SOFIA Begins 2015 Southern Hemisphere Science Flights

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Credit: NASA/SOFIA/USRA/ASP/N. Veronico

NASA's Stratospheric Observatory for Infrared Astronomy, SOFIA, departed from Christchurch, New Zealand at 6:20 pm local time June 19 for the first of 15 planned Southern Hemisphere deployment science flights.

For the next five weeks SOFIA will operate from the U.S. National

Science Foundation's Antarctic Program facility at Christchurch International Airport. Flying out of New Zealand enables SOFIA to study celestial objects that are more easily observed, or can only be observed, from southern latitudes.

"SOFIA's 2013 deployment to New Zealand and the resulting observations were of great scientific value," said Eddie Zavala, SOFIA program manager. "Our research staff and guest investigators have been looking forward to building on that success with our return to the Southern Hemisphere this month."

During this deployment, five cameras and spectrographs will be used: the Faint Object infraRed CAmera for the SOFIA Telescope (FORCAST) and the German REceiver for Astronomy at Terahertz Frequencies (GREAT) for a total of 15 flights, plus the First Light Infrared TEst CAMera (FLITECAM), the High Speed Imaging Photometer for Occultations (HIPO), and the Focal Plane Imager (FPI) in ensemble during one flight to observe a stellar occultation by Pluto.

"Many of the observations planned for this deployment are aimed at studying the formation of massive stars," said Pamela Marcum, SOFIA's Project Scientist. "Massive protostars are rare, so even the nearest examples are more than a thousand light years away. SOFIA's large telescope enables astronomers to resolve distant groups of such stars, allowing uniquely detailed observations of them and the material that surrounds them."

"We are also interested in the other end of the stellar life cycle," noted Dana Backman, astronomer and manager of SOFIA's Outreach programs. "During late stages, many stars develop intense winds, ejecting large amounts of their material into surrounding space. As those winds cool, some of the gas condenses into dust particles. The gas and dust are recycled into the interstellar medium, adding to the raw material

for subsequent generations of stars and planets. Researchers want a more complete understanding of how that all happens."

Observing from the Southern Hemisphere also enables SOFIA to view the Magellanic Clouds, two satellite galaxies of the Milky Way Galaxy that have had fewer generations of stars, and therefore contain smaller proportions of heavy elements, than our own galaxy. Comparing star formation and stellar evolution in the Magellanic Clouds versus the Milky Way can help refine an understanding of how the earliest generations of stars in the Universe formed from gas containing little or no heavy elements.

FLIPO and the FPI are expected to observe Pluto as it passes in front of a background star on June 29. That occultation event is fortuitously soon before the New Horizons spacecraft's closest approach to Pluto on July 14. The near-coincidence of observations by SOFIA and New Horizons could provide investigators with a singular opportunity to link the fly-by spacecraft's "snap shot" measurements with an ongoing Earth-based research program monitoring long-term changes in Pluto's atmosphere.

SOFIA is scheduled to return to the United States on July 24.

Provided by NASA