



First results from the Orbiting Carbon Observatory pre-flight instrument tests

C. Miller (1), D. Crisp (1), R. Pollock (2), C. Bruegge(1), D. Rider (1), D. O'Brien (3), I. Polonsky (3), and the OCO Team

(1) Jet Propulsion Laboratory, California Institute of Technology Pasadena CA USA
(Charles.E.Miller@jpl.nasa.gov/ +1 818 393 6294)

(2) Hamilton Sundstrand, Pomona CA USA

(3) Dept. of Atmospheric Sciences, Colorado State University Pomona CA USA

The Orbiting Carbon Observatory (OCO) flight instrument underwent its pre-flight First Light tests in September 2007. The primary purpose of these tests was to set the spectrometer focus prior to final assembly, but they also provided insight into the end-to-end performance of the flight instrument and the ground support equipment being developed for the comprehensive performance tests. The overall instrument performance was also demonstrated by directing sunlight into the test chamber and recording atmospheric spectra of CO₂ and O₂. Comprehensive performance testing of the OCO flight instrument started in January 2008. These tests will calibrate and characterize the instrument's radiometric, spectral, and spatial performance and provide all necessary parameters to generate calibrated radiances and characterize the near and far wings of the instrument line shape for each detector element. Comparisons of the as-built instrument performance with the design specifications showed significant margins in most parameters that are critical to accurate X_{CO_2} retrievals. End-to-end instrument performance was verified by recording atmospheric solar spectra with the flight instrument and comparing them to spectra recorded simultaneously from a collocated ground-based high-resolution Fourier transform spectrometer (Boesch et al., this session). Space-based measurements were simulated by measuring sunlight reflected off of a variety of surface targets. These results indicate that the instrument meets or

exceeds its design objectives and will provide excellent data for X_{CO_2} retrievals.