

Stratospheric Aerosol and Gas Experiment III Advanced Capabilities – Spectral Survey

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The Stratospheric Aerosol and Gas Experiment III (SAGE III) was installed on the International Space Station (ISS) in March 2017. Since achieving first light on 17 March 2017, SAGE III has taken solar occultation, lunar occultation, and limb scattering measurements as part of its primary and secondary mission objectives. These measurements provide exceptionally stable observations of ozone, aerosol, and other trace gases through the atmosphere ranging from the troposphere to the mesosphere. In addition to these products, SAGE III on ISS has additional capabilities owing to a highly configurable Charge Coupled Device (CCD) Controller (CCDC). The programmable CCDC allows for rapid mode switching including a mode capable of reading the full wavelength registration of the CCD from 282 nm to 1038 nm at an approximate 1 nm resolution. This mode has been utilized on orbit numerous times since first light, and thus far has been used for wavelength calibration and to inform potential increases in signal-to-noise. However, cursory investigations into additional species collection opportunities are in progress as well. An initial look at the opportunities present in the SAGE III data through the experimental spectral survey mode are presented.