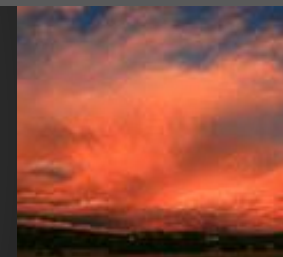
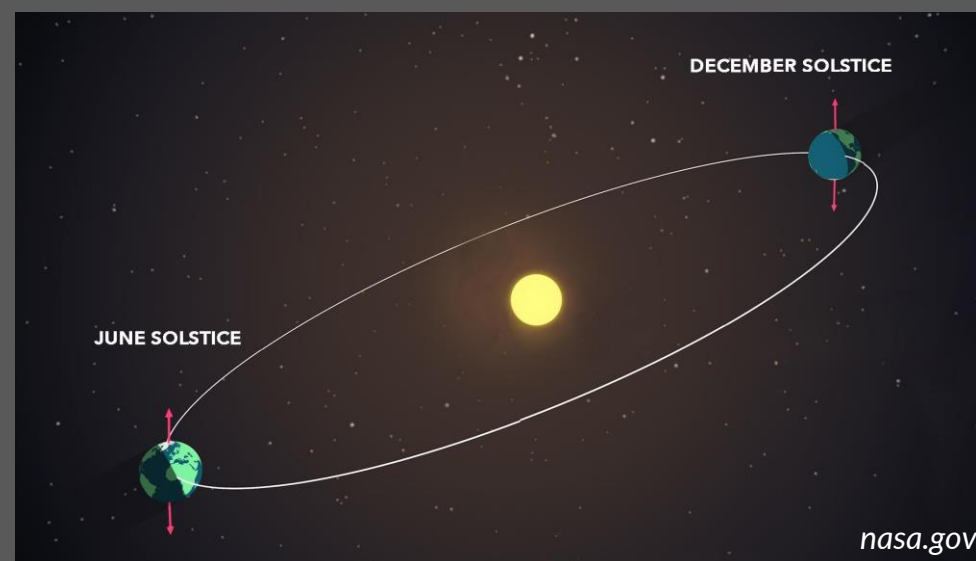
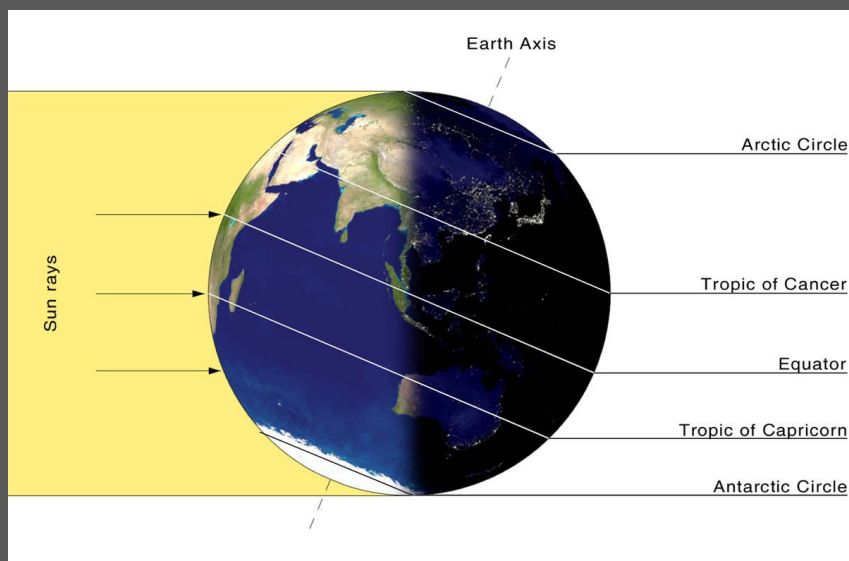




December 21, 2023
8:27 PM MST



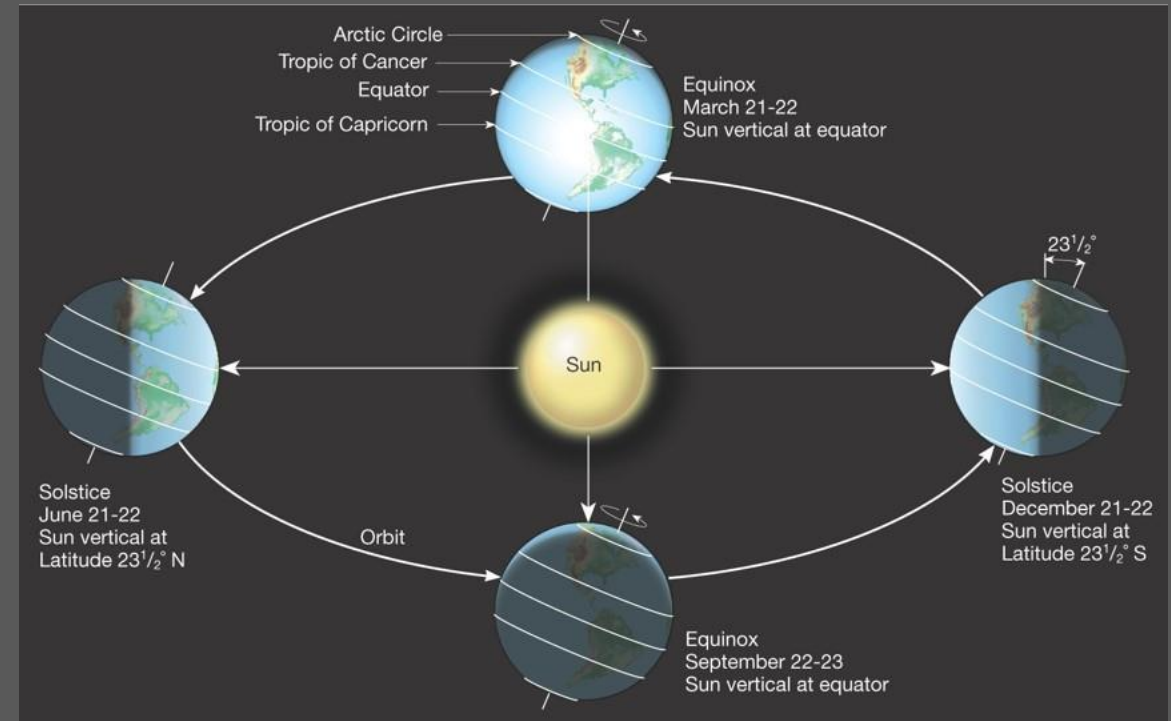
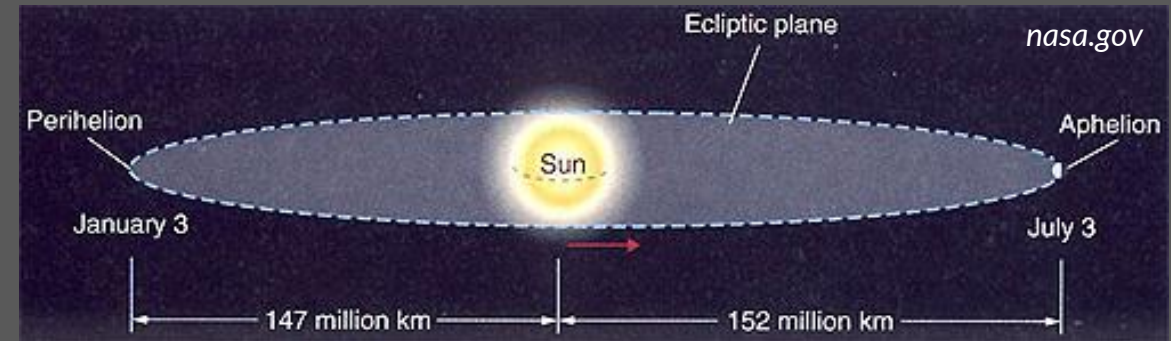
The winter solstice occurs at the moment the earth's tilt away from the sun is at a maximum. Therefore, on the day of the winter solstice, the sun appears at its lowest elevation with a noontime position that changes very little for several days before and after the solstice. In fact, the word solstice comes from Latin *solstitium* or *sol* (the sun) + *-stit-*, *-stes* (standing). The winter solstice marks the shortest day and longest night of the year. In the Northern Hemisphere, it occurs when the sun is directly over the Tropic of Capricorn, which is located at 23.5° south of the equator and runs through Australia, Chile, southern Brazil, and northern South Africa. The Northern Hemisphere winter solstice will occur at 8:27 pm MST on December 21, 2023.



The Seasons



We all know that the Earth makes a complete revolution around the sun once every 365 days, following an orbit that is elliptical in shape. This means that the distance between the Earth and Sun, which is 93 million miles on average, varies throughout the year. The top of figure on the right illustrates that during the first week in January, the Earth is about 1.6 million miles closer to the sun. This is referred to as the perihelion. The aphelion, or the point at which the Earth is about 1.6 million miles farther away from the sun, occurs during the first week in July. This fact may sound counter to what we know about seasons in the Northern Hemisphere, but actually the difference is not significant in terms of climate and is NOT the reason why we have seasons. **Seasons are caused by the fact that the Earth is tilted on its axis by 23.5°.** The tilt's orientation with respect to space does not change during the year; thus, the Northern Hemisphere is tilted toward the sun in June and away from the sun in December, as illustrated in the bottom graphic on the right. The combination of the earth's elliptical orbit and it's axial tilt contribute to the uneven changes in the times of sunrise and sunset throughout the year.



The Seasons



A pinhole camera (no lens and a single small aperture) can be effectively used to document the change in elevation of the sun during the year. The image below is a solargraph made with a pinhole camera, in which the path of the sun as it crosses the sky is captured for an extended period. It was made in Tijeras, and depicts the period from the summer solstice (highest streaks) to the winter solstice (lowest streaks) in 2009.

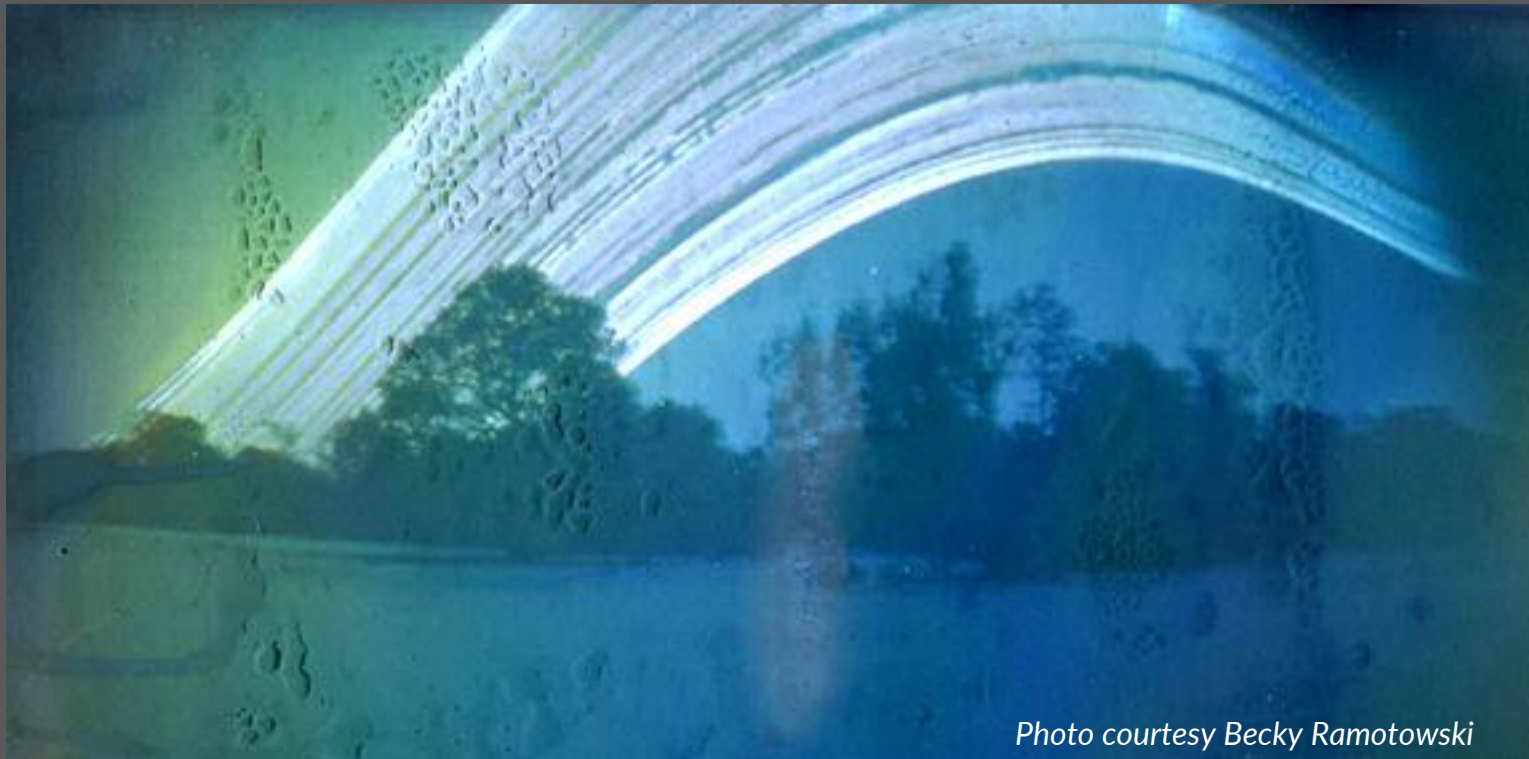


Photo courtesy Becky Ramotowski

Weather



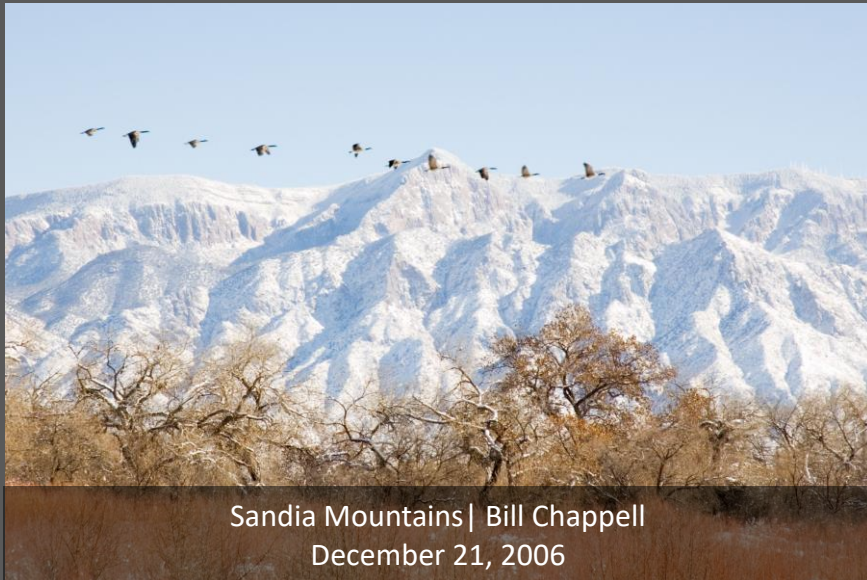
New Mexico is no stranger to hazardous winter weather. Winter can bring arctic cold blasts, heavy snow and blizzard conditions, damaging wind storms, ice storms, and dense freezing fog. Folks are always encouraged to stay alert to the latest forecast and be prepared if traveling across NM as winter weather can result in widespread, severe travel disruptions that can often occur suddenly. Winter weather can also be pleasant at times in NM with extended periods of bright blue sky, mild temperatures, and light winds!



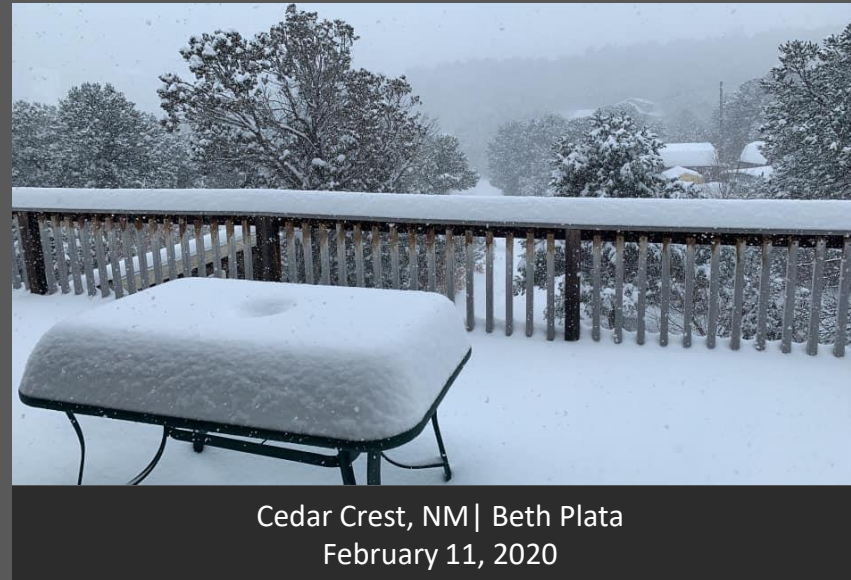
Jemez Mountains Snowdrift | Patty Simi
March 1, 2007



Lamy, NM | Heidi Social via X
February 14, 2023



Sandia Mountains | Bill Chappell
December 21, 2006



Cedar Crest, NM | Beth Plata
February 11, 2020

Satellite View



The GOES-16 full disk images on December 16, 2021 showed the tilted distribution of day and night between the north and south poles as we approached the winter solstice on December 21, 2021. There is total darkness at the north pole and total daylight at the south pole. The location of maximum sun glint can be seen over the Tropic of Capricorn where sunlight is reflected back to the satellite on the winter solstice. Earth will orbit the sun for the summer solstice on June 20, 2024 at 2:50 PM MDT.

