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Clusters Nebulae Galaxies

Orion Nebula, a starry nursery

Posted by [Bruce McClure](#) | December 3, 2020



View at [EarthSky Community Photos](#). | Scott MacNeill at [Frosty Drew Observatory](#) in Charlestown, Rhode Island, created this composite image of the Orion Nebula from images captured on November 17, 2020. Thank you, Scott!

[Orion the Hunter](#) is the most noticeable of all constellations. The three stars of *Orion's Belt* jump out at you as a short, straight row of medium-bright stars, midway between Orion's two brightest stars, [Betelgeuse](#) and [Rigel](#). Once you find the Belt stars, you can also locate the Orion Nebula, otherwise known as [M42](#). When you look at it, you're gazing toward a stellar nursery, a place where new stars are born.

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[View larger.](#) | [Stefan Nilsson](#) captured this image in southern Sweden in 2017. You can recognize the constellation Orion by his 3 Belt stars, three stars in a short, straight row. The Orion Nebula is that red fuzzy region in Orion's Sword, hanging from the Belt.



[View larger.](#) | The three medium-bright stars in a straight row represent Orion's Belt. A curved line of stars extending from the Belt represents Orion's Sword. The Orion Nebula lies about midway down in the Sword of Orion. Image via Marian McGaffney.

How to locate the Orion Nebula

If you want to find this famous nebula, first you have to locate the constellation Orion. Fortunately, that's easy, if you're looking at the right time of year. The Northern Hemisphere winter months (Southern Hemisphere summer months) are the perfect time to come to know Orion.

The constellation is noticeable for three medium-bright stars in a short, straight row. These stars represent Orion's Belt.

If you look closely, you'll notice a curved line of stars "hanging" from the three Belt stars. These stars represent Orion's Sword. Look for the Orion Nebula about midway down in the Sword of Orion.

As a general rule, the higher the constellation Orion is in the sky, the easier it is to see the Orion Nebula. From Northern Hemisphere locations, Orion is due south and highest in the sky around midnight in middle December. The stars return to the same place in the sky some four minutes earlier each night, or two hours earlier each month. So look for Orion to be highest up around 10 p.m. in mid-January and 8 p.m. in mid-February.

Another time people notice Orion is around the months of August and September, when this constellation appears in the east before dawn.

Most *nebulae* – clouds of interstellar gas and dust – are difficult if not impossible to see with the unaided eye or even binoculars. But the Orion Nebula is in a class nearly all by itself. It's visible to the unaided eye on a dark, moonless night. To me, it looks like a star encased in a globe of luminescent fog. The [dark-sky](#) aficionado Stephen James O'Meara described it as:

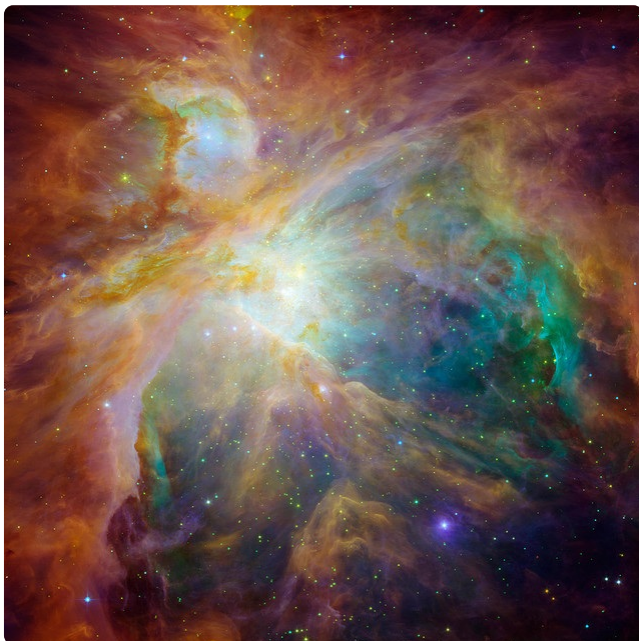
... angel's breath against a frosted sky.

In a [dark country sky](#), observe the Orion Nebula for yourself to see what it looks like. A backyard telescope, or even binoculars, will do wonders to showcase one of the greatest celestial treasures in the winter sky.





This spectacular image of the Orion Nebula star-formation region was obtained from multiple exposures using the HAWK-I infrared camera on ESO's [Very Large Telescope](#) in Chile. Image via ESO/ H. Drass et al.



The Orion Nebula, 1,500 light years from Earth. Image via NASA/ JPL-Caltech/ STScI.

What science says about the Orion Nebula

According to modern astronomers, the Orion Nebula is an enormous cloud of gas and dust, one of many in our Milky Way galaxy. It lies roughly 1,300 [light-years](#) from Earth.

At some 30 to 40 light-years in diameter, this great big nebulous cocoon is giving birth to perhaps a thousand stars. A young *open star cluster*, whose stars were born at the same time from a portion of the nebula and are still loosely bound by gravity, can be seen within the nebula. It is sometimes called the Orion Nebula Star Cluster. In 2012, an international team of astronomers suggested this cluster in the Orion Nebula [might have a black hole at its heart](#).

The four brightest stars in the Orion Nebula can be

seen through amateur astronomers' telescopes and are affectionately known as The Trapezium. The light of the young, hot Trapezium stars illuminate the Orion Nebula. These stars are only a million or so years old, babies on the scale of star lifetimes.

But most of the stars in this emerging cluster are veiled behind the Orion Nebula itself, the great stellar nursery in Orion's Sword.

The Orion Nebula's position is Right Ascension: 5h 35 m; Declination: 5 degrees 23' south

Bottom line: The Orion Nebula appears to the eye as a tiny, hazy spot. But it's a vast stellar nursery, a place where new stars are forming.

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Bruce McClure

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About the Author:

Bruce McClure served as lead writer for EarthSky's popular Tonight pages from 2004 to 2021, when he opted for a much-deserved retirement. He's a sundial aficionado, whose love for the heavens has taken him to Lake Titicaca in Bolivia and sailing in the North Atlantic, where he earned his celestial navigation certificate through the School of Ocean Sailing and Navigation. He also wrote and hosted public astronomy programs and

planetarium programs in and around his home in upstate New York.



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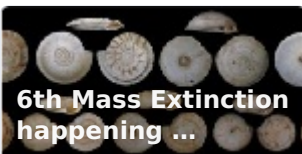


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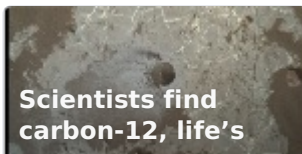
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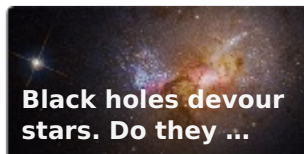
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Eidolon • 2 years ago • edited

The Star Splitter

"You know Orion always comes up sideways. Throwing a leg up over our fence of mountains, And rising on his hands, he looks in on me..."

Robert Frost

2 ^ | v 1 • Reply • Share >

Anahita • 10 months ago

" this fills me up with bliss Don't tell me this wasn't real"

^ | v • Reply • Share >

Sxpehr • a year ago

how

^ | v • Reply • Share >

Lehmann108 • a year ago

Just saw this for the first time time tonight with my 10x50 binoculars. Absolutely stunning!

^ | v • Reply • Share >

Eidolon • a year ago

If you get a chance to actually look at this nebula through a telescope, be warned. It looks nothing like these images. It's far more subtle, in soft gray/green monochrome. The 4 bright stars in the center, the Trapezium, the dark cloud of dust and gas in front of a portion of the nebula show detail, but you have to look for it. That said, I always at least take a peak at it when it's up. It rewards the patient observer.

^ | v • Reply • Share >

Ryan H Peterson • 2 years ago • edited

The three Kings of Orions belt are the three masters of Earth Lord Christ, Lord Buddha, Lord Kristna and the Father of these sons makes the 4th Orion!.....these are the 4 beasts in revelations and are the gate keepers and the 4 cosmic forces in this universe.....the 3 Sons of glory are aptly depicted as temple of lights or pyramids in egypt the last and longest standing of the 7 wonders of the world

^ | v • Reply • Share >

Well,well,whathavewehere...? → Ryan H Peterson • a year ago

First base is where batters go first then second base and third. Home is the lord of bases and it has five corners. Three strikes and you are out.

1 ^ | v • Reply • Share >

Lee → Ryan H Peterson • a year ago

What are you on about. They are stars. End of. Gas collapses under gravity. Fusion starts = . Science not religion.

^ | v 1 • Reply • Share >

MechaShadowV2 → Lee • a year ago

I'm religions and I still don't know what the heck he's talking about.

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