



SOFIA opens new window on star formation in Orion

12 January 2011

A mid-infrared mosaic image from the SOFIA airborne observatory offers new information about processes of star formation in and around the nebula Messier 42, in the constellation Orion. The image data were acquired using the Faint Object Infrared Camera for the SOFIA Telescope, or FORCAST, (principal investigator: Terry Herter, Cornell University) during SOFIA's Short Science 1 observing program in December 2010.

SOFIA, the Stratospheric Observatory for Infrared Astronomy, is a joint project by NASA and the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR).

SOFIA's view combines images at mid-infrared wavelengths of 19.7 microns (green) and 37.1 microns (red). The latter wavelength cannot be accessed by any telescope on the ground or currently in space. Detailed structures in the clouds of star construction material can be seen, as well as warm clouds of dust and gas surrounding, and partly obscuring, a cluster of luminous new-born stars at the upper right.

The left and centre panels of the three-image comparison have the same scale and orientation as the SOFIA image.

The image in the left panel, made at wavelengths visible to the human eye, shows dense clouds of interstellar dust blocking our view into parts of the star forming region, plus the rosy glow of hydrogen gas excited by radiation from the young stars just above the centre of the image.

In the centre panel, the near-infrared image penetrates some of the dust and reveals numerous stars at various stages of formation, embedded inside the clouds.

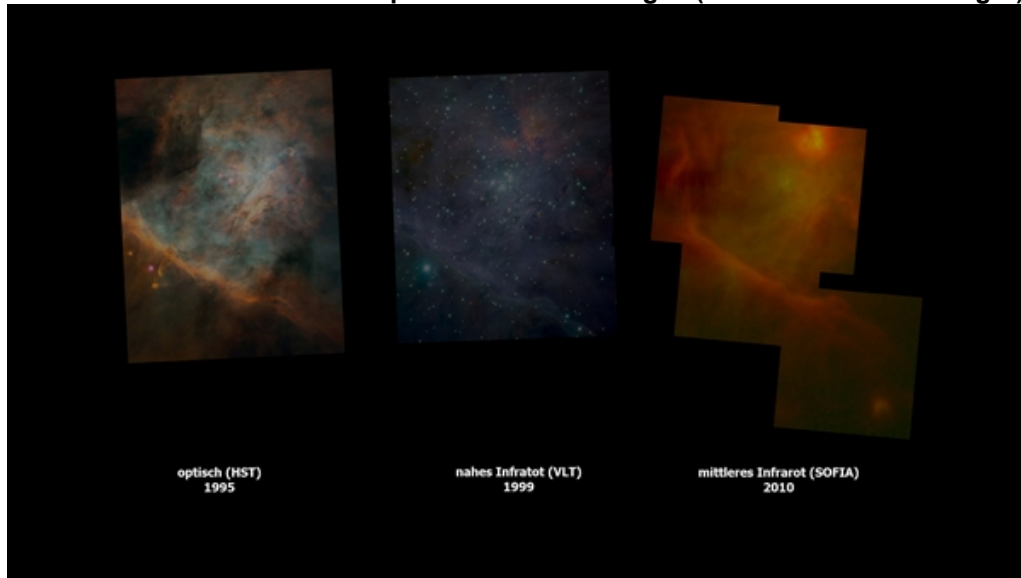
SOFIA's observations reveal distinctly different aspects of the M42 star formation complex than the other images. For example, the dense dust cloud at the upper left is completely opaque in the visible-light image, partly transparent in the near-infrared image, and is seen shining with its own heat radiation in the SOFIA mid-infrared image. The hot stars of the Trapezium cluster are seen just above the centres of the visible-light and near-infrared images, but they are almost undetectable in the SOFIA image. At the upper right, the dust-embedded cluster of high-luminosity stars that is the most prominent feature in the SOFIA mid-infrared image is less apparent in the near-infrared image and is completely hidden in the visible-light image.

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The Orion Constellation – comparison of three images (SOFIA/FORCAST at right)



This mid-infrared mosaic image from the SOFIA airborne observatory (right panel) offers new information about processes of star formation in and around the nebula Messier 42, in the constellation Orion. The image data were acquired using the Faint Object Infrared Camera for the SOFIA Telescope, or FORCAST, (principal investigator: Terry Herter, Cornell University) during SOFIA's Short Science 1 observing program in December 2010.

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Credit: Left: NASA/ESA/HST/STScI/O'Dell & Wong; Center: Visible-light image (left): NASA/ESA/HST/AURA/STScI/O'Dell & Wong; Near-IR image (centre): ESO/McCaughrean et al.; Mid-IR image (right): NASA/DLR/SOFIA/USRA/DSI/FORCAST Team.

SOFIA, the Stratospheric Observatory For Infrared Astronomy



SOFIA, the Stratospheric Observatory For Infrared Astronomy, during the first test flight with the telescope door fully open, on 18 December 2009 over the Mojave Desert in California. The 2.5 metre telescope, built in Germany, is visible in the opening in the fuselage of this Boeing 747SP. The test flight with the door open helped engineers examine, for the first time under experimental conditions, the movement of air in and around the telescope and the door.

Credit: NASA/C. Thomas.

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