



SO FIA

STRATOSPHERIC OBSERVATORY FOR INFRARED ASTRONOMY



EXPLORING THE INFRARED UNIVERSE

SOFIA's Mission

Many objects of interest to astronomers emit most of their energy in the infrared portion of the electromagnetic spectrum. Ground-based telescopes, however, can detect only limited amounts of infrared radiation because most of it is absorbed by water vapor in the Earth's atmosphere. Cruising at altitudes of 39,000 ft (12 km) or higher, SOFIA operates above more than 99% of the water vapor, enabling it to make observations that are impossible for even the largest and highest ground-based telescopes.

SOFIA will help astronomers learn more about the birth of stars, the formation of planetary systems, the compositions and histories of comets and asteroids, the origin of complex molecules in space, how galaxies form and evolve, and the nature of the mysterious black holes lying at the centers of some galaxies including our own.

A Unique Airborne Observatory

SOFIA's extensively modified Boeing 747SP aircraft carries a telescope with an effective diameter of 2.5 meters (100 inches) into the stratosphere, the world's largest and most sensitive airborne observatory. Peering out through an open cavity in the side of the aircraft, the telescope allows astronomers to obtain sharper infrared images than ever before. The astronomers, technicians, engineers and flight crews work in a comfortable environment during a typical eight-to-ten hour flight.



Scientists and technicians participate in nighttime observations with Cornell University's FORCAST mid-infrared camera mounted on SOFIA's telescope. (NASA Photo / Tom Tschida)

The SOFIA Team

SOFIA is a joint project of NASA and the German Aerospace Center (DLR). SOFIA's science mission is managed for NASA by a team of universities, corporations, and private non-profit institutions. The Universities Space Research Association (USRA), headquartered in Columbia, Maryland, and the German SOFIA Institute (DSI) at the University of Stuttgart conduct SOFIA's science mission for NASA and the DLR. Scientists from NASA's Ames

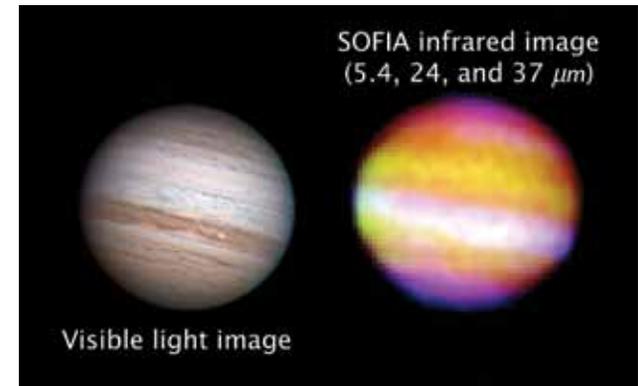
Research Center, USRA, and several universities are working to develop SOFIA's specialized instruments and conduct its scientific mission. SOFIA's education and public outreach programs are managed by an alliance of the SETI Institute and the Astronomical Society of the Pacific.

The SOFIA Telescope

SOFIA's telescope was designed and built for the DLR by a consortium of Germany's leading aerospace companies — Kayser-Threde GmbH and MAN Technologie AG. Development, testing, and operations support for the telescope and associated systems is managed by the DSI.

Observatory Operations

SOFIA is based at NASA's Dryden Aircraft Operations Facility (DAOF) adjacent to the Palmdale airport in southern California. The SOFIA Science Center (SSC) is housed at NASA's Ames Research Center in northern California. These two facilities cooperate to support the aircraft and all the scientists, engineers, technicians, air crews, and educators required to manage SOFIA's mission and operate the aircraft, telescope, computers, and scientific instruments. SOFIA is expected eventually to provide astronomers from all over the world with up to 120 research flights per year.



Infrared image of Jupiter from SOFIA's First Light flight composed of individual images at wavelengths of 5.4 (represented by blue), 24 (green), and 37 microns (red) made by Cornell University's FORCAST camera. A visual-wavelength picture of approximately the same side of Jupiter taken a few weeks earlier is shown for comparison. The white stripe in the infrared image is a region of relatively transparent clouds through which the warm interior of Jupiter can be seen. (Visual image credit: Anthony Wesley; IR image credit: NASA/DLR/USRA/DSI/FORCAST Team)

More Information

To find out the latest about SOFIA, visit the Science Center web site at www.sofia.usra.edu

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