

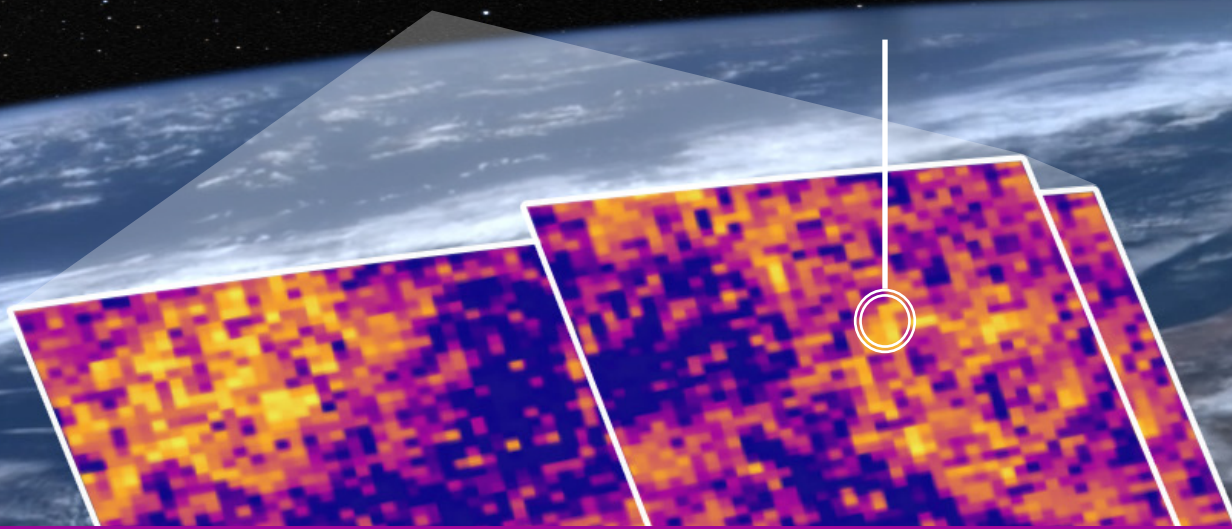
MethaneSAT will have a wide field of view along with a high level of precision and spatial resolution to find and measure small amounts of excess methane.

Area Emissions

3,240 Gigagrams / yr

Point Source Emissions

500 kg/hr



METHANE CAPABILITY

SPECIFICATION

Create high-resolution emissions heatmap of area sources (or spatially distributed emissions)

Heatmaps of 1 km² areas across targets that are 200 km x 200 km, with a native pixel size of 100m x 400m

Quantify total regional emissions

Emissions from individual oil/gas fields/basins accounting for more than 80% of global oil and gas production

Automate computations used to measure emission rates, cutting a process that can take months down to days

Actionable emission rate data will be accessible in a few days

Broad area coverage

Orbit Earth in 100 minutes, with a swath width of 200 km

Point source attribution

Trace larger single emission events back to their point source

Quantify methane concentrations with high precision

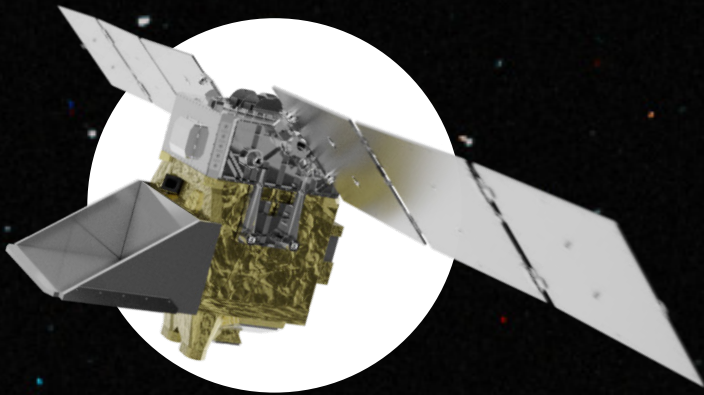
Detect excess methane at 3 parts per billion (highest precision compared to satellites currently in orbit)

Transparency

Free public data access

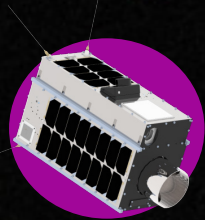
THE METHANE SATELLITE ECOSYSTEM

A complementary ecosystem of methane satellites for addressing methane emissions globally



MethaneSAT

100 m x 400 m pixels across 200 km swath
MethaneSAT will revolutionize measurement of methane emissions by detecting concentrated point sources and dispersed area sources. It quantifies total emissions - not possible with today's satellites - thus advancing the state-of-the-art and filling major data gaps globally.



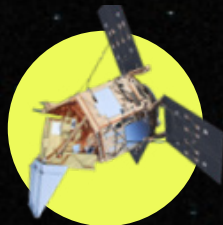
GHGSat

30 m x 30 m pixels across 10 km swath
An industry-oriented constellation of commercial point-source satellites.



PRISMA

30 m x 30 m pixels across 30 km swath
Launched by the Italian Space Agency in 2019 it combines a hyper-spectral sensor with a high-resolution camera.



TROPOMI

7,000 m x 5,500 m pixels across 2,600 km swath
European Space Agency's global mapper launched in 2017 on the Sentinel-5P satellite.



Carbon Mapper

30 m x 30 m pixels across 18 km swath
A point-source instrument launched in 2024 by a coalition of organizations together with commercial satellite provider Planet.

GLOBAL MAPPING

Global & large-scale regions
Large point sources

Tropomi, SCIAMACHY, GOSAT, GOSAT-2, CO2M

AREA MAPPING

Area sources
Point sources
Sector-wide quantification

MethaneSAT

LOCAL MAPPING

Point sources
Facility level attribution

GHGSat, PRISMA, EnMAP
GF-5, ZY-1, Carbon Mapper

TECHNICAL SPECIFICATIONS



METHANESAT

TWO PASSIVE INFRARED LITTROW SPECTROMETERS

Wavelengths	1249 - 1305 nm	1598 - 1683 nm
Target species	O ₂	CH ₄ CO ₂
Spectral resolution / sampling	0.20 nm / 0.06 nm	0.25 nm / 0.08 nm
Signal to noise ratio	190	190
Detector	HgCdTe 2k x 2k	HgCdTe 2k x 2k
Payload / Observatory mass	183 kg / 362 kg	
Orbit altitude	525 km	
Field of view / swath width	21 deg / 200 km	
Ground sampling distance	100 m across track X 400 m along track	

Along with the satellite, we will be flying similar instruments aboard a dedicated aircraft called MethaneAIR starting in mid-2023. MethaneAIR previously flew in 2021 and 2022 retrieving important methane emissions data. Data from these flights will be used to help refine our data analytics and augment our findings once MethaneSAT is launched.

METHANEAIR

TWO PASSIVE INFRARED OFFNER SPECTROMETERS

Wavelengths	1249 - 1305 nm	1595 - 1683 nm
Target species	O ₂	CH ₄ CO ₂
Spectral resolution / sampling	0.20 nm / 0.06 nm	0.25 nm / 0.08 nm
Signal to noise ratio	180	160
Detector	InGaAs 1024 x 1248	InGaAs 1024 x 1248
Payload mass	50 kg	
Flight altitude	13 km	
Field of view / swath width	24 deg / 4.6 km	
Ground sampling distance	5 m across track X 25 m along track	