

MethaneSAT: a targeted satellite

- Systematic CH₄ emission monitoring of regions accounting for > 80% of global oil and gas production
- Sun-synchronous orbit, early afternoon overpass
- Cloud-avoiding target selection

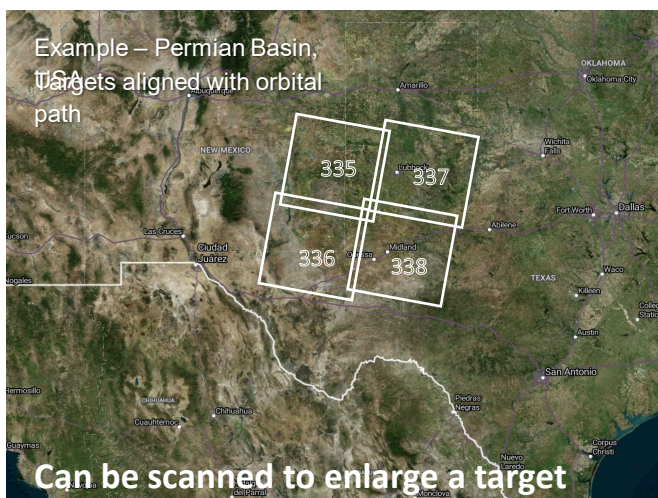


Photo by Ball Aerospace

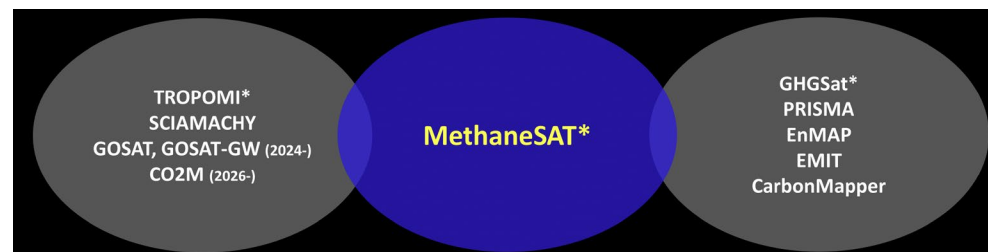
- Aggregated to 400m x 400m for most processing
- 30 targets each day
- Initial focus on oil & gas regions
- Other targets: agriculture, landfills, wetlands, urban
- Products: XCH₄ (CO₂ proxy), XCO₂ (O₂ proxy)

Instrument Specifications

O ₂ Spectral Window	1249 – 1305 nm FWHM = 0.17 nm
CH ₄ Spectral Window	1598 – 1676 nm FWHM = 0.23 nm
SNR	CH ₄ / O ₂ : 190 @ 1.4/2.0 x10 ¹³ ph/s/cm ² /sr/nm
Spatial resolution	100 x 400 km nadir
Target area	200 x 200 km ²
Orbit	525 km (descending)



MethaneSAT is designed to quantify both diffuse area emissions and point source emissions

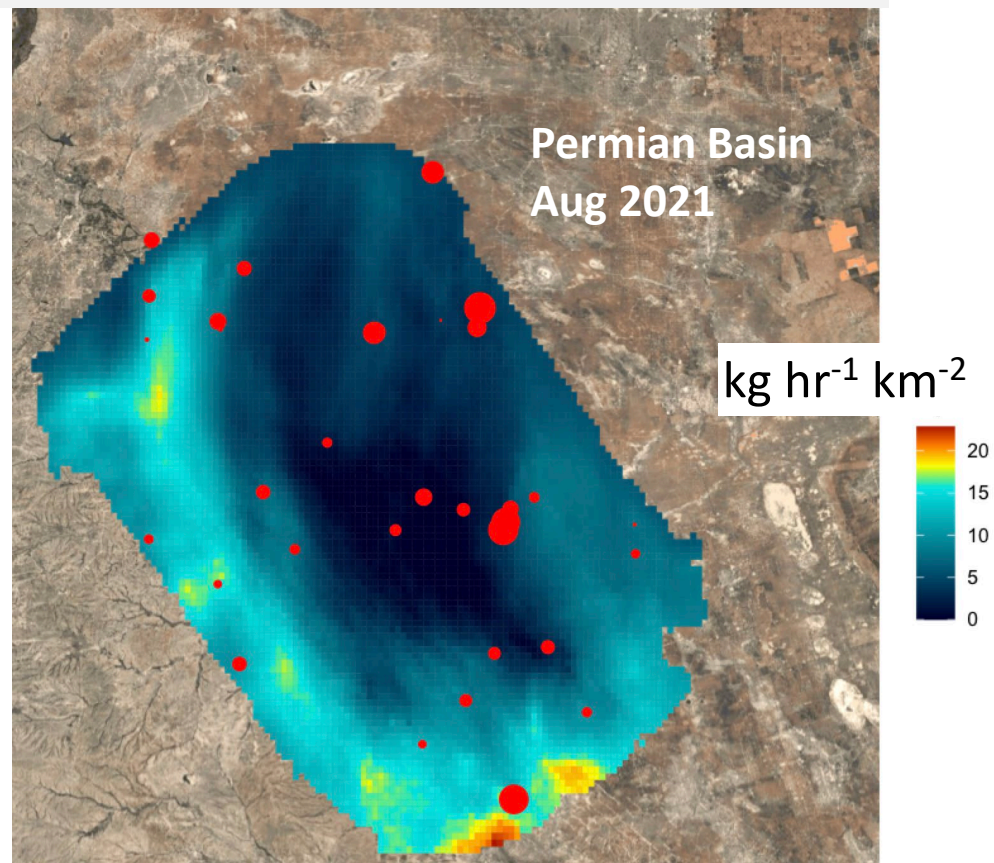
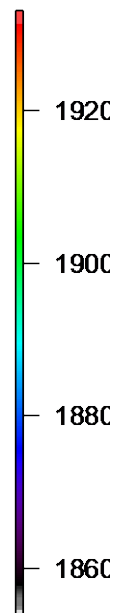
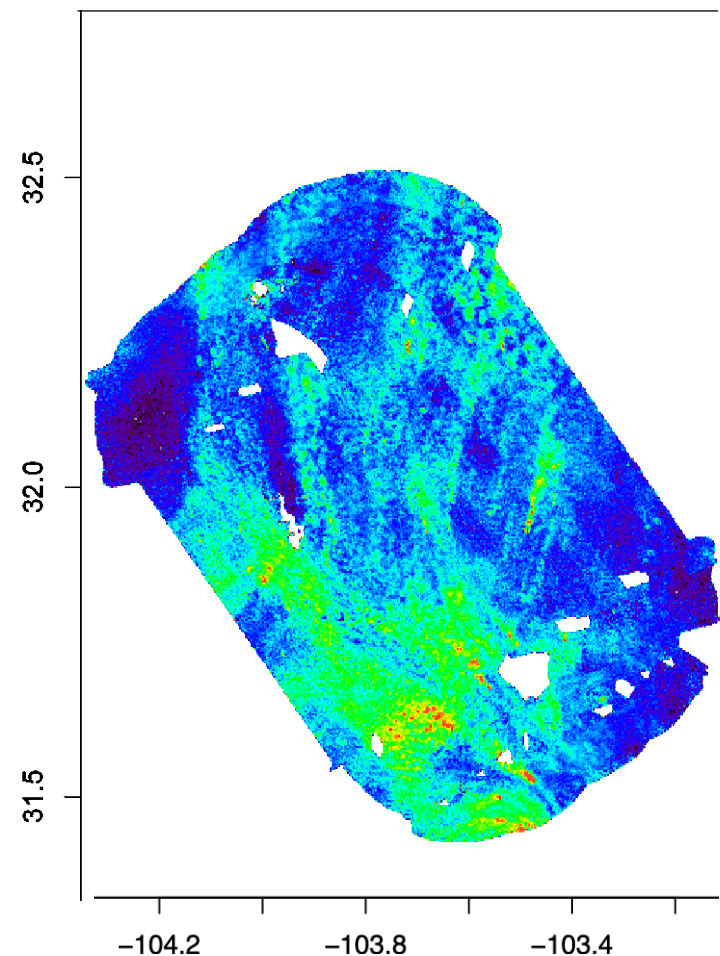


Data from MethaneAIR (airborne simulator) demonstrate the quantification of both point source and area emissions from the finely detailed concentration maps that MethaneSAT will provide.

Concentration map



Flux map



Total Point Emissions (30 plumes) : 31,100 kg/hr (15,600 - 46,700)

Total Area Emissions: 57,600 kg/hr (40,300 - 74,900)

Grand Total Emissions: 88,700 kg/hr (62,100 - 115,300)

MethaneSAT Status and Plans

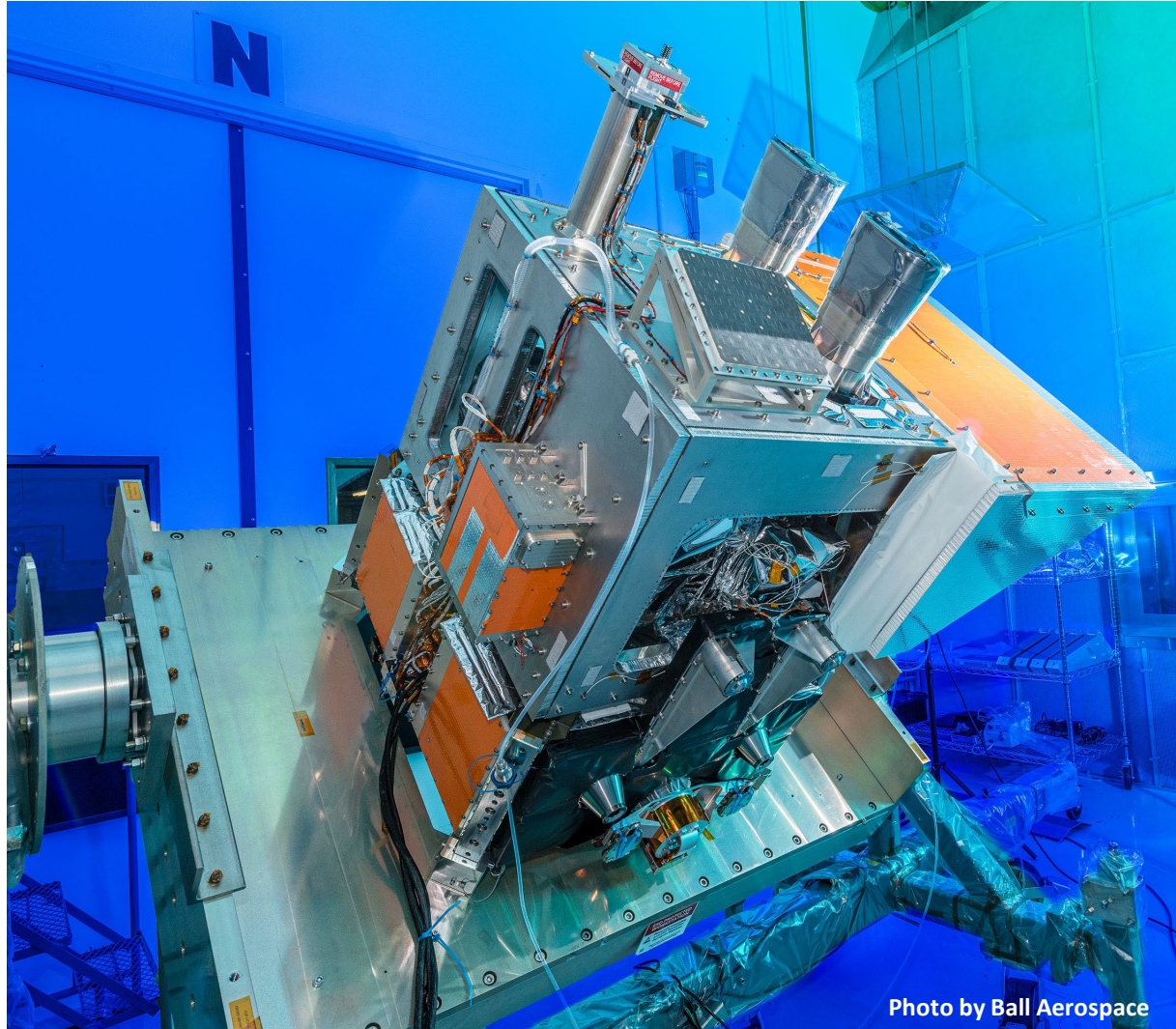


Photo by Ball Aerospace

- The MethaneSAT instrument has been integrated with its bus
- Final Thermo-vacuum (TV) tests scheduled to start next week
 - Tight schedule!
- Launch: Feb. 2024 on SpaceX T10
- First data: Launch + 3 months
- 100% open data policy