

"A CLOSER LOOK AT DEEP SPACEY IDEAS"

# DEEP SPACE (I)MAGER

"PROJECTED FANTASIES"



<https://norseforcenewsreal.com/>

# Imagine Deep Space

*Content notes and source links*

Jan. 5, 2009

## Lonely Galaxy

[https://www.nasa.gov/multimedia/imagegallery/image\\_feature\\_1255.html](https://www.nasa.gov/multimedia/imagegallery/image_feature_1255.html)

XMM-Newton Nova

<https://www.flickr.com/photos/nasacommons/31462436705/in/dateposted/>

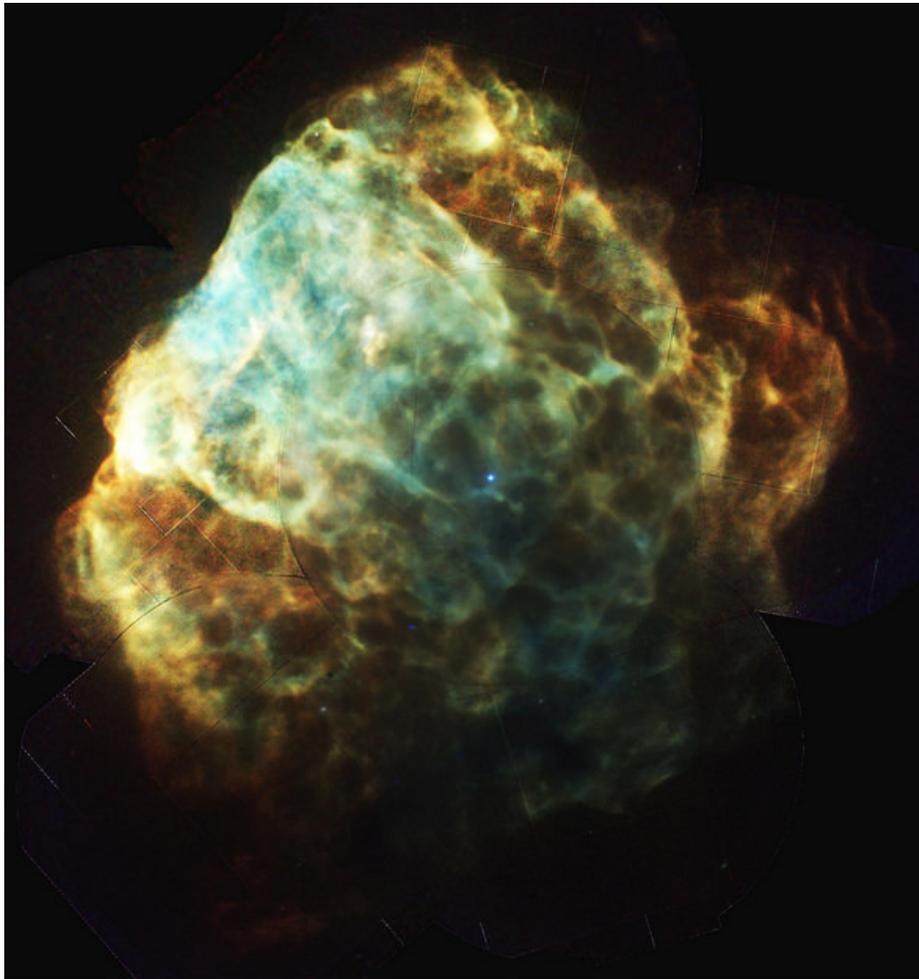


Image courtesy of D. Dolnicar, N. Lénizás, F. Bellón-Barrera, M. J. S. Bell, E. Gierli, and D. Casadei

The most complete and detailed X-ray view of the SNR, Pignatelli

European Space Agency

Full view of Puppis A in X-rays obtained after combining the EPIC exposures of two new XMM-Newton observations with 53 re-reduced and cleaned images (from previous 45 XMM-Newton EPIC and 8 Chandra ACIS exposures). In this representation, red, green, and blue correspond to (0.3–0.7), (0.7–1.0) and (1.0–8.0) keV bands, respectively.

**Image #:** Dubner - ESA

**Date:** April 29, 2013

April 30, 2014

## Spiral Galaxy M51

[https://www.nasa.gov/mission\\_pages/chandra/multimedia/spiral-galaxy-m51.html](https://www.nasa.gov/mission_pages/chandra/multimedia/spiral-galaxy-m51.html)

M51 is a spiral galaxy, about 30 million light years away, that is in the process of merging with a smaller galaxy seen to its upper left.

This image is part of a "[quartet of galaxies](#)" collaboration of professional and amateur astronomers that combines optical data from amateur telescopes with data from the archives of NASA missions. NASA's Marshall Space Flight Center in Huntsville, Ala., manages the Chandra program for NASA's Science Mission Directorate in Washington. The Smithsonian Astrophysical Observatory in Cambridge, Mass., controls Chandra's science and flight operations.

Image credit: X-ray: NASA/CXC/SAO;  
Optical: Detlef Hartmann; Infrared:  
NASA/JPL-Caltech



July 11, 2014

## Hubble Sees a Galaxy With a Glowing Heart

<https://www.nasa.gov/content/goddard/hubble-sees-a-galaxy-with-a-glowing-heart>

This view, captured by the NASA/ESA Hubble Space Telescope, shows a nearby spiral galaxy known as NGC 1433. At about 32 million light-years from Earth, it is a type of very active galaxy known as a

Seyfert galaxy — a classification that accounts for 10% of all galaxies. They have very bright, luminous centers that are comparable in brightness to that of our entire galaxy, the Milky Way.

Galaxy cores are of great interest to astronomers. The centers of most, if not all, galaxies are thought to contain a supermassive black hole, surrounded by a disk of in-falling material.

NGC 1433 is being studied as part of a survey of 50 nearby galaxies known as the Legacy ExtraGalactic UV Survey (LEGUS). Ultraviolet radiation is observed from galaxies, mainly tracing the most recently formed stars. In Seyfert galaxies, ultraviolet light is also thought to emanate from the accretion discs around their central black holes. Studying these galaxies in the ultraviolet part of the spectrum is incredibly useful to study how the gas is behaving near the black hole. This image was obtained using a mix of ultraviolet, visible, and infrared light.

LEGUS will study a full range of properties from a sample of galaxies, including their internal structure. This Hubble survey will provide a unique foundation for future observations with the James Webb Space Telescope (JWST) and the Atacama Large Millimeter/submillimeter Array (ALMA). ALMA has already caught unexpected results relating to the center of NGC 1433, finding a surprising spiral structure in the molecular gas close to the center of NGC 1433. The astronomers also found a jet of material flowing away from the black hole, extending for only 150 light-years — the smallest such molecular outflow ever observed in a galaxy beyond our own.

*European Space Agency*

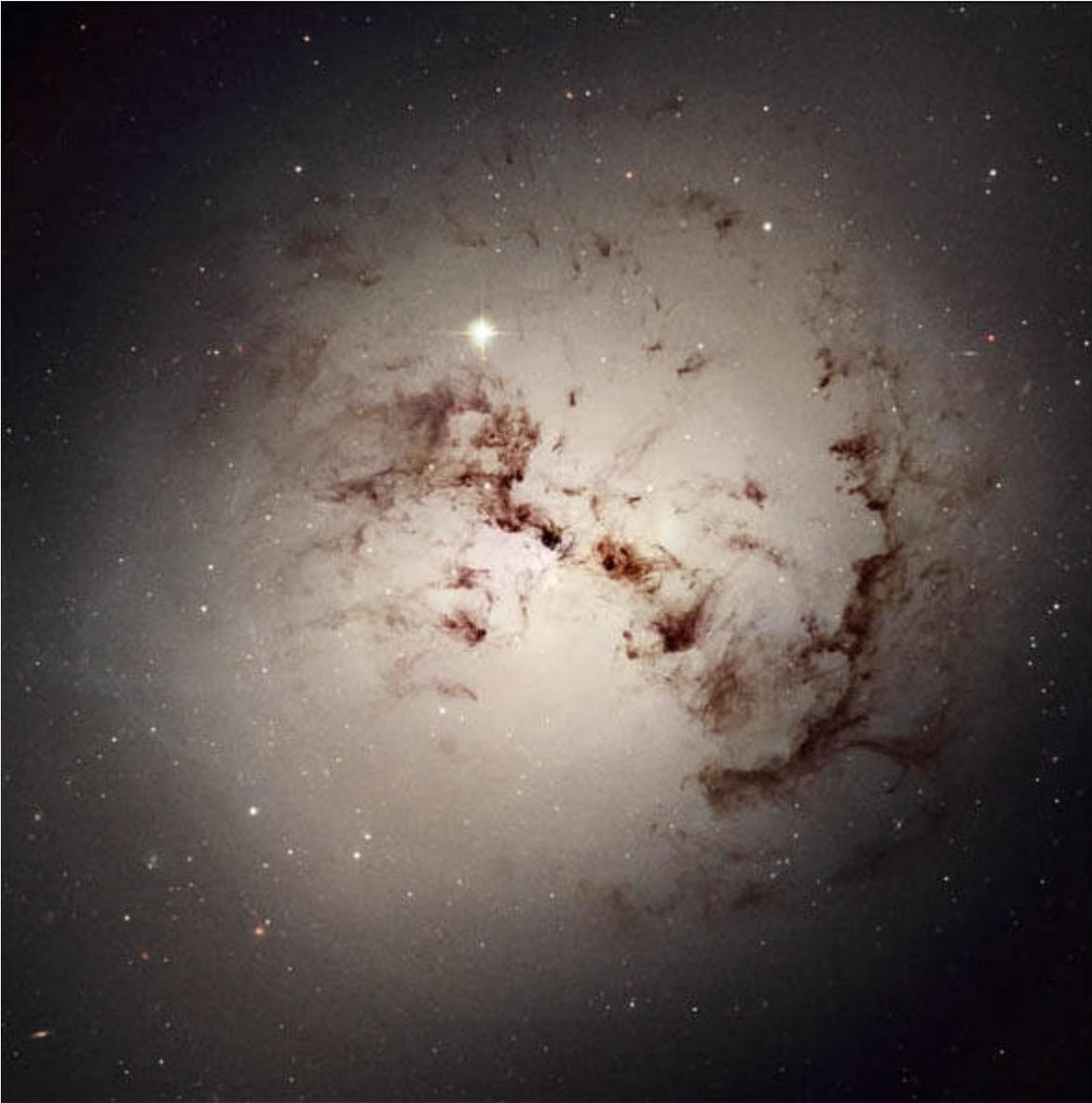
**Credit: ESA/Hubble & NASA, Acknowledgements: D. Calzetti (UMass) and the LEGUS Team**

March 23, 2008

## **Elliptical Galaxy**

[https://www.nasa.gov/multimedia/imagegallery/image\\_feature\\_299.html](https://www.nasa.gov/multimedia/imagegallery/image_feature_299.html)

Like dust bunnies that lurk in corners and under beds, surprisingly complex loops and blobs of cosmic dust lie hidden in the giant elliptical galaxy NGC 1316. This image made from data obtained with the NASA Hubble Space Telescope reveals the dust lanes and star clusters of this giant galaxy that give evidence that it was formed from a past merger of two gas-rich galaxies.



The combination of Hubble's superb spatial resolution and the sensitivity of the Advanced Camera for Surveys (ACS), installed onboard Hubble in 2002 and used for these images, enabled uniquely accurate measurements of a class of red star clusters in NGC 1316. Astronomers conclude that these star clusters constitute clear evidence of the occurrence of a major collision of two spiral galaxies that merged together a few billion years ago to shape NGC 1316 as it appears today.

*Credit: NASA, ESA, and The Hubble Heritage Team (STScI/AURA)*

*Aug. 3, 2012*

## Star Formation in a Dwarf Galaxy

[https://www.nasa.gov/multimedia/imagegallery/image\\_feature\\_2323.html](https://www.nasa.gov/multimedia/imagegallery/image_feature_2323.html)

*This image shows the Small Magellanic Cloud galaxy in infrared light from the Herschel Space Observatory, a European Space Agency-led mission, and NASA's Spitzer Space Telescope. Considered dwarf galaxies compared to the big spiral of the Milky Way, the Large and Small Magellanic Clouds are the two biggest satellite galaxies of our home galaxy.*



*In combined data from Herschel and Spitzer, the irregular distribution of dust in the Small Magellanic Cloud becomes clear. A stream of dust extends to the left in this image, known as the galaxy's "wing," and a bar of star formation appears on the right.*

*The colors in this image indicate temperatures in the dust that permeates the Cloud. Colder regions show where star formation is at its earliest stages or is shut off, while warm expanses point to new stars heating surrounding dust. The coolest areas and objects appear in red, corresponding to infrared light taken up by Herschel's Spectral and Photometric Imaging Receiver at 250 microns, or millionths of a meter. Herschel's Photodetector Array Camera and Spectrometer fills out the mid-temperature bands, shown here in green, at 100 and 160 microns. The warmest spots appear in blue, courtesy of 24- and 70-micron data from Spitzer.*

*Image Credit: ESA/NASA/JPL-Caltech/STScI*

Nov. 8, 2013

## NGC 6946: The 'Fireworks Galaxy'

[https://www.nasa.gov/mission\\_pages/chandra/multimedia/fireworks-galaxy-ngc6946.html](https://www.nasa.gov/mission_pages/chandra/multimedia/fireworks-galaxy-ngc6946.html)

NGC 6946 is a medium-sized, face-on spiral galaxy about 22 million light years away from Earth. In the past century, eight supernovas have been observed to explode in the arms of this galaxy. Chandra

observations (purple) have, in fact, revealed three of the oldest supernovas ever detected in X-rays, giving more credence to its nickname of the "Fireworks Galaxy." This composite image also includes optical data from the Gemini Observatory in red, yellow, and cyan.

Image credit: X-ray: NASA/CXC/MSSL/R.Soria et al,  
Optical: AURA/Gemini OBs



*May 11, 2018*

# Hubble Spies Glowing Galaxies in Massive Cluster

<https://www.nasa.gov/image-feature/goddard/2018/hubble-spies-glowing-galaxies-in-massive-cluster>

*In the darkness of the distant universe, these galaxies resemble glowing fireflies, flickering candles, charred embers floating up from a bonfire, and light bulbs softly shining. This image, captured by the NASA/ESA Hubble Space Telescope, shows a massive group of galaxies bound together by gravity: a cluster named RXC J0032.1+1808.*

This image was taken by Hubble's Advanced Camera for Surveys and Wide Field Camera 3 as part of an observing program called [RELICS \(Reionization Lensing Cluster Survey\)](#). RELICS imaged 41 massive galaxy clusters with the aim of finding the brightest distant galaxies for the forthcoming James Webb Space Telescope to study.

Expected to launch in 2020, the Webb telescope is designed to see in infrared wavelengths, which is exceedingly useful for observing distant objects. As a result of the expansion of the universe, very distant objects are highly redshifted (their light is shifted toward the redder end of the spectrum), and so infrared telescopes are needed to study them. While Hubble currently has the ability to peer billions of years into the past to see “toddler” galaxies, the Webb telescope will have the capability to study “baby” galaxies, the first galaxies that formed in the universe.



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**Credit: ESA/Hubble & NASA, RELICS**

**Text: European Space Agency**

Last Updated: May 11, 2018

Editor: Karl Hille

[NASA Hubble Space Telescope](#)

# Hubble finds infant stars in neighbouring galaxy

The exquisite sharpness of the NASA/ESA Hubble Space Telescope has plucked out an underlying population of infant stars embedded in the nebula NGC 346 that are still forming from gravitationally collapsing gas clouds. They have not yet ignited their hydrogen fuel to sustain nuclear fusion. The smallest of these infant stars is only half the mass of our Sun.

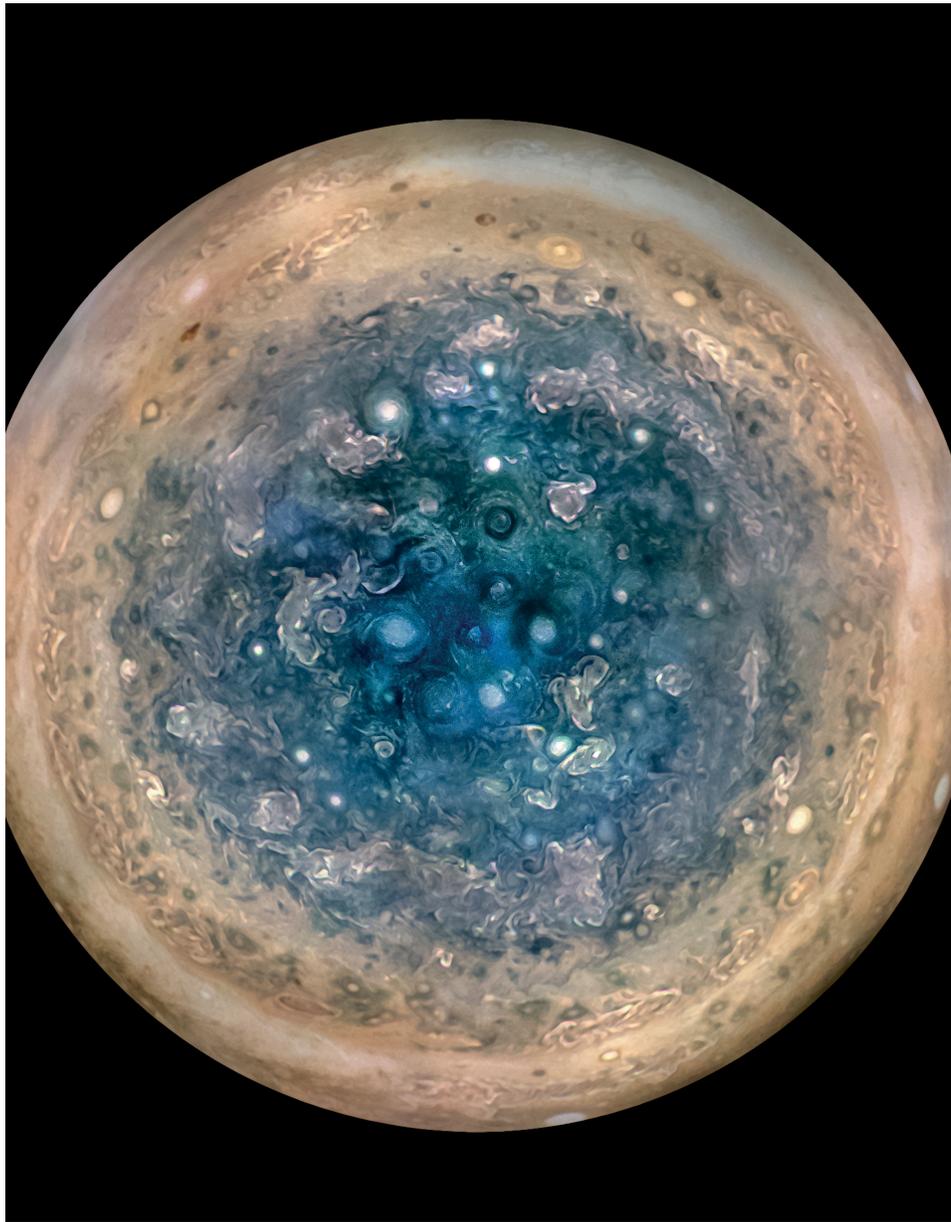


<https://www.flickr.com/photos/nasahubble/42060167442/in/dateposted/>

## South Pole of Jupiter as seen by Juno Spacecraft

This image shows Jupiter's south pole, as seen by NASA's Juno spacecraft from an altitude of 32,000 miles (52,000 kilometers). The oval features are cyclones, up to 600 miles (1,000 kilometers) in diameter. Multiple images taken with the JunoCam instrument on three separate orbits were combined to show all areas in daylight, enhanced color, and stereographic projection.

<https://www.flickr.com/photos/nasacommons/34107732364/in/datetaken/>



**Juno launched on August 5, 2011, entering Jupiter's orbit on July 4, 2016. The findings from the first data-collection pass, which flew within about 2,600 miles (4,200 kilometers) of Jupiter's swirling cloud tops on August 27, 2016, were published during the last week of May 2017 in two papers in the journal Science, as well as 44 additional papers in the journal Geophysical Research Letters.**

**Image #: [PIA21641](#)**

**Date: (released by NASA) May 25, 2017**

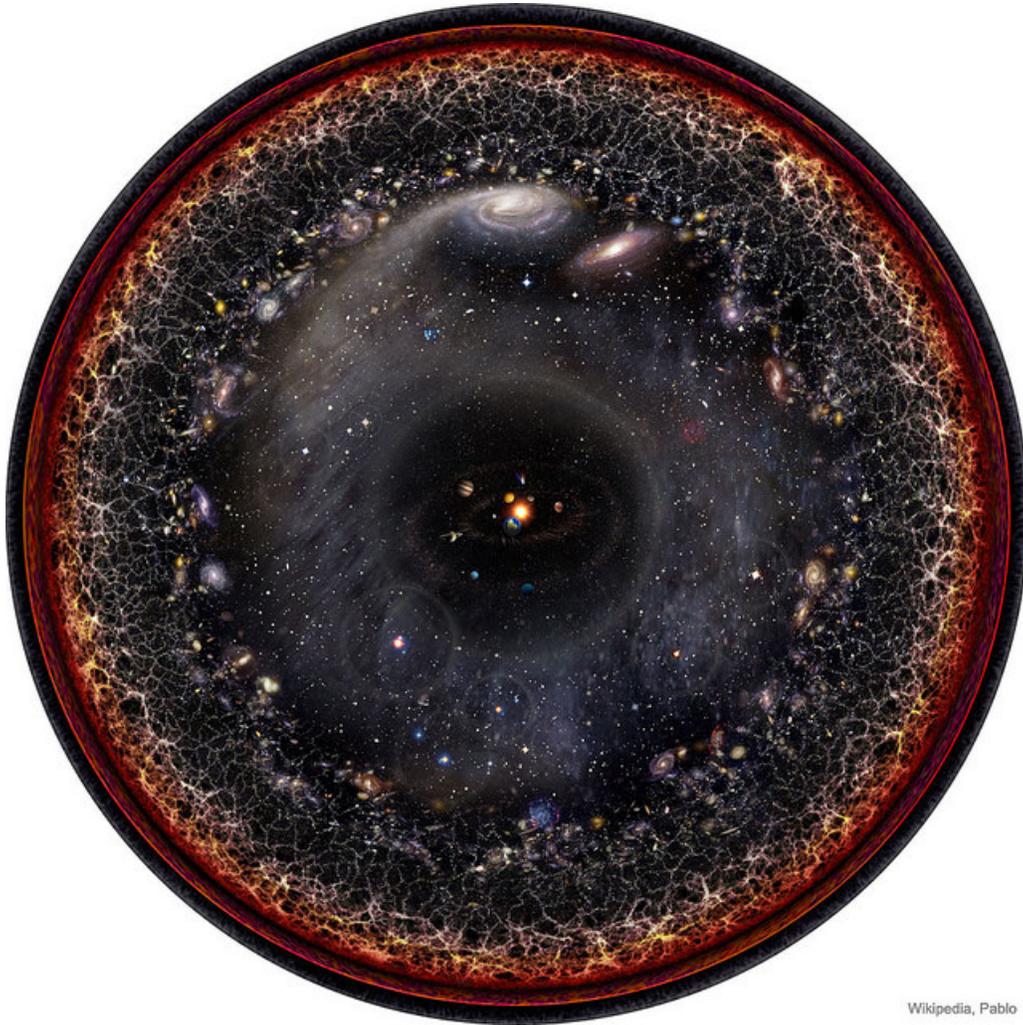
Giant Twisters in the Lagoon Nebula

[arun17kumar2002](#)

# The Observable Universe

<https://www.flickr.com/photos/8230725@N02/28096328938/>

How far can you see? Everything you can see, and everything you could possibly see, right now, assuming your eyes could detect all types of radiations around you -- is the observable universe. In visible light, the farthest we can see comes from the cosmic microwave background, a time 13.8 billion years ago when the universe was opaque like thick fog. Some neutrinos and gravitational waves that surround us come from even farther out, but humanity does not yet have the technology to detect them.



Wikipedia, Pablo

The featured image illustrates the observable universe on an increasingly compact scale, with the Earth and Sun at the center surrounded by our Solar System, nearby stars, nearby galaxies, distant galaxies, filaments of early matter, and the cosmic microwave background. Cosmologists typically assume that our observable universe is just the nearby part of a greater entity known as "the universe" where the same physics applies. However, there are several lines of popular but speculative reasoning that assert that even our universe is part of a greater multiverse where either different physical constants occur, different physical laws apply, higher dimensions operate, or slightly different-by-chance versions of our standard universe exist. via NASA [go.nasa.gov/2KJbdBH](https://www.nasa.gov/2KJbdBH)

This NASA Hubble Space Telescope (HST) image reveals a pair of one-half light-year long interstellar "twisters," eerie funnels and twisted-rope structures in the heart of the Lagoon Nebula (Messier 8) which lies 5,000 light-years away in the direction of the constellation Sagittarius. The central hot star, O Herschel 36 (lower right), is the primary source of the ionizing radiation for the brightest region in the nebula, called the Hourglass. Analogous to the spectacular phenomena of Earth tornadoes, the large difference in temperature between the hot surface and cold interior of the clouds, combined with the pressure of starlight, may produce strong horizontal shear to twist the clouds into their tornado-like appearance. Though the spiral shapes suggest the clouds are "twisting," future observations will be needed, perhaps with Hubble's next generation instruments, with the spectroscopic capabilities of the Space Telescope Imaging Spectrograph (STIS) or the Near Infrared Camera and Multi-Object Spectrometer (NICMOS), to actually measure velocities. These color-coded images are the combination of individual exposures taken in July and September, 1995 with Hubble's Wide Field and Planetary Camera 2 (WFPC2) through three narrow-band filters (red light ionized sulphur atoms, blue light, double ionized oxygen atoms, green light, ionized hydrogen).

<https://www.flickr.com/photos/nasacommons/9458008327/>

Image # : PR96-38B

Date: September 27, 1995

