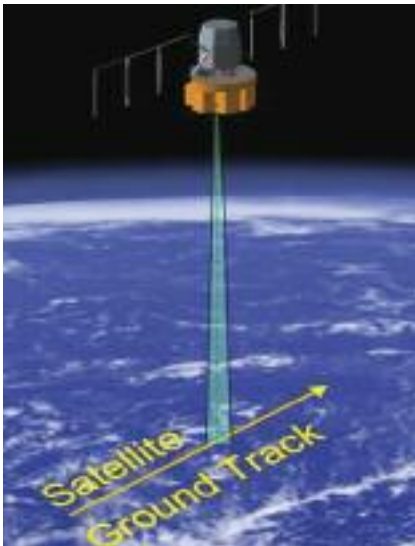




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Active Sensing of CO₂ Emissions over Nights, Days, and Seasons (ASCENDS) Remote Sensing Solutions



The proposed mission will make measurements day and night at all latitudes in all seasons of total column mixing ratio of CO₂ with sufficient precision to allow accurate determination of spatial and temporal pattern of the sources and sinks of CO₂ as defined by the Decadal Survey.¹

ITT Space Systems Division, University of New Hampshire, NASA Langley Research Center, and Atmospheric and Environmental Research (AER), Inc. has developed, validated and are operating the ASCENDS Engineering Unit. The NASA Active Sensing of CO₂ Emissions over Nights, Days and Seasons (ASCENDS) mission, on which the sensors and lidars would fly, is projected for launch in 2015.

- Measurement Technique: Laser Absorption Spectroscopy (LAS)
 - Simultaneously transmits multiple laser wavelengths across CO₂ & O₂ absorption lines in near-IR
 - CO₂, O₂ & Altimeter share receiver, telescope, signal processing
 - High precision CO₂ measurements at 1.57 μm have been obtained from aircraft engineering development units (EDU)
 - High precision O₂ measurements at 1.26 μm have been obtained from brassboard. Aircraft EDU is under development by NASA Innovative Partnership Program (IPP)
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Remote Sensing Solutions



- Pseudo-Noise (PN) encoded laser altimeter being developed under NASA Instrument Incubator Program
- Passive Sounder System includes:
 - Temperature
 - CO
 - Cloud imaging
- Aircraft-based ASCENDS-prototype LAS instrument will be used to under-fly the OCO and ASCENDS missions to provide measurements of XCO₂ along the orbital tracks for direct comparison with OCO and ASCENDS XCO₂

¹Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond, National Research Council of the National Academies.

ITT provides a full range of remote sensing and GPS navigation solutions. For further information, contact us at:

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