

Launch and Early Operations of the National Aeronautics & Space Administration (NASA) Orbiting Carbon Observatory-2

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The Orbiting Carbon Observatory – 2 (OCO-2) is scheduled to launch from Vandenberg Air Force Base in California on a Delta-II 7320-10 launch vehicle at 02:56:44 AM PDT (12:56:44 GMT) on 1 July 2014. OCO-2 will separate from the 2nd stage about 56.25 minutes after lift-off and begin a 10-day spacecraft checkout period. A 20-day series of orbit raising maneuvers will then be executed to insert OCO-2 at the front of the 705-km Afternoon Constellation (A-Train; Fig. 1). It will follow an orbit track that shares the same nadir ground track as the CloudSat radar and the Cloud-Aerosol Lidar & Infrared Pathfinder Satellite Observation lidar (Fig. 2). This 98.8-minute sun synchronous orbit has a 1:36:30 PM mean local time and a 16-day (233-orbit) ground track repeat cycle. The instrument optical bench and detectors will then be cooled to their operating temperatures and a ~7-day observatory check-out period will commence. OCO-2 will then start routinely collecting about 1 million soundings each day over the sunlit hemisphere. Within 90 days, calibrated, geo-located spectral radiances will start being delivered to the NASA Goddard Earth Sciences Data & Information Services Center. Initial estimates of the column averaged CO₂ dry air mole fraction, XCO₂, will start being delivered 90 days after that.

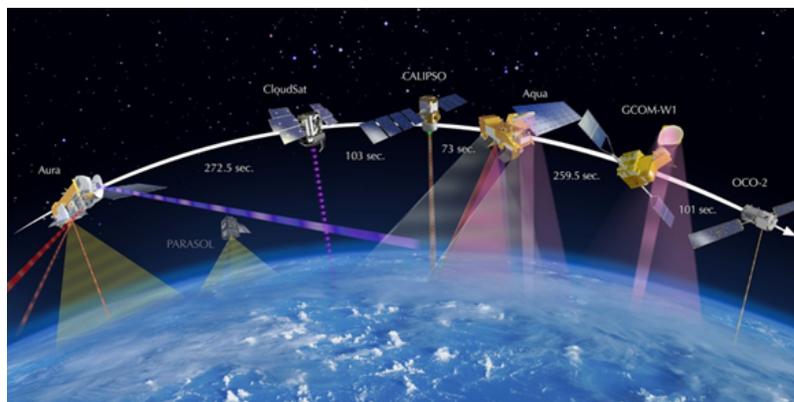


Figure 1. 705-km afternoon constellation, showing the positions and separations (in seconds) between the spacecraft.

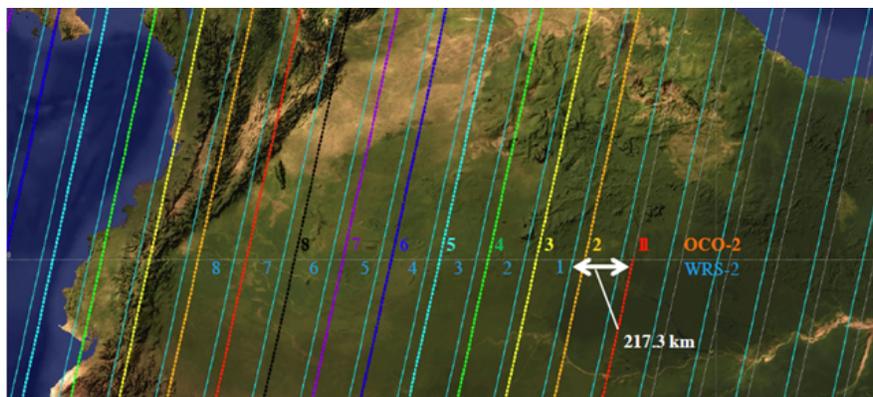


Figure 2. Map showing relationship of OCO-2 ground tracks and the Worldwide Reference System -2 paths followed by the Aqua satellite. The OCO-2 tracks are displaced eastward by 217.3 km at the equator.