Mission Overview

Instrument mounted on geostationary communications satellite at 85°W centered over North and South American landmasses.

Instrument looks down, collecting reflected sunlight using a 4-Channel scanning IR spectrometer.

Scan is 2800km North-to-South in extent, and sweeps East-to-West at 39km/min. Enables multiple visits over continental-sized regions daily.

Processed data yields high precision column mixing ratios of CO₂, CH₄ from which their fluxes are computed.

Raw data and data products are calibrated and validated using ground truth from TCCON network.

Distributed data enables community-wide flux estimation and source/sink assessment.

geoCARB transforms space-based carbon science, making persistent and accurate CO₂ and CH₄ measurements at high spatial and temporal resolution over continental-sized regions.

Spectrometer’s passbands are centered at:
- 0.76 μm – O₂ / SIF
- 1.61 μm – CO₂ weak
- 2.06 μm – CO₂ strong
- 2.32 μm – CH₄ and CO
- CO₂ & CH₄ : Dominant GHGs
- CO: for Combustion Attribution
- SIF: Solar Induced Fluorescence

TCCON (Total Carbon Column Observing Network)

Primary Data Products
- Level 0: Raw Data
- Level 2: Concentration Maps (depicted) & SIF
- Level 4: Fluxes

Ground Segment is Based at NASA Ames:
- Massive Parallel Computing
- Leverages OCO-2
GeoCarb will provide OCO-2 class measurements daily and even diurnally across the domain with 3-5 km pixels (depending on longitude)
GeoCarb will provide L2 and L3 data products to the community

XCO2
XCH4
XCO
SIF

Inversions and flux results are not part of the mission baseline
GeoCarb open meeting Friday of the OCO-2 STM in Boulder, Oct 27.