Abstract Details

<u>AOGS 1st Annual Meeting</u> > <u>Biogeoscience</u> > CO2 Measurements from Space: The Orbiting Observatory (OCO) >

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Category: Biogeoscience

- **Paper ID:** 57-OBG-A1382
 - Title: CO2 Measurements from Space: The Orbiting Carbon Observatory (C

Abstract:

NASA@s Orbiting Carbon Observatory (OCO) will make the first spac measurements of atmospheric carbon dioxide (CO2) with the precisio resolution, and coverage needed to characterize the geographic distri of CO2 sources and sinks and quantify their variability. OCO is schedu launch in late 2007. It will carry a single instrument that incorporates high-resolution grating spectrometers designed to measure the nearabsorption by CO2 and molecular oxygen (O2) in reflected sunlight. S taken in the CO2 bands near 1.61 and 2.06 \Box m will provide constrair the CO2 column abundance. Simultaneous measurements in the 0.76 O2 A-band will provide accurate estimates of surface pressure as well constraints on clouds and aerosols. These spectra will be analyzed wit remote sensing retrieval algorithm to yield spatially-resolved estimate column-averaged CO2 dry air mole fraction, XCO2. The primary adva space-based XCO2 measurements is their global coverage and dense sampling. OCO will fly about 10 minutes ahead of the EOS Aqua platf the Earth Observing System (EOS) Afternoon Constellation (A-Train). ~1:20 PM equator crossing time ensures that OCO will share its grou with Aqua. The orbit's 16-day repeat cycle facilitates monitoring XCO. variations on regional scales at semi-monthly intervals. To characteriz even in the presence of patchy clouds, the instrument records 8 soun along a 0.8 wide cross-track swath at 3 Hz, yielding a nadir footprir of ~3 km2. OCO will collect science observations in Nadir, Glint, and 1 modes. Nadir soundings provide the highest spatial resolution and are expected to return more useable soundings in regions that are partial cloudy or have significant surface topography. In Glint mode, the space points the instrument toward the bright **o**glint**o** spot, where solar rac is specularly reflected from the surface. Glint measurements should p much higher signal to noise ratios over the ocean. OCO will switch fro to Glint modes on alternate 16-day global ground track repeat cycles the entire Earth is mapped in each mode on roughly monthly time sca Finally, Target mode will be used to observe specific stationary surfac targets as the satellite flies overhead. Target passes will be conducted each OCO calibration site at monthly intervals. This presentation will summarize other aspects of the mission design, retrievals algorithms, validation approach.

Presentation Mode: Oral