

MOON PHASES IN JANUARY

New Moon	Jan. 1
First Quarter	Jan. 7
Full Moon	Jan. 15
Last Quarter	Jan. 24
New Moon	Jan. 30

During the year's first week, the Moon waxes from New to First Quarter phase and sets during the evening hours. The best comet views come after our satellite dips below the horizon in mid- to late evening. With the arrival of First Quarter Moon on January 7, bright moonlight washes across the evening sky during the month's second week. This means the prime viewing hours shift to the morning, slightly before dawn starts to color the sky. At this time of year, twilight begins around 5:30 A.M. local time.

As the best comet viewing switches from the more pleasant evening hours to the morning, ISON moves from the friendly confines of Ursa Minor into the relative emptiness of northern Cepheus the King. Few stars light the way, so tracking down the comet could test your observing skills. ISON crosses from Cepheus into eastern Cassiopeia the Queen on January 13, but the comet lies some 15° from the constellation's familiar W-shaped asterism. To find ISON on either the 13th or 14th, draw an imaginary line between Polaris and 3rd-magnitude Epsilon Cassiopeiae (the W's eastern end), and then scan approximately 5° east of that line's midpoint.



Comet McNaught (C/2009 R1) reached 6th magnitude near its peak in June 2010, similar to the brightness ISON should be in the first week of January. GERALD RHEMANN

The edge of darkness

During January's second week, solar system geometry carries Earth progressively closer to ISON's orbital plane. The comet's broad fan-shaped dust tail narrows significantly with each passing day until the night of January 15/16, when our planet passes through the plane and the dust tail collapses into a sharp spike.

This alignment should create a bright anti-tail — one that points toward the Sun instead of away from it. Because the dust particles that form the anti-tail are larger than those in the normal dust tail, radiation pressure can't drive them away from the Sun as fast as the comet itself moves. These bits of debris remain in the comet's orbit, but they lag behind. The Sun lights up the particles impressively when we view them edge-on. The best views of ISON's anti-tail should come between January 14 and 16. Look at the normal dust tail on one of these nights, and you might see a bluish streak of light from the ion tail superimposed on it.

It's too bad that Full Moon arrives on the same night (January 15/16) that Earth passes through ISON's orbital plane. Scattered light from our satellite brightens the background sky and thus reduces contrast with celestial objects, making fine detail harder to see. Still, the comet should glow at 8th magnitude in mid-January, and the anti-tail should show up nicely through 4-inch scopes even from the suburbs.

Some researchers have speculated that Earth's passage through the comet's orbital plane could trigger a meteor shower. When our planet crosses ISON's orbit, it will be near where the comet was this past November. Unfortunately, it doesn't look like we'll see much effect because ISON likely didn't



Comet PANSTARRS (C/2011 L4) appeared near Polaris (the bright star at top center) in May 2013. ISON comes even closer to the North Star in January's first week. JOSÉ CHAMBO