

GeoCarb

GeoCarb: A New Way to Monitor Earth's Health

The Geostationary Carbon Cycle Observatory (GeoCarb) is a first-of-its-kind Earth observation mission. A collaboration between NASA, Lockheed Martin and the University of Oklahoma, it will study in unprecedented detail how the Earth breathes. It will observe factors like how the carbon cycle is changing and monitor plant health in the Americas with millions of daily observations.

Persistent observations of the most critical carbon gases – carbon dioxide and methane – and vegetation stress are needed globally, and GeoCarb will be the world's first and only geostationary satellite for greenhouse gas monitoring. This technology will also be available to interested parties or countries for their own climate monitoring needs.

TECH ONBOARD

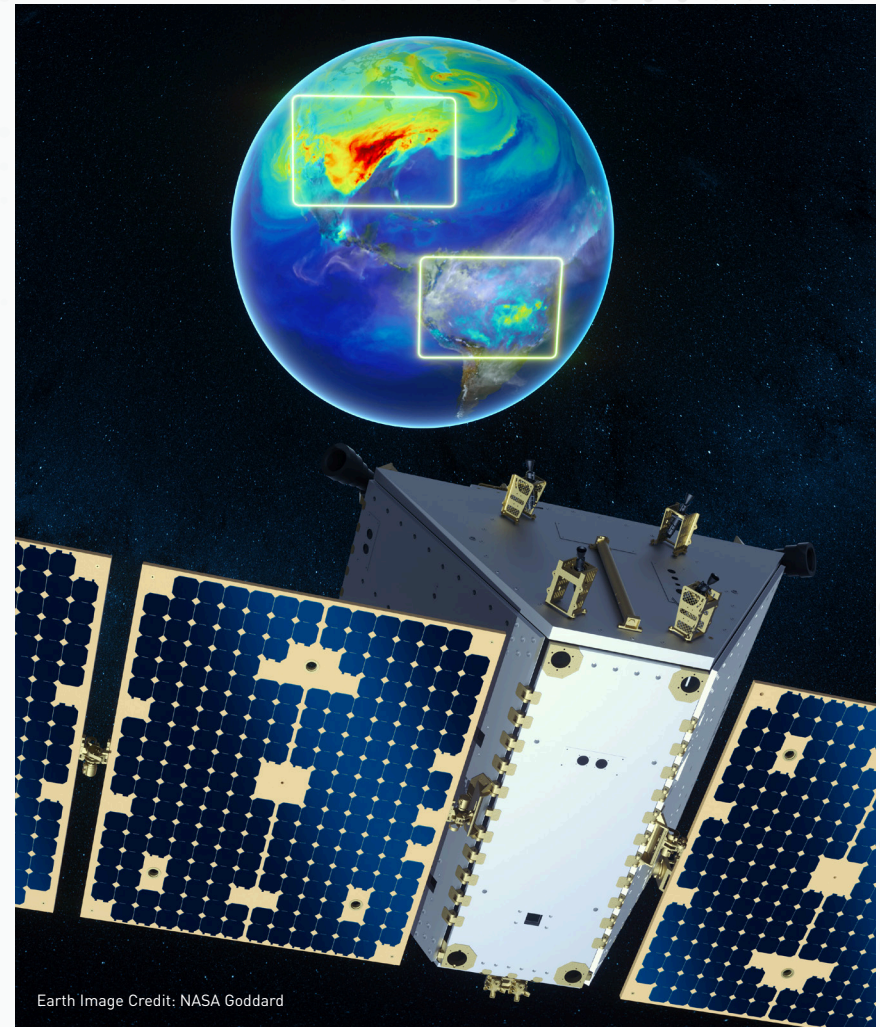
Telescope—Flexible scanning allows for focusing on critical areas of interest. For the NASA mission, this is multiple daily scans of N. America and S. America.

Spectrometer—Built by Lockheed Martin's Advanced Technology Center, a next-generation spectrometer operates across four different infrared channels, optimized to identify concentrations of carbon dioxide, methane, carbon monoxide and solar-induced fluorescence (a measure of plant health).

Instrument Autonomy—Designed to be spacecraft-agnostic and capable of commercial hosting or flying on dedicated satellites in geostationary or highly elliptical orbits.

WHAT CAN GEOCARB DO FOR YOU? SCIENCE, ECONOMICS, AND POLICY

- Track carbon sources and sinks for scientists to answer the most pressing questions about our changing planet.
- Identify and monitor greenhouse gas emissions so regulators and impact leaders can empower positive change.
- Enable informed decisions by global leaders on climate and environmental policymaking.
- Measure methane near Earth's surface, providing useful insights to the energy industry.
- Gauge health of important ecosystems by measuring solar-induced fluorescence, promoting proactive global supply chain planning among agriculturalists.
- Offer insight into the relationship between weather patterns and carbon dioxide and methane concentrations.
- Provide daily coverage to assess magnitude and variance of forest carbon sinks, a key factor in understanding humanity's contribution to Earth's carbon balance.



Earth Image Credit: NASA Goddard

GeoCarb is pictured here on an LM400 satellite bus.

BY THE NUMBERS

- Orbit: Geostationary, 65W-105W (depending on host spacecraft)
- Image Frequency: ~4,000,000 soundings per day
- Mass: 156 kg
- Dimensions: 1.3 m x 1.14 m x 1.3 m
- Data Rate: 10 Mbps
- Spectral Bands: 0.76 μ m, 1.61 μ m, 2.06 μ m, and 2.32 μ m
- Science Data: CO₂, CH₄, CO, & Solar Induced Fluorescence