

## **SOFIA observatory performance and characterization**

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### ABSTRACT

The Stratospheric Observatory for Infrared Astronomy (SOFIA) has recently concluded a set of engineering flights for Observatory performance evaluation. These in-flight opportunities have been viewed as a first comprehensive assessment of the Observatory's performance and will be used to address the development activity that is planned for 2012, as well as to identify additional Observatory upgrades. A series of 8 SOFIA Characterization And Integration (SCAI) flights have been conducted from June to December 2011. The HIPO science instrument in conjunction with the DSI Super Fast Diagnostic Camera (SFDC) have been used to evaluate pointing stability, including the image motion due to rigid-body and flexible-body telescope modes as well as possible aero-optical image motion. We report on recent improvements in pointing stability by using an Active Mass Damper system installed on Telescope Assembly. Measurements and characterization of the shear layer and cavity seeing, as well as image quality evaluation as a function of wavelength have been performed using the HIPO+FLITECAM Science Instrument configuration (FLIPO). A number of additional tests and measurements have targeted basic Observatory capabilities and requirements including, but not limited to, pointing accuracy, chopper evaluation and imager sensitivity. SCAI activities included in-flight partial Science Instrument commissioning prior to the use of the instruments as measuring engines. This paper reports on the data collected during the SCAI flights and presents current SOFIA Observatory performance and characterization.