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## First scientific flight for the SOFIA airborne observatory

*01 December 2010*

The Stratospheric Observatory for Infrared Astronomy, SOFIA, a joint project of NASA and the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR), has commenced scientific operations. SOFIA took off on its first scientific observation flight on 30 November 2010 at 19:34 hrs local time, from the NASA Dryden Aircraft Operations Facility in Palmdale, California. The subject of the night-time observations was the constellation of Orion, with its numerous, interesting star forming regions. The water vapour in Earth's atmosphere does not allow infrared light to pass through, making these observations carried out with SOFIA impossible from the ground.

SOFIA landed back in Palmdale on 1 December 2010 at 5:28 hrs local time (14:28 CET). On board were lead scientist Terry Herter and his colleagues from Cornell University, Ithaca, with their highly sensitive infrared camera, the Faint object infrared camera for the SOFIA Telescope, FORCAST, which can capture data in the spectral range between 5 and 40 microns. This first image from the first science flight shows the constellation of Orion, as seen by FORCAST. "The first science flight shows that the SOFIA observatory works very well. And it demonstrates the excellent collaboration between the US and German partners and the intense work of the teams during the last few weeks," said Alois Himmels, SOFIA Project Manager at DLR.

### **A unique and versatile tool to study the universe**

"These initial scientific flights are meant to test SOFIA's potential and to demonstrate the performance capabilities of this globally-unique airborne observatory," explains Professor Alfred Krabbe, Head of the German SOFIA Institute at the University of Stuttgart. Herter was able to observe Orion for about 35 minutes during this first night of observation. After another two flights, due to take place in the next few days, efforts will be concentrated on analysing the data with his colleagues and they will soon be able to present the first scientific findings from SOFIA. Terry Herter is already clear about one thing: "SOFIA is a remarkable infrared telescope."

The start of scientific observations marks SOFIA's transition from a test platform to a fully-fledged flying observatory. "From now on, astronomers around the world will have a unique and versatile tool to study the universe with," says Alois Himmels. Scientific operations are planned to last 20 years. Under the leadership of Rolf Güsten from the Max-Planck Institute for Radio Astronomy in Bonn, the German receiver for astronomy at terahertz frequencies, GREAT, is due for its first mission on SOFIA in early March 2011. Two more flights are expected shortly thereafter.

The SOFIA observations demonstrate the power of this observatory, such as its capacity to explore a wide area of the electromagnetic spectrum. "We can use SOFIA and GREAT to study the astrochemical properties of the interstellar medium in bright star formation regions by detecting particular molecular lines," explains Hans Zinnecker, Deputy Director of the SOFIA Science Center at the NASA Ames Research Center, Moffett Field, California.

### **About SOFIA**

The mission consists of a 2.5-metre telescope built into a modified Boeing 747SP, designed for astronomical observations in the infrared and sub-millimetre wavelength range, high above the interference of Earth's atmosphere. The main objective is to research the development of galaxy systems and the formation and evolution of stars and planetary systems from interstellar molecular and dust clouds.

SOFIA, the Stratospheric Observatory for Infrared Astronomy, is a joint project of the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) and the National Aeronautics and Space Administration, NASA. The project is being carried out under the auspices of DLR, with funds provided by the German Federal Ministry of Economics and Technology (Bundesministerium für Wirtschaft und Technologie; BMWi) under a resolution passed by the German Parliament, and with funding from the State of Baden-Württemberg and the University of Stuttgart. On the German side, the scientific operations are coordinated by the German SOFIA Institute (Deutsches SOFIA Institut; DSI) at University of Stuttgart, and on the American side by the Universities Space Research Association (USRA). The development of the German instruments is being financed by the Max-Planck Society (Max-Planck-Gesellschaft; MPG) and the German Research Foundation (Deutsche Forschungsgemeinschaft; DFG).

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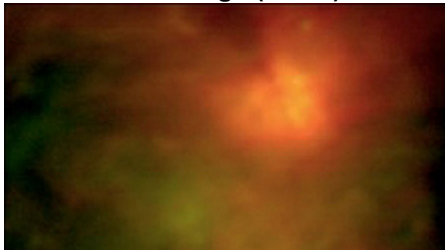
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## **Orion mid-IR image (detail)**



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Credit: NASA/DLR/SOFIA/USRA/DSI/FORCAST Team.

## The Stratospheric Observatory For Infrared Astronomy, SOFIA



The Stratospheric Observatory For Infrared Astronomy, SOFIA, during its first test flight with its telescope exposed, on 13 July 2010. The German-built 2.5-metre infrared telescope is visible through the opening in the aircraft.

Credit: NASA/Jim Ross.

## SOFIA high above the NASA Dryden Aircraft Operations Facility in Palmdale



SOFIA above its base, a hangar at the NASA Dryden Aircraft Operations Facility (DAOF) in Palmdale, California (front/right).

Credit: NASA.

**Made in Germany: the 2.5-metre infrared telescope in the fuselage of the Boeing 747SP**



SOFIA during test observations of the night sky in March 2008. The opening in the fuselage of the converted Boeing 747SP provides a glimpse of the 2.5-metre infrared telescope, built in Germany.

Credit: NASA.

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