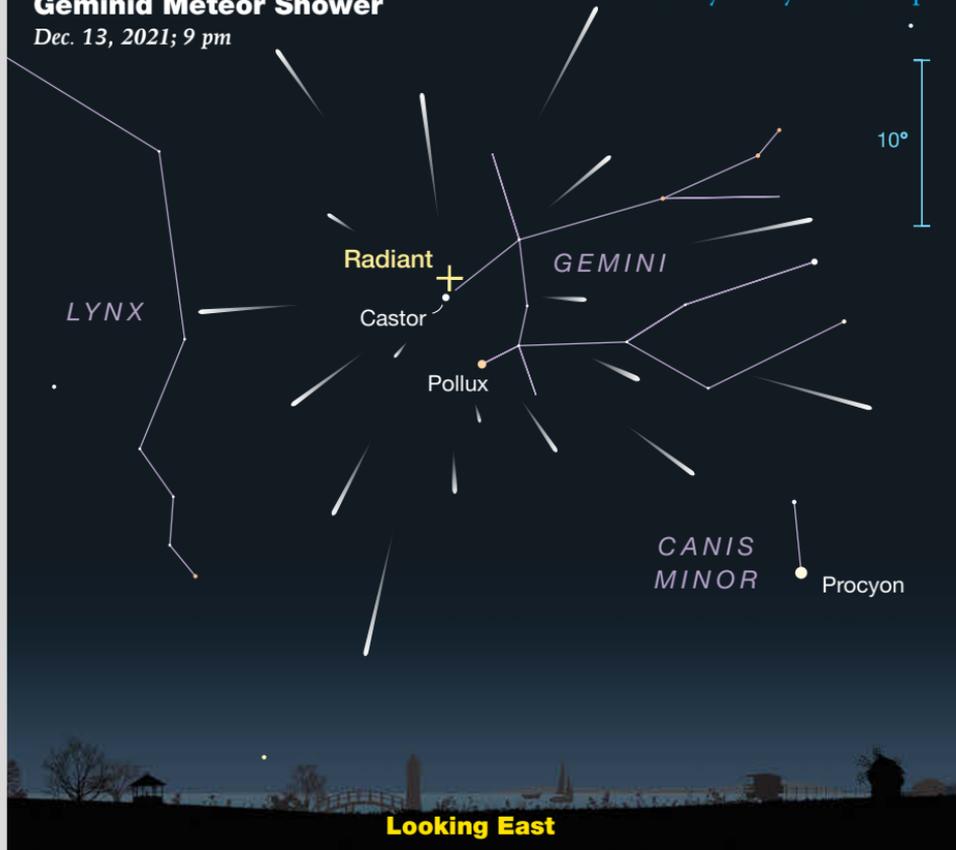


## Geminid Meteor Shower

Dec. 13, 2021; 9 pm

Courtesy of Sky & Telescope



Looking East

# The 2021 Geminids Cup Half Full

**THE STRONGEST ANNUAL** meteor shower of the year, the Geminids, peak at 7:00 UT (2 a.m. EST) on December 14th. If you observe after the Moon sets (at around 3 a.m. local time), you might see up to 150 meteors per hour from a dark, rural location and perhaps 30–50 per hour under suburban light pollution.

The shower derives from dust and debris spalled from asteroid 3200 Phaethon during its close approach to the Sun every 1.4 years. Geminids enter the atmosphere at 35 kilometers per second (that's nearly 80,000 miles per hour) – slow enough that they typically don't produce long-lasting ionization trails.

As shown in the chart above, the radiant is located about 2° northwest of Castor and stands 30° high around 9 p.m. local time. Unfortunately, the Moon will be about 77% full and seriously degrade the shower for much of the night. However, if you wait until moonset, you'll have about three hours of darkness before the start of morning twilight. At that time, Gemini will be off to the west and in good view.

Dress warmly, have a hot beverage at the ready, unfold your chaise lounge, and enjoy the display. During lulls in meteor activity, you can always take a few moments to appreciate the brilliant constellations of the winter sky as they sink toward the western horizon.\*\*\*



▲ Dean Rowe photographed this spectacular and colorful Geminid fireball during the 2018 display. Meteor colors are produced when air heats and ionizes atoms from the incoming meteoroid. Each atom emits a characteristic color: Oxygen glows green at the start of the meteor trail, followed farther down by green-glowing magnesium. Calcium lights up purple, and red originates from oxygen and nitrogen in the air itself.