

Sky News

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ICE QUAKES

Polar Vortex is a very cold, swirling, low pressure air mass that forms above the North and South Poles. In, winter, the air mass expands, sending the cold air into nonpolar regions. The northern polar vortex brought an extremely cold air mass to Northwest Indiana that contributed to an unusual phenomenon called **cryoseism**, or ice quakes, also called frost quakes.

Three factors contribute to the unique conditions for ice quakes to occur. First, the ground has to be saturated with water. Second, there has to be a sudden drop in temperature, enough to make the water in the ground freeze rapidly. The polar vortex suddenly brought -20° to -30° temperatures. When water freezes, it expands. The expansion causes the soil and rock in the ground to crack from the pressure. The cracking makes very loud sounds. The third condition was not met, because it usually has to be a snow-free ground. The intensity of the polar vortex still froze the water under 8 inches of snow!

Tennessee and Missouri have reported ice quakes, but they are much more common around the Great Lakes, New England, and Alaska. They are called quakes, indicating seismic activity, because they do move the ground. Seismometers, machines that measure earthquake activity, don't register these small, localized earthquakes.

The following sources were used
for this issue of *Sky News*:

www.nasa.gov, earthsky.org,
www.astropixels.com, <https://in-the-sky.org>,
www.greenmatters.com, www.physics.valpo.edu,
www.smithsonianmag.com,

Astronomy, and *Sky and Telescope*.

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V'GERS OUT OF SOLAR SYSTEM

Voyager 2 has now joined *Voyager 1* in the vast area of interstellar space. *Voyagers* are no longer affected by the Sun's gravity or solar winds. They are the first manmade objects to leave our solar system.

Using the 5 instruments aboard *Voyager 2*, scientists believe the boundary, or **heliopause**, between our solar system and interstellar space has been crossed. The hot solar wind, or plasma, is felt to the very edge of our solar system. It creates a bubble around our solar system called the **heliosphere**. On November 5, 2018, *Voyager 2* detected a steep decline in the speed of the solar wind and its particles. No solar wind flow has been observed since that day. Three other instruments; the cosmic ray subsystem, the low energy charged particle instrument, and the magnetometer are consistent with crossing the heliopause. The cold, dense interstellar medium outside our solar system's heliosphere is very different than inside.

Scientists are very interested to study and information from the area just outside of our heliopause. They will be gathering information for as long as the *Voyagers* can return data to Earth.

RESTORE CORAL REEFS

In 2016 and 2017, about half of the corals in the Great Barrier Reef off the coast of Australia died from the effects of changing climate and greenhouse gases. Researchers from two Australian universities have been trying to repair the coral reef, which is home to an amazing variety of animal species. To restore corals of the 1,400 miles of the Great Barrier Reef, the researchers used an underwater robot to deliver 100,000 baby corals. The robot seeded the baby corals into the damaged areas. Another process, called **microfragmenting**, allows coral to grow 40 times faster than under normal conditions.

FEBRUARY PLANETS

Mars can be seen high in the southwestern sky after sunset in the constellation Pisces (the Fishes). Mars is the only evening planet until the end of February. Mars appears medium-high in the western sky by the end of February and is very easy to find. Mars looks like a bright, ruddy-colored star.

Mercury cannot be seen until the end of February when it returns to the evening sky. Mercury stays close to the horizon and sets about 7:00 p.m. Mercury looks like a small white star.

Jupiter can be seen rising in the southeastern sky in the constellation Ophiuchus (the Serpent Bearer), just to the left, or east, of the red star Antares (the Rival of Mars) in Scorpius (the Scorpion). Jupiter rises about 3:30 a.m. in early February and by 2:30 a.m. at the end of the month. Jupiter can be seen medium-high in the southeastern sky before dawn. Jupiter looks like a very bright, yellow-colored star.

Venus rises an hour after Jupiter, also in the constellation Ophiuchus, in early February. Venus rises later and appears lower throughout the month. Venus passes Saturn on the 19th. Venus looks like a very bright white star.

Saturn can be seen for a short time rising in the southeastern predawn sky in the constellation Sagittarius (the Archer). Saturn rises about 6:00 a.m. and then by 4:00 a.m. at the end of the month. Saturn looks like a bright, amber-colored star.

FEBRUARY SUNRISE AND SUNSET (times are for mid-month)

sunrise:	6:45 a.m.
sunset:	5:23 p.m.
length of daylight:	10 hours, 22 minutes
length of darkness:	13 hours, 38 minutes

This edition of the
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was written by
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SKY DATES

February

- 1 - Moon occults Saturn
- 2 - Candlemas, a cross-quarter day
- 4 - New Moon at 3:04 p.m.
- Asteroid Herculina at opposition
- 5 - Moon at apogee (farthest point from Earth) at 252,065 miles at 3:26 a.m.
- 8 - VU Observatory 8:30 to 9:30 p.m.
- Alpha Centaurid meteor shower
- 10 - Moon passes 6.04° S of Mars
- 12 - First quarter moon at 4:26 p.m.
- 13 - Mars passes 1.03° N of Uranus
- Moon passes 1.7° N of Aldebaran
- 17 - Moon passes 0.6° S of Beehive cluster
- 18 - Venus passes 1.05° of Saturn
- 19 - Moon at perigee (closest point to Earth) at 221,192 miles at 3:06 a.m.
- Moon passes 2.5° N of Regulus
- Full moon called Snow Moon, Hunger Moon, Trapper's Moon, or Raccoon Moon at 9:53 a.m.
- Mercury passes 0.46° N of Neptune
- 22 - VU Observatory 8:30 to 9:30 p.m.
- 23 - Venus passes 1.24° N of Pluto
- 26 - Last quarter moon at 5:28 a.m.
- Mercury at dichotomy
- Mercury at greatest eastern elongation
- 27 - Moon passes 2.3° N of Jupiter

METEOR HITS CUBA

On February 1, 2019 at about 1:16 p.m., a meteor was seen streaking across the sky over West Palm Beach, the Florida Keys, and western Cuba where it hit near Vinales, a town in Pinar del Rio.

The meteor was extremely bright, yellow-orange in color and left a long lasting smoke trail. The yellow-orange color indicates sodium in its composition, very similar to the Chelyabinsk, Russia meteor. The meteor was about the size of a van, smaller than the house-sized meteor at Chelyabinsk. A loud sonic boom was heard in Cuba from the incoming meteor that shattered windows. The meteorites found in the area were black **chondrites** that are common type of meteorite, similar in composition to Chelyabinsk.