



THE ATMOSPHERIC RESERVOIR

Examining the Atmosphere and Atmospheric Resource Management



SEPTEMBER RECORDS & TEMPERATURE SWINGS

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In early October when this article was written, above average temperatures were being reported on nearly a daily basis across the entire state. September made the record books for Bismarck, Jamestown, and Minot with the warmest average monthly temperature on record for those locations. On September 29, Bismarck and Minot shattered their daily record high temperatures by reaching 97°F! Also impressive on that day were record high temperatures in Dickinson (95°F), Jamestown (89°F), Fargo (88°F), and Grand Forks (88°F). Williston reached 94°F which was a daily record at its new airport location.

North Dakotans are used to large variations in air temperature. We live in a state where the record high temperature of 121°F and record low of -60°F both occurred within the same year. It's quite common to have 30-to-40-degree differences between daily high and low temperatures. In general, "land-locked" states such as North Dakota have much greater daily or diurnal temperature variability than coastal areas of the U.S. Land warms and cools rapidly whereas water holds heat much more efficiently and cools slower. This concept also applies to whether the air is dry or humid. During Autumn, the air is typically drier and that allows it to heat up and cool down faster than during the Spring when the humidity is higher. This explains why desert areas of the southwestern U.S. have some of the greatest variations in daytime temperatures.

You might be surprised just how fast the thermometer can change though. Residents of Granville, ND received a pleasant surprise on February 21, 1918 when the temperature warmed 83 degrees Fahrenheit in twelve hours. Imagine waking up to an air temperature of -33°F, bundling up with layers of warm clothes for the day and by the time the sun was setting barely needing a light jacket in 50°F weather. On January 22, 1943 in Spearfish, SD a world record two-minute temperature change occurred. The temperature rose from -4°F to +45°F two-minutes later! This 49-degree change was caused by strong downslope or Chinook winds, which compressed and warmed the air as it moved down a mountain slope. Almost as incredible was the 58-degree temperature drop at Spearfish that morning in just 27 minutes as the Chinook wind subsided. The greatest 24-hour temperature change in the United States was recorded in Loma, MT. Also caused by Chinook winds, the thermometer rose from a low temperature of -54°F on the morning of January 14, 1972 to a high of +49°F the next morning (an increase of 103 degrees).

North Dakota probably won't be breaking any temperature change records this winter. That's good because it should make it a little easier to dress for the weather.

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