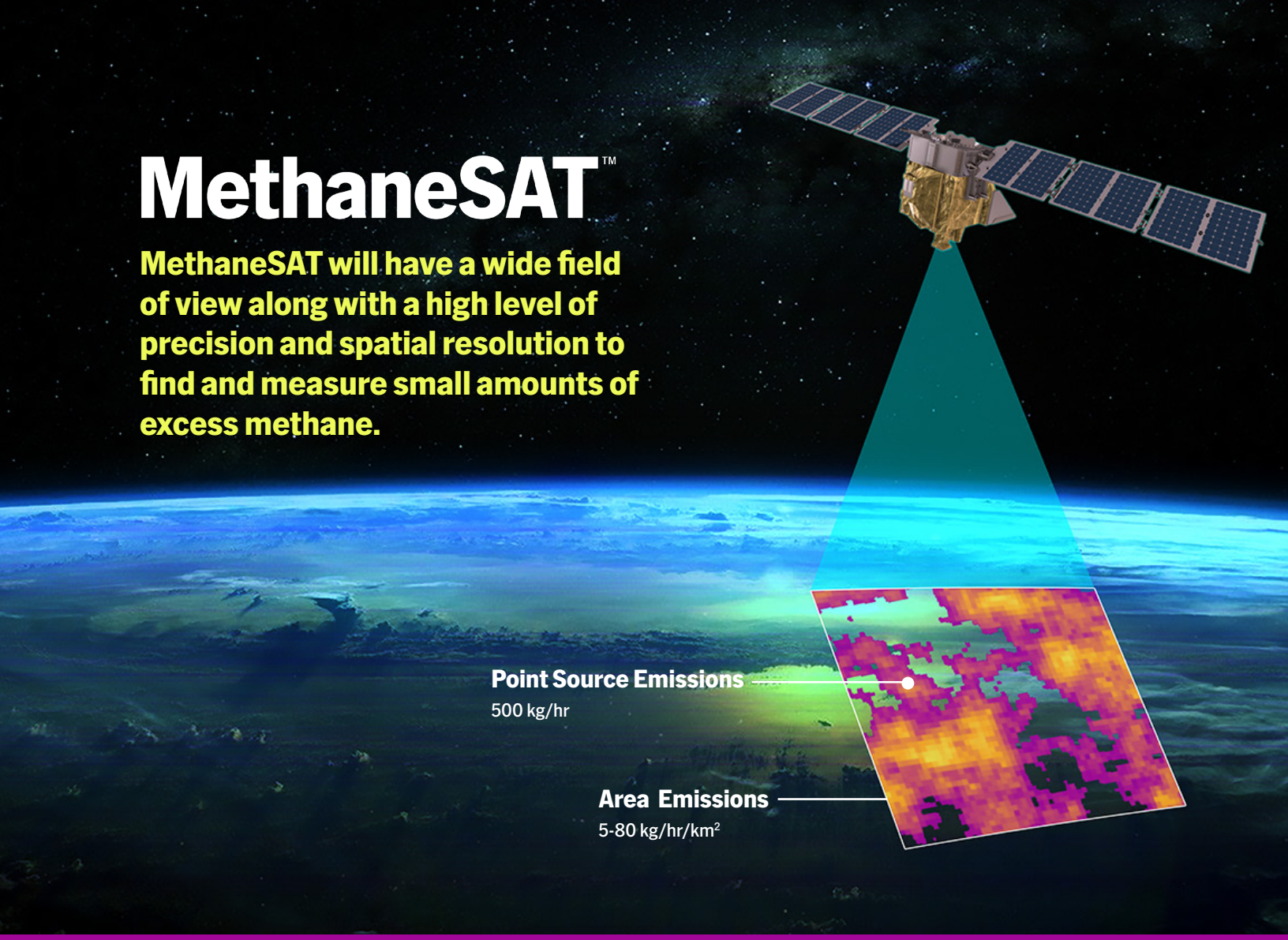
MethaneSAT™

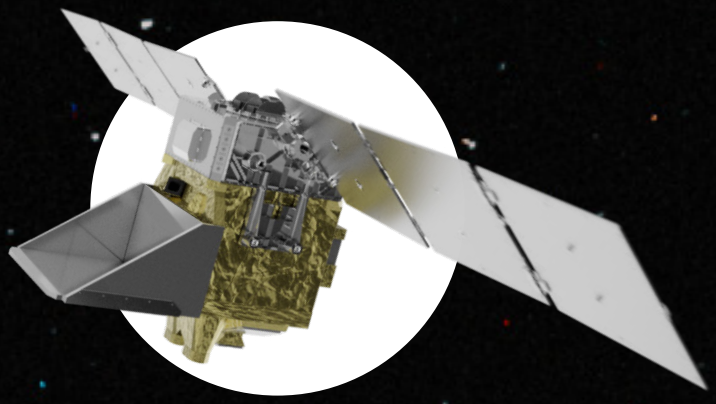
MethaneSAT will have a wide field of view along with a high level of precision and spatial resolution to find and measure small amounts of excess methane.



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 95 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

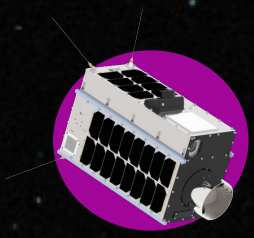
A complementary ecosystem of methane satellites for addressing methane emissions globally



MethaneSAT

100 m x 400 m pixels across 200 km swath

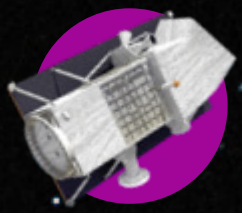
MethaneSAT will revolutionize measurement of methane emissions by detecting concentrated point sources and dispersed area sources. It quantifies total emissions – not possible with today's satellites – thus advancing the state-of-the-art and filling major data gaps globally.



GHGSat

30 m x 30 m pixels across 10 km swath

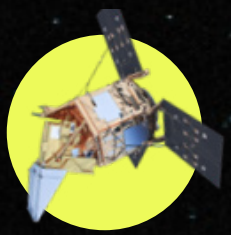
An industry-oriented constellation of commercial point-source satellites.



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.

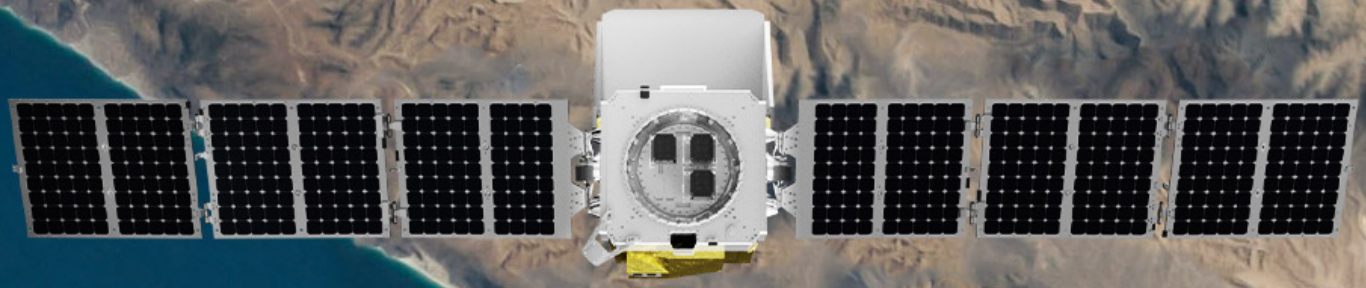
Carbon Mapper

30 m x 30 m pixels across 18 km swath

A point-source instrument announced in 2021 by coalition of organizations together with commercial satellite provider Planet, planned for launch in 2023.

GLOBAL MAPPING	AREA MAPPING	LOCAL MAPPING
Global & large-scale regions **Large point sources**	**Area sources** **Point sources** **Sector-wide quantification**	**Point sources** **Facility level attribution**
Tropomi, SCIAMACHY, GOSAT, GOSAT-2, CO2M	MethaneSAT	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	O2	CH4 CO2
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	O2	CH4 CO2
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	