



SOFIA Southern Deployment Fact Sheet

NASA's airborne observatory, SOFIA, is scheduled to make 9 science flights during its three-week deployment to Christchurch, New Zealand (July 12-Aug. 2, 2013).

SOFIA will deploy with approximately 60 staff members (ground and flight crew, mission operations staff, science team).

The observatory will depart the Dryden Aircraft Operations Facility at Palmdale, Calif., on July 12 and fly to Honolulu for a flight crew change, then on to Christchurch, New Zealand.

During SOFIA's Southern Deployment, the observatory will exclusively use the German REceiver for Astronomy at Terahertz Frequencies (GREAT), a dual channel, infrared heterodyne spectrometer. GREAT was developed by a consortium of German science institutions, led by Rolf Guesten and Stefan Heyminck from the Max-Planck-Institute for Radio Astronomy, Bonn, Germany.

GREAT works like a very high frequency radio receiver detecting light waves rather than light particles. Observations are made between 60 and 200 microns in three different frequencies:

- Low-frequency to map fine structure lines of ionized nitrogen and carbon
- Mid-frequency to study deuterated molecular hydrogen
- High-frequency to examine the transition of atomic oxygen at 63 microns

More information on GREAT can be found at:

http://www.sofia.usra.edu/Science/instruments/instruments_great.html

More than two-dozen unique astronomical targets will be imaged during these flights, the results of which will be released in approximately one year, after they have gone through the peer-review publication process. Below is a list of targets to be observed, and please note the following:

- Lists for each flight include only targets new with that flight, not objects observed on previous deployment flights.

- Nomenclature note #1: the Large Magellanic Cloud (LMC) and Small Magellanic Cloud (SMC) are satellite galaxies orbiting the Milky Way Galaxy, visible only from the southern hemisphere, first reported to Europeans by Ferdinand Magellan.
- Nomenclature note #2: UCHIIR = Ultracompact HII (H + Roman numeral II) Region, a small, dense cloud of ionized hydrogen, often found surrounding a single massive protostar, but can also be a young supernova remnant. Objects listed below with "G" catalog designations are UCHIIRs discovered by a radio telescope survey of the Milky Way.

Media contacts during the deployment can be found at:
<http://www.sofia.usra.edu/News/media/NZ/contacts.html>

----- Flight 1 -----

Flight ID: 2013/07/17

Leg 4: Sgr B2 (Sagittarius B2) – monster molecular cloud and star formation complex near the Galactic Center, in the vicinity of the Quintuple Cluster (also scheduled in Flight 3).

Leg 5: W31C – another monster molecular cloud and star formation complex near the Galactic Center

Leg 6: G29.96-0.2 – UCHIIR in the Milky Way

Leg 7: N25-1 – planetary nebula (i.e., a cloud of material expelled by a dying medium-mass star) in the LMC (also scheduled in Flight 4)

Leg 8: 30 Dor (30 Doradus) - aka the Tarantula Nebula, located in the LMC; this is the largest known star-forming region (also scheduled in Flight 5)

Leg 9: Sgr A – Center of the Galaxy (also scheduled in Flight 2)

----- Flight 2 -----

Flight ID: 2013/07/18

Leg 4: G357.7-H2peak – UCHIIR, supernova remnant nebula; object label indicates molecular hydrogen has been detected there

Leg 5: kes69-H2peak – UCHIIR, supernova remnant nebula; object label indicates molecular hydrogen has been detected there (also scheduled in Flight 7)

Leg 6: G23.21+0.13 – UCHIIR in the Milky Way

Leg 7: N88-1 - UCHIIR in the SMC

Leg 9: NII_G358.20+0.0 – UCHIIR; object label indicates ionized nitrogen is detected there (also scheduled in Flights 3, 4, and 5)

----- Flight 3 -----

Flight ID: 2013/07/19

Leg 5: M17SW (Messier 17 Southwest) – aka the Omega Nebula, big star forming region near the center of the Galaxy.

Leg 6: N11-D-CO-1 – UCHIIR in the Large Magellanic Cloud; Cloud; the object label indicates carbon monoxide molecules have been detected there (also scheduled in Flight 7). (Highest-ranked U.S. proposal for GREAT.)

----- Flight Number 4 -----

Flight ID: 2013/07/22

Leg 5: G358.50+0.25 – UCHIIR in the Milky Way (also scheduled in Flight 5)

Leg 6: Carina G287.84-0.82 – UCHIIR in the Milky Way

Leg 7: G34.3+0.1 - UCHIIR in the Milky Way

Leg 8: G34.26+0.13 - UCHIIR in the Milky Way (also scheduled in Flight 7)

Leg 9: G35.20-0.74 – UCHIIR in the Milky Way (also scheduled in Flight 5)

----- Flight 5 -----

Flight ID: 2013/07/23

Leg 7: I16293A – solar-mass protostar with organic molecules in the surrounding cloud

Leg 8: G327.29 - UCHIIR in the Milky Way (also observed in Flight 7)

----- Flight 7 -----

Flight ID: 2013/07/28

Leg 4: Saturn – to be observed as a bright test source to check instrument and telescope alignment after an engineering flight.

Leg 6: W49B - supernova remnant near the Galactic Center

Leg 8: G351.58 - UCHIIR in the Milky Way

Leg 10: G330.95= - UCHIIR in the Milky Way

Leg 11: G332.83 - UCHIIR in the Milky Way

----- Flights 6, 8, & 9 -----

Flights 6, 8, and 9 are combinations of engineering and German consortium science flights. Targets slated for this flight are proprietary to the GREAT instrument team.

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