

## **Western U.S. to northern Plains Winter Storm 27-30 November, 2016**

**By: Amanda Reinhart, WPC Meteorologist**

**Meteorological Overview:** A winter storm event that spanned several days impacted places from the Sierra Nevada in California to the northern plains. Several feet of snow fell in the higher elevations of the Sierra Nevada mountain range while locations across the Plains and Upper Midwest also received a substantial amount of snow.

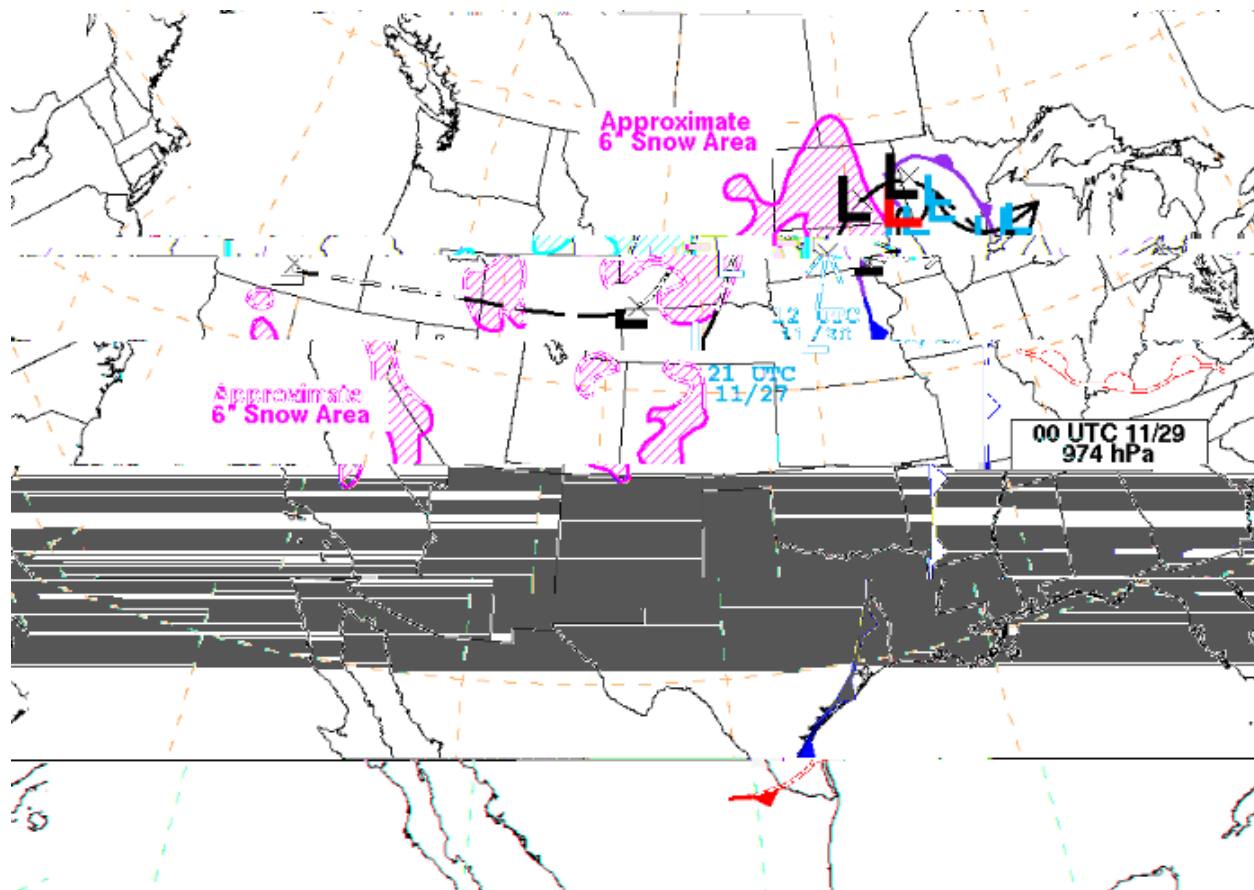
On the evening of 26 November, an upper low began to dig across California—sending multiple short waves across the West Coast and into the Great Basin by Sunday, 27 November. At the surface, an occluded front pushed across the Great Basin while approaching the central plains. Synoptic scale lift associated with the short waves caused orographically enhanced widespread precipitation across California. The Sierra Nevada range received a significant amount of snow with areas near Lake Tahoe receiving at least 24 inches. Snow also began to spread across the higher terrain of the Great Basin and the central Rockies. Ahead of the front, widespread showers and thunderstorms began to move across the central Plains and into the middle Mississippi Valley. In fact, several tornadoes were reported across Iowa and one in northern Louisiana on the 27 November. Meanwhile, snow spread across the northern plains and the Upper Midwest along the surface low that was also moving into that region. Convection ahead of the front in the central plains began to organize into a squall line as it moved from the Mississippi valley into the Southeast. On Monday evening, cold air and upper dynamics on the backside of the surface low that was slowly moving from North Dakota to Minnesota continued to bring heavy snowfall to central portions of the state. Farther south, the squall line pushed across the Southeast and Tennessee Valley—and caused a major severe weather outbreak. Tornado reports spanned from northeast Louisiana to eastern Tennessee.

By 29 November, the severe weather had ended; however, moderate snowfall continued to fall across the northern plains and Upper Midwest as the surface low slowly meandered across Minnesota. On the morning of 30 November, light snow showers lingered across the northern plains and Upper Midwest.

**Impacts:** There were several impacts across many states during this winter storm. In North Dakota, where Van Hook Park received 24 inches of snow (the most in the state), the governor issued an emergency evacuation order of the Dakota Pipeline protest camps. In addition, a travel alert was issued throughout the state. Many highways from Utah to North Dakota were partially shut down throughout the event. In California, a couple got stranded in their car in El Dorado county—which is located in the Sierra Nevada. They were rescued and in good condition. However, a man went missing while hiking in Sequoia National Park—his body was found several days later. Colorado was affected by multiple avalanches that shut down highways. Finally, sections of Wyoming experienced blizzard conditions, with Elk Mountain receiving 62 inches.

**Figure 1:** 72 hr accumulated snowfall ending 1200 UTC 28 November, 2016 (NOHRSC).

**Figure 2:** 72 hr accumulated snowfall ending 1200 UTC 1 December, 2016 (NOHRSC).



**Figure 3:** Surface low tracks (blue), 500 hPa low tracks (black), approximate areas receiving greater than 8 inches of snow (magenta) are shown along with the WPC surface analysis from 00 UTC on 29 November, 2016.