HUBBLE'S SHARPEST VIEW OF THE ORION NEBULA

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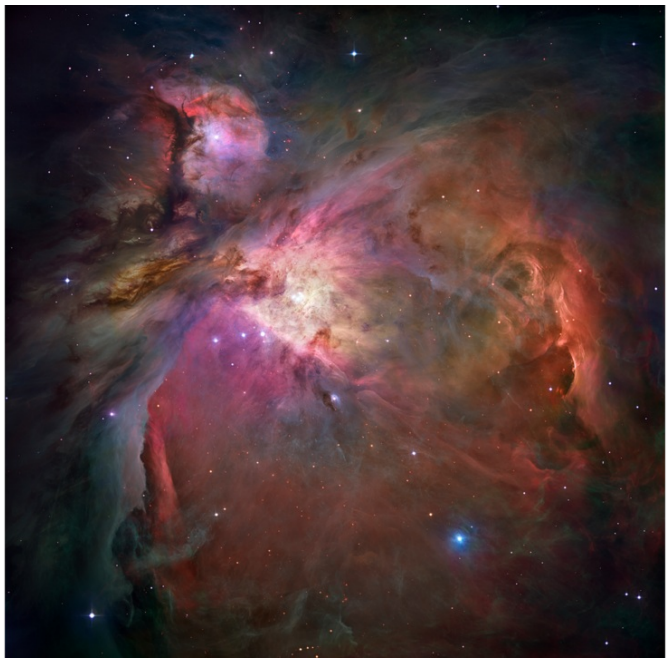

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January 11, 2006 10:00AM (EST)

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About This Image

This dramatic image offers a peek inside a cavern of roiling dust and gas where thousands of stars are forming. The image, taken by the Advanced Camera for Surveys (ACS) aboard NASA's Hubble Space Telescope, represents the sharpest view ever taken of this region, called the Orion Nebula. More than 3,000 stars of various sizes appear in this image. Some of them have never been seen in visible light. These stars reside in a dramatic dust-and-gas landscape of plateaus, mountains, and valleys that are reminiscent of the Grand Canyon.

The Orion Nebula is a picture book of star formation, from the massive, young stars that are shaping the nebula to the pillars of dense gas that may be the homes of budding stars. The bright central region is the home of the four heftiest stars in the nebula. The stars are called the Trapezium because they are arranged in a trapezoid pattern. Ultraviolet light unleashed by these stars is carving a cavity in the nebula and disrupting the growth of hundreds of smaller stars. Located near the Trapezium stars are stars still young enough to have disks of material encircling them. These disks are called protoplanetary disks or "proplyds" and are too small to see clearly in this image. The disks are the building blocks of solar systems.

The bright glow at upper left is from M43, a small region being shaped by a massive, young star's ultraviolet light. Astronomers call the region a miniature Orion Nebula because only one star is sculpting the landscape. The Orion Nebula has four such stars. Next to M43 are dense, dark pillars of dust and gas that point toward the Trapezium. These pillars are resisting erosion from the Trapezium's intense ultraviolet light. The glowing region on the right reveals arcs and bubbles formed when stellar winds - streams of charged particles ejected from the Trapezium stars - collide with material.

The faint red stars near the bottom are the myriad brown dwarfs that Hubble spied for the first time in the nebula in visible light. Sometimes called "failed stars," brown dwarfs are cool objects that are too small to be ordinary stars because they cannot sustain nuclear fusion in their cores the way our Sun does. The dark red column, below, left, shows an illuminated edge of the cavity wall.

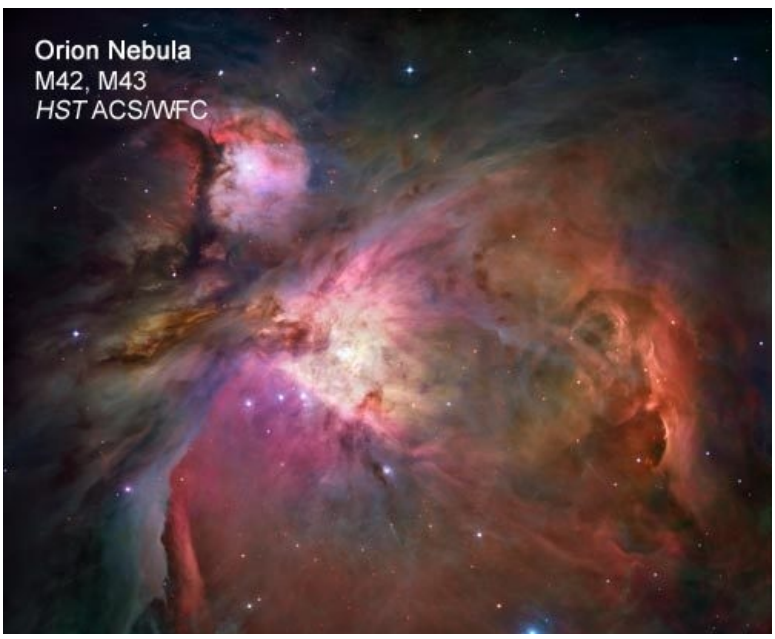
The Orion Nebula is 1,500 light-years away, the nearest star-forming region to Earth. Astronomers used 520 Hubble images, taken in five colors, to make this picture. They also added ground-based photos to fill out the nebula. The ACS mosaic covers approximately the apparent angular size of the full moon.

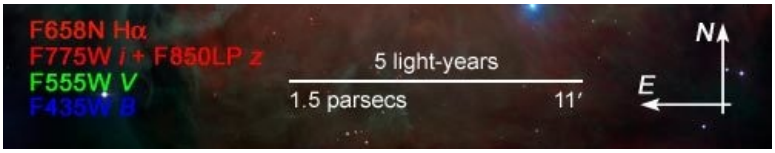
The Orion observations were taken between 2004 and 2005.

CREDITS:
NASA, ESA, M. Robberto (Space Telescope Science Institute/ESA) and the Hubble Space Telescope Orion Treasury Project Team

KEYWORDS:
EMISSION NEBULAS NEBULAS

Fast Facts

About The Object	
Object Name	Orion Nebula , M42, NGC 1976
Object Description	Emission Nebula
R.A. Position	05h 35m 17.0s
Dec. Position	-5° 23' 27.99"
Constellation	Orion
Distance	The distance to the Orion Nebula is 1,500 light-years (460 parsecs).
Dimensions	The image is 30 arcminutes (13 light-years or 4.0 parsecs) square.
About The Data	
Data Description	The Hubble image was created from HST data from proposal 10246: M. Robberto (STScI/ESA), C.R. O'Dell (Vanderbilt University), L.A. Hillenbrand (Caltech), M. Simon (SUNY Stony Brook), P. McCullough (STScI), J. Krist (Jet Propulsion Laboratory), F. Palla (Osservatorio Astrofisico di Arcetri), M. Romaniello (ESO – Germany), J. Najita (NOAO/AURA), E.D. Feigelson (The Pennsylvania State University), R. Makidon (STScI), J. Stauffer (Jet Propulsion Laboratory); N. Panagia, I.N. Reid, D.R. Soderblom, and E. Bergeron (STScI); and K.G. Stassun (Vanderbilt University). The Hubble data was superimposed onto a ground-based image taken from the 2.2 meter telescope at the European Southern Observatory – La Silla.
Instrument	HST>ACS and ESO-La Silla >2.2 meter telescope/WFI
Exposure Dates	October 2004 - April 2005 (ACS), and December 11, 2001 (WFI)
Filters	ACS: F435W (B), F555W (V), F658N (Halpha) , F775W (i), and F850LP (z) ESO: BB#B/99_ESO842 B, NB#OIII/8_ESO859 [O III], ESO NB#Halpha/7_ESO856, and ESO NB#SIIr/8_ESO857 [S II]
About The Image	
Color Info	This image is a composite mosaic of many separate expposures made by the ACS instrument on the Hubble Space Telescope and the ESO La Silla 2.2 meter telescope using several different filters isolating the light of specific elements or of specific broad wavelength ranges. The color arises by assigning different hues (colors), to each monochromatic image. In this case, the colors are: Blue: ACS F435W (B) + ESO BB#B/99_ESO842 B Green: ACS F555W (V) + ESO NB#OIII/8_ESO859 [O III] Red-orange: ACS F658N (Halpha) Red: ACS F775W (i) + F850LP (z) + ESO NB#Halpha/7_ESO856 + ESO NB#SIIr/8_ESO857 [S II]
Compass Image	



Fast Facts Help

About The Object	
Object Name	A name or catalog number that astronomers use to identify an astronomical object.
Object Description	The type of astronomical object.
R.A. Position	Right ascension – analogous to longitude – is one component of an object's position.
Dec. Position	Declination – analogous to latitude – is one component of an object's position.
Constellation	One of 88 recognized regions of the celestial sphere in which the object appears.
Distance	The physical distance from Earth to the astronomical object. Distances within our solar system are usually measured in Astronomical Units (AU). Distances between stars are usually measured in light-years. Interstellar distances can also be measured in parsecs.
Dimensions	The physical size of the object or the apparent angle it subtends on the sky.
About The Data	
Data Description	**Proposal:** A description of the observations, their scientific justification, and the links to the data available in the science archive. **Science Team:** The astronomers who planned the observations and analyzed the data. "PI" refers to the Principal Investigator.
Instrument	The science instrument used to produce the data.
Exposure Dates	The date(s) that the telescope made its observations and the total exposure time.
Filters	The camera filters that were used in the science observations.
About The Image	
Image Credit	The primary individuals and institutions responsible for the content.
Publication Date	The date and time the release content became public.
Color Info	A brief description of the methods used to convert telescope data into the color image being presented.
Orientation	The rotation of the image on the sky with respect to the north pole of the celestial sphere.