

1000 days of infrared wonders

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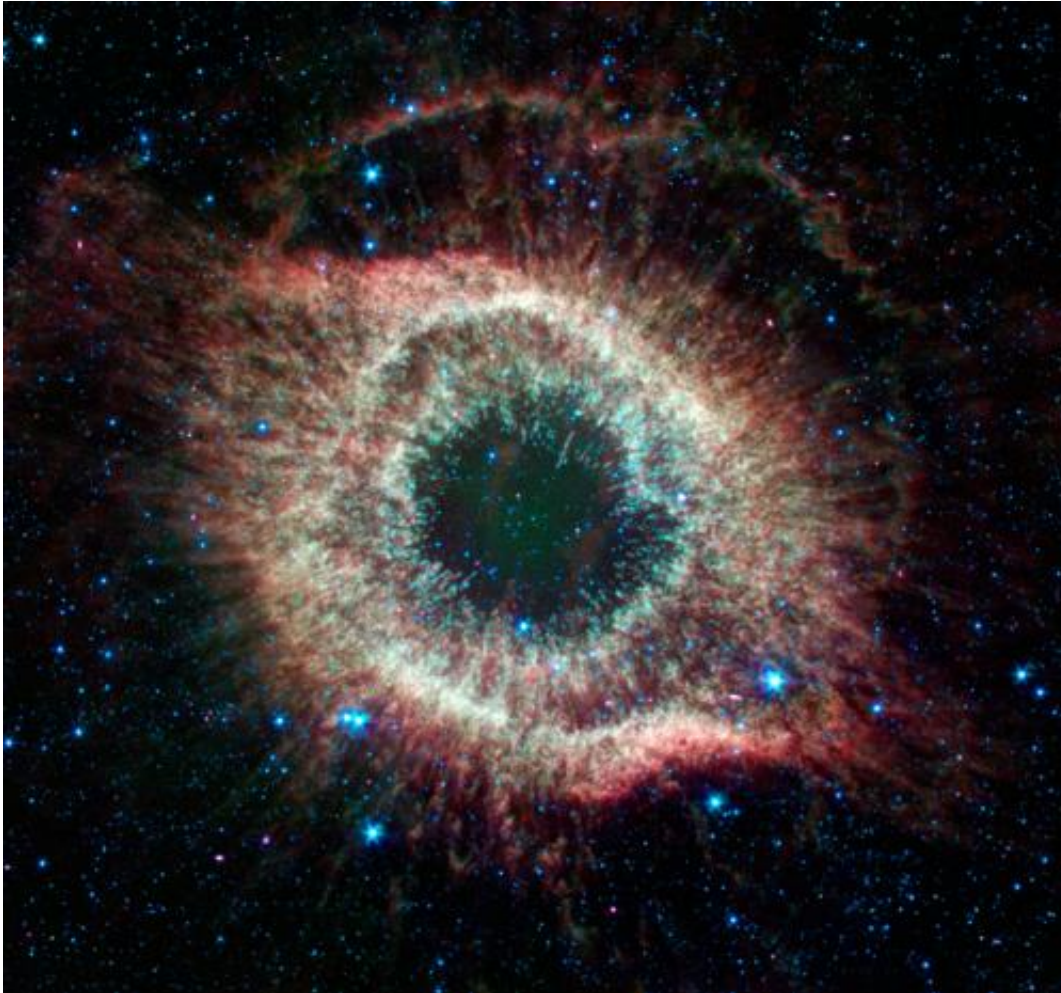
IRAC not only probes what is known - it also has uncovered some mysterious objects like this so-called "tornado" nebula. Because the camera is sensitive to light emitted from shocked molecular hydrogen (seen here in green), astronomers think that this strange beast is the result of an outflowing jet of material from a young star that has generated shock waves in surrounding gas and dust. Credit: NASA / JPL-Caltech / J. Bally (University of Colorado)

(Phys.org) -- For the last 1000 days the Infrared Array Camera (IRAC), aboard NASA's Spitzer Space Telescope, has been operating continuously to probe the universe from its most distant regions to our

local solar neighborhood. The IRAC "warm" program began once Spitzer used up its liquid helium coolant, thus completing its "cold" mission. To commemorate 1000 days of infrared wonders, the program is releasing a gallery of the 10 best IRAC images.

"IRAC continues to be an amazing camera, still producing important discoveries and spectacular new images of the infrared universe," said principal investigator Giovanni Fazio of the Harvard-Smithsonian Center for Astrophysics.

The warm-mission images particularly highlight the continuing capabilities of Spitzer. Indeed, NASA's Senior Review Panel has recommended extending the Spitzer warm mission through 2015. They specifically commended the Spitzer team for telescope improvements that have made it a powerful instrument for science, especially in exoplanet studies.



After a long life of hydrogen-burning nuclear fusion, stars move into later life states whose details depend on their masses. This IRAC image of the Helix Nebula barely spots the star itself at the center, but clearly shows how the aging star has ejected material into space around it, creating a "planetary nebula." The Helix Nebula is located 650 light-years away in the constellation Aquarius. This image was taken during Spitzer's warm mission. Credit: NASA / JPL-Caltech / J. Hora (CfA) & W. Latter (NASA/Herschel)

IRAC is sensitive to infrared light - light beyond the red end of the visible spectrum. It can image nebulae of cold dust, peer inside obscured dust clouds where new stars are forming, and detect faint emissions from very distant galaxies.

During its 1000-day undertaking, IRAC used its two shortest-wavelength infrared sensors. However, some of the images featured today include data collected during the cold mission, when all four of its infrared sensors could function.



The famous nebula in Orion, located about 1,340 light-years from Earth, is actively making new stars today. Although the optical nebula is dominated by the light from four massive, hot young stars, IRAC reveals many other young stars still embedded in their dusty womb. It also finds a long filament of star-forming activity containing thousands of young protostars. Some of these stars may host still-forming planets. This image was taken during Spitzer's warm mission. Credit: NASA / JPL-Caltech / Univ. of Toledo

The top 10 IRAC images the team selected are:

- A "space tornado"
- The Orion Nebula
- The [Helix Nebula](#)
- The Trifid Nebula
- The "Mountains of Creation"
- A young star cluster
- Our [Milky Way galaxy](#)
- The [Whirlpool galaxy](#)
- The Sombrero galaxy
- The young, distant universe

More information: Many additional images from Spitzer can be found online at www.spitzer.caltech.edu/

Provided by Harvard-Smithsonian Center for Astrophysics

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