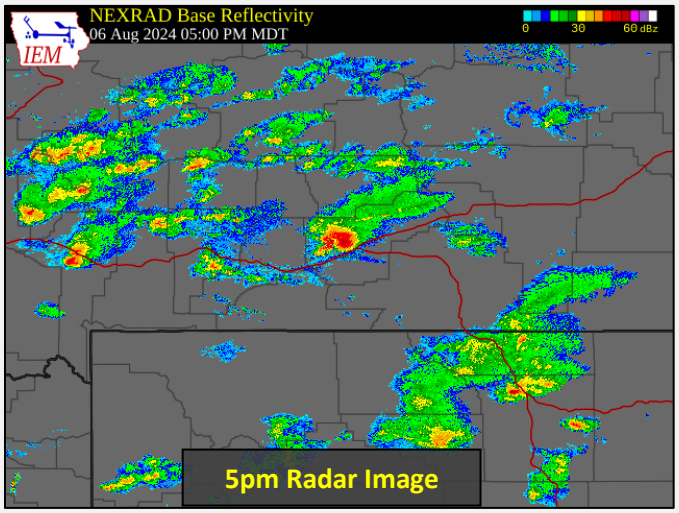


#3: August 6: Severe Thunderstorm Hits Billings

In the late afternoon, a severe thunderstorm moving northwest to southeast, produced very strong straight-line winds in Billings (and later, at Crow Agency and Busby). The Billings airport recorded a peak gust of 76 mph, its 2nd strongest wind gust on record, dating back to 1972. A DOT station at Arrow Creek Hill (I-90 east of Billings) recorded a peak gust of 78 mph, the strongest measured wind with this storm. Some other gusts included: Soda Springs Raws (south of Billings) 76 mph, Little Bighorn Raws (at Crow Agency) 72 mph, Busby 7N 66 mph. There was widespread damage across Billings, including snapped/uprooted trees, downed power lines, and home/business damage. The storm also produced some hail, up to the size of quarters in Lockwood, and brief heavy rain.

Tree Damage in Billings (Schwab)

Tree Damage in Billings (McLean)

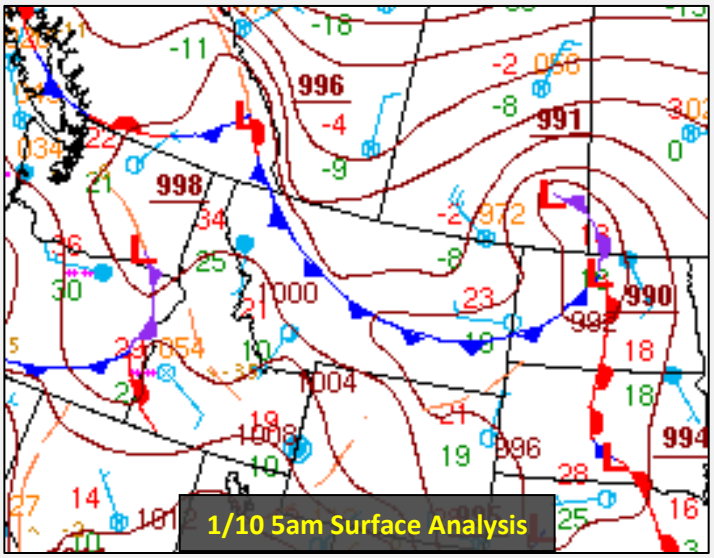


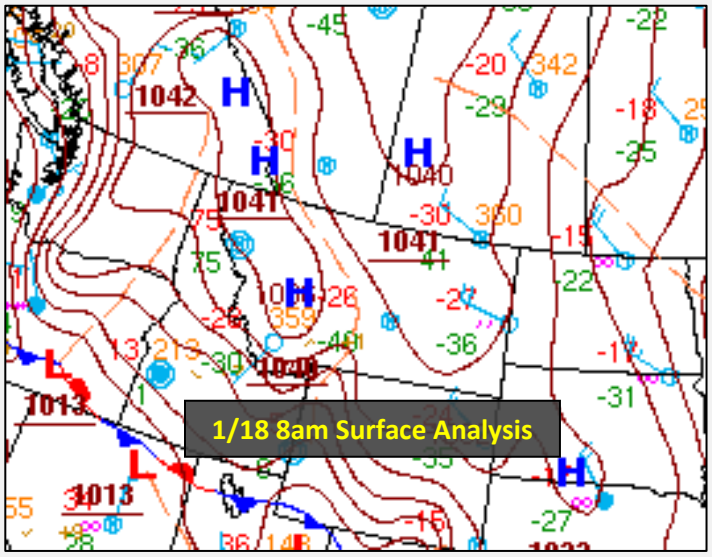
5pm Radar Image

#2: Mid-January: Bitter Cold

A bitterly cold air mass originating in the Canadian arctic settled over the region and brought an extended period of extreme cold from January 11th through the 19th. Temperatures were coldest in the beginning of the cold snap, from the 12th to the 15th, during which many locations experienced low temps in the -30s and -40s over consecutive days. There were also several rounds of light snow, but overall snow cover was not significant. Based on historical records, it is safe to say that this was the coldest air our region has experienced since January 1997, and among the coldest over the last century.

The 2023-24 winter was mostly warm & dry – the mid-January cold snap was the exception. The initial Canadian cold front arrived on the morning of the 10th, and temperatures fell steadily over the next two days. The mean sea level pressure rose to near 1040mb by the morning of the 13th, a strength indicative of the cold air with which it was associated. The mornings of the 13th and 14th were the coldest for most of the region. Temperatures began to moderate by the 16th but remained well below normal through the 19th. In fact, surface pressures exceeded 1040mb on the 18th as the cold air was reinforced briefly by another cold front.





Three factors made this an historic cold snap. First, the areal extent of the cold. This arctic air mass impacted not only our region, but all of Montana (including west of the divide) and eventually all the central plains of the U.S. Second, the magnitude of the cold, with many locations seeing their coldest temperatures since 1997, and some over an even longer time. Third, the duration of the cold. The bitterest of the cold air existed for 2-3 days, and a few locations reported lows of at least 40 below on TWO consecutive days. It is much more typical to have a single “coldest” day then a warming trend. In addition, gusty northwest winds produced extreme/dangerous wind chills. Much of the region experienced wind chills in

Billings during the January cold snap

the 50s and 60s below zero! Below are summaries of the coldest observed temperatures and wind chills between January 12th and 15th. Thanks to our numerous cooperative observers for much of this information. Wind and wind chill data were taken from automated stations.

Coldest Observed Temps		Coldest Since…	Rank	Start of Period of Record
Huntley	-52°	Feb 1936	2nd coldest	1911
Hysham 25SSE	-47°	Dec 1989	2nd coldest	1951
Ryegate 18NNW	-44°		Coldest	1962
Roundup 15SW	-44°		Coldest	2004
Melville 4W	-42°	Dec 2022	4th coldest	1961
Brandenberg	-42°	Dec 1983	2nd coldest	1956
Ingomar 9E	-42°	Feb 2021	20th coldest	1955
Busby	-41°	Jan 1997	24th coldest	1907
Broadus	-38°	Dec 1990	9th coldest	1920
Columbus	-38°	Dec 1983	6th coldest	1930
Ekalaka	-38°	Dec 1989	9th coldest	1896
Forsyth	-36°	Feb 1996	8th coldest	1975
Hardin	-35°	Dec 2022	16th coldest	1948
Miles City	-34°	Dec 2013	12th coldest	1937
Baker	-33°	Feb 2021	2nd coldest	1998
Sheridan	-31°	Jan 1997	25th coldest	1907
Billings NWS	-31°		Coldest	1999
Livingston	-29°	Mar 2019	22nd coldest	1948
Billings Airport	-26°	Jan 1997	17th coldest	1934

Coldest Observed Wind Chills	
Albion 12NW	-69°
Ekalaka 7SE	-68°
Alzada	-66°
Baker	-65°
Judith Gap	-63°
Baker 13NE	-63°
Harlowton 4NNE	-62°
Big Timber	-59°
Hardin	-59°
Reed Point 9NE	-59°
Miles City	-58°
Livingston	-57°
Billings	-53°
Crow Agency	-53°
Forsyth	-52°
Columbus	-51°
Fishtail 3W	-51°

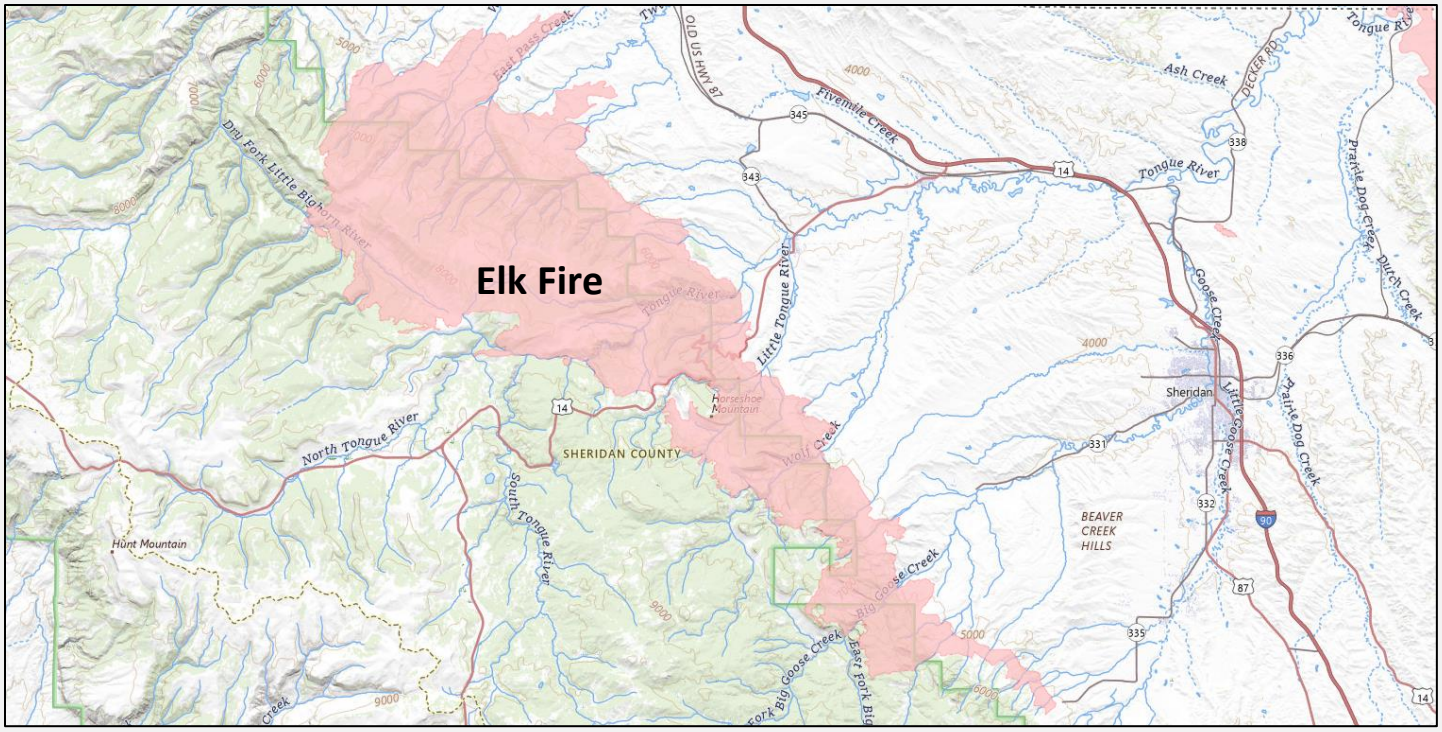
#1: September 27: Elk Fire

The Elk Fire, which was determined to be caused by lightning, was detected in the Bighorn Mountains west of Dayton in late September. The fire grew rapidly along the foothills on the night of the 29th, due to dry and windy conditions. The fire went on to burn 98,352 acres along the eastern slopes of the Bighorns west of Dayton and Sheridan. Due to persistent warm and dry weather in the fall, the fire was not fully contained until November 10th. There were some evacuations near Dayton, and US-14 was closed for a time from Dayton to Burgess Junction. Smoke from the Elk Fire also produced poor air quality across the east side of the Bighorns.

Oct 2: Elk Fire from above (Inciweb)

Oct 8: Crew on the Elk Fire (Inciweb)

Below is a map of the Elk Fire's perimeter.



Thanks for reading. We wish everyone a happy 2024!