

The Carbon Mapper Coalition Satellite Launch Media Kit



Contacts

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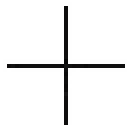
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The Carbon Mapper Coalition Satellite

Scaling up data to action on methane and CO2 super-emitters

No earlier than August 2024 at the Vandenberg Space Force Base, the first Carbon Mapper coalition satellite — called Tanager-1 developed by Planet Labs PBC with technology from NASA's Jet Propulsion Laboratory — will be launched into orbit on board the Transporter-11 Rideshare mission with SpaceX.

This is a major milestone in driving greenhouse gas emissions reductions by making methane and CO2 data accessible and actionable.

Tackling methane

Methane is more than 80 times more powerful than CO2. Reducing methane emissions is the single most effective way to rapidly slow global temperature rise.

Current approaches to measure methane and CO2 emissions at the scale of individual facilities — particularly intermittent activity — present challenges especially in terms of transparency, accuracy, scalability, and cost.

As society's window narrows to address climate change, **there is an urgent need to deploy new technologies** that can quickly and accurately measure greenhouse gas emissions across the globe while providing visibility into the exact sources of emissions.

The Carbon Mapper Coalition

This philanthropically-funded satellite program is a multi-year effort by the Carbon Mapper Coalition, a public-private partnership led by the non-profit Carbon Mapper.

Partners



Jet Propulsion Laboratory
California Institute of Technology



Funders



Grantham Foundation
for the Protection of the Environment



+ About Tanager-1

This hyperspectral satellite which is no bigger than a mini-fridge has unique observational capabilities that will empower society to take near-term action to act on large methane and CO2 emissions, slow global temperature rise, and meet targets such as the Global Methane Pledge.

Tanager-1 is optimized for point source mapping meaning **it has the ability to identify methane and CO2 emissions down to the scale of individual facilities and pieces of equipment** like leaking gas pipelines, venting coal mines, or a leak in a landfill gas capture system.

Carbon Mapper will use observations from Tanager-1 to provide transparent emissions data on its data portal, vastly scaling up the tens of thousands of plumes already available on this public platform (learn more about the data portal below).

Data from Tanager-1 will also be commercially available to Planet's customers for methane emissions monitoring plus a variety of additional use cases such as biodiversity assessments, invasive species detection, mineral mapping, and water quality assessments.

Focusing on Super-Emitters

A big near-term climate win

To tackle climate change, society needs to understand exactly where emissions are coming from on a variety of scales to support different use cases.

The Carbon Mapper Coalition's satellite is designed to fill gaps in the growing ecosystem of emissions sensing satellites and is **specifically focused on detecting, quantifying, and tracking high emissions point sources (called super-emitters) from the fossil fuel, waste, and agriculture sectors**. These are large 'bursts' of methane or CO₂ that can be intermittent or persistent and carry an outsized risk and opportunity to tackle climate change.

That's because in some places and for some sectors, **super-emitters can make up a large proportion of a basin or region's total emissions. If we can spot and act on these big sources with an outsized risk, we can make immediate progress toward our climate goals.**



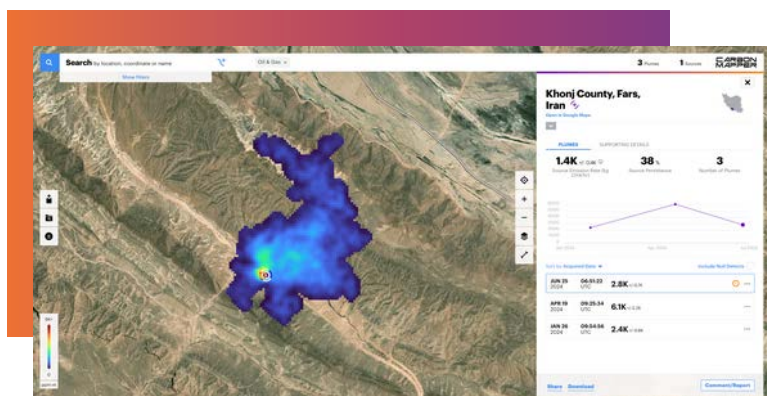
Plumes of methane and CO₂ observed by Carbon Mapper airborne surveys. Source: [Carbon Mapper data portal](#).

Examples

- Oil and gas operations are the largest source of methane emissions from the energy sector. Studies have found that on average, 20%–60% of emissions from US oil and gas basins originate from a very limited number of super-emitting sources.
- This disproportionate contribution of point sources to regional emissions has been found across many sectors including coal and waste.

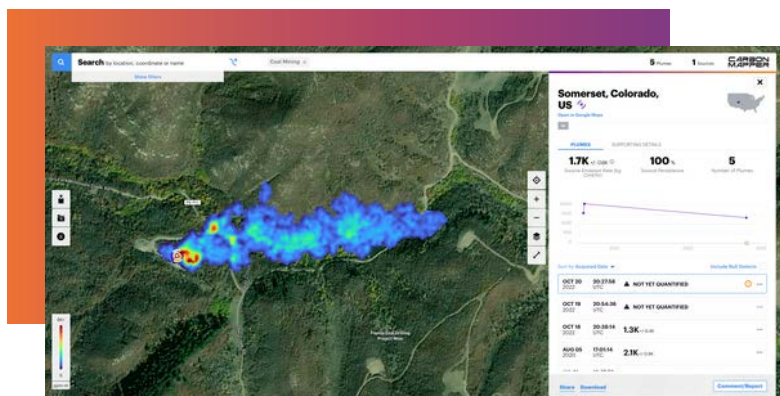
+ Detecting Emissions Across Sectors

Data and insights from Tanager-1 will help society better identify, understand, and address super-emitters across the most significant sectors, like fossil fuels, waste, and agriculture.



Oil and Gas

This sector is responsible for about 23% of global human-caused methane emissions which come from equipment malfunctions, leaks, flaring, venting, and process emissions. Our observations will spot large and potentially hazardous super-emitters, support rapid leak detection and repair, assess trends, and verify reductions for both methane and CO₂ in those high-emission sources.



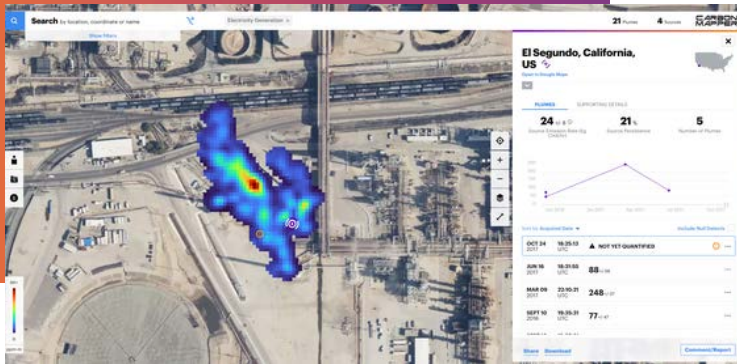
Coal

Coal venting contributes about 12% of human-caused methane emissions worldwide. Tanager-1 will allow Carbon Mapper to continue surveying both active and idle coal mining operations to identify and quantify large emitting sources in key coal-producing regions.

Methane plume images are available on the [Carbon Mapper data portal](#). Carbon Mapper has used observations from multiple remote sensing instruments to generate its public data. Sources include Carbon Mapper airborne surveys and NASA's EMIT instrument onboard the International Space Station.

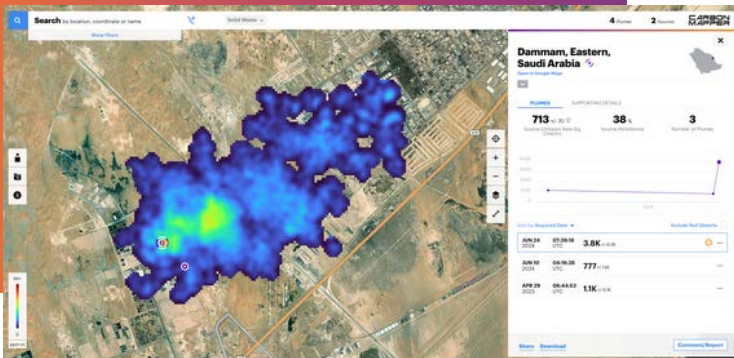
Electricity Generation

Power generation is responsible for about 25% of human-caused greenhouse gasses in the U.S. Power generation can occur in large power plants and on a smaller scale at industrial facilities like refineries. If methane is burned as a fuel, methane emissions are sometimes observed at these facilities.



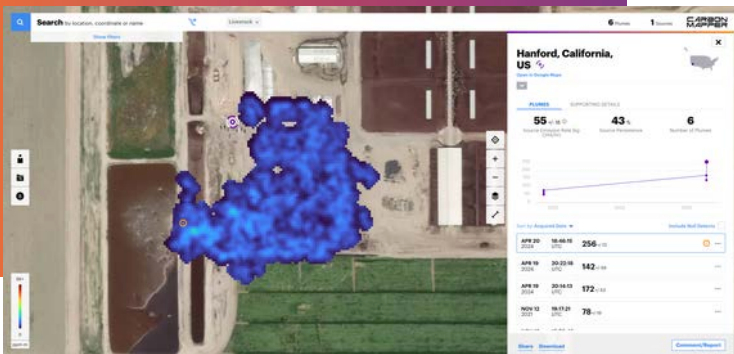
Waste

The waste sector accounts for nearly 20% of human-caused methane emissions from sources like landfills, waste sites, and wastewater treatment plants. Our ability to detect and precisely locate these emissions within specific sections of waste sites can guide best practices and help prioritize actions that can [close the gap between reported and observed emissions](#).



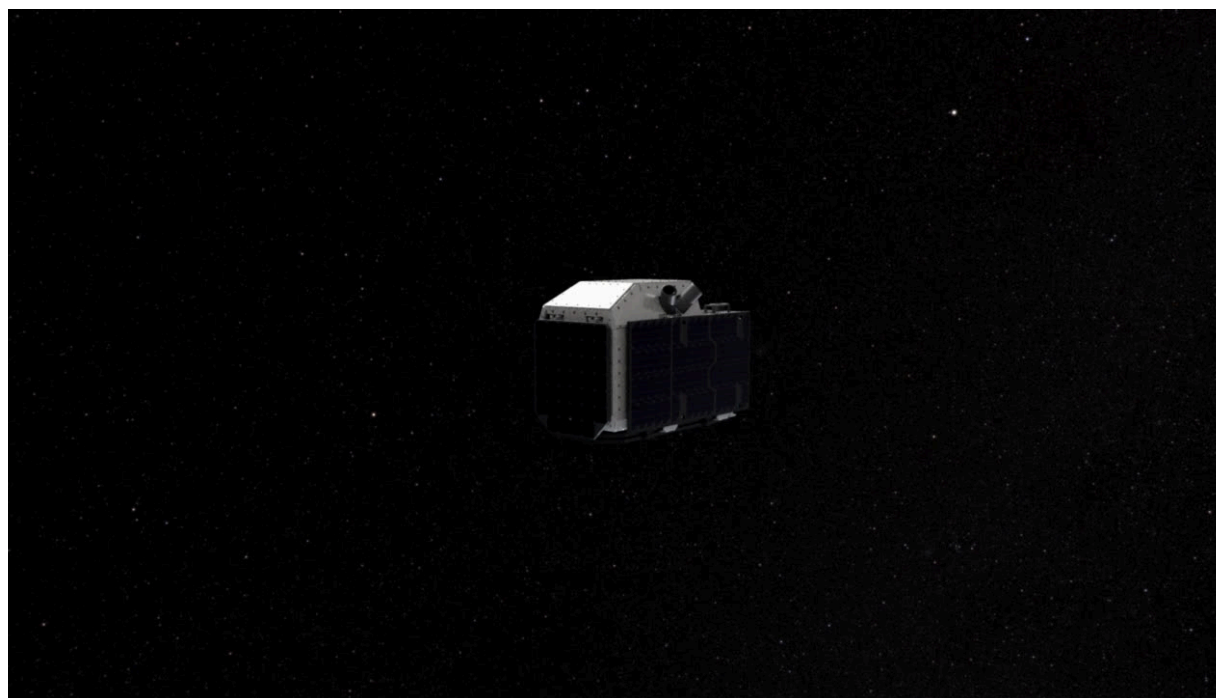
Agriculture

The agriculture sector is one of the largest methane-emitting sectors but detecting and pinpointing those emissions is challenging. Our surveys have identified agricultural methane point sources at large livestock operations, including emissions associated with manure management and biogas capture technologies. Tanager-1 will allow us to scale up these observations.



How Tanager Pinpoints and Tracks Super-Emitters

The imaging spectrometer onboard Tanager-1 originally developed by JPL (which acts as the 'eye' of the satellite) measures hundreds of wavelengths of light reflected by Earth's surface and absorbed by gasses in the planet's atmosphere. Different compounds – including methane and CO₂ – absorb different wavelengths of light leaving a spectral "fingerprint" that the imaging spectrometer can identify.



Capabilities At-A-Glance

Detecting methane with high sensitivity

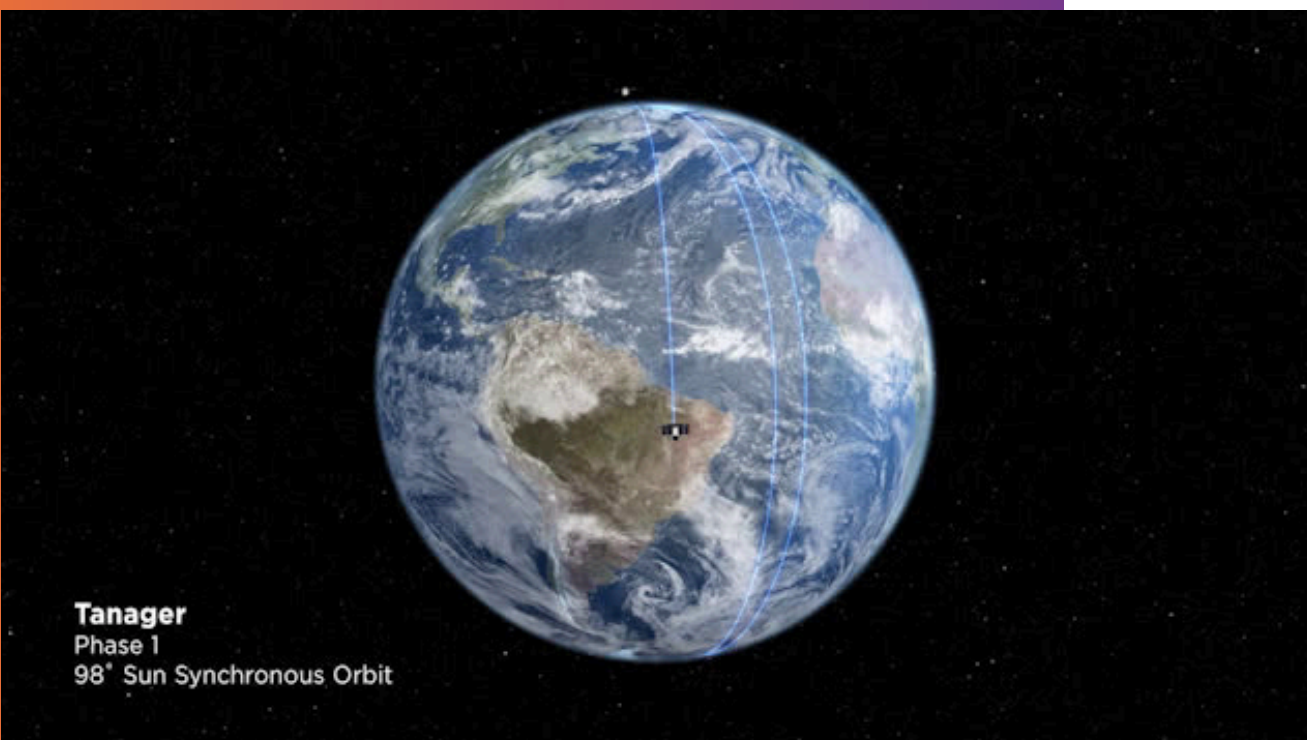
Tanager satellites are designed to detect methane with emission rates as low as 70kg/hr under moderate conditions (predicted 90% detection limit of about 100 kg/hr).

Mapping priority areas with high resolution

Tanager-1's imaging spectrometer combines high spatial resolution — 30-40 meters — with the ability to rapidly image large areas — upwards of 130,000 km²/day per Tanager.

Observations from Tanager-1 will enable Carbon Mapper to pinpoint and quantify emissions from facilities or pieces of equipment emitting over 100 kg of methane or CO₂ per hour and attribute emissions to their specific source within 50 meters.

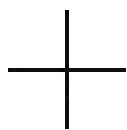
This intelligence can help operators find and fix leaks quickly, diagnose root causes for emissions events, inform solutions, and verify reductions.



Tanager
Phase 1
98° Sun Synchronous Orbit

+ Scaling Up To a Full Satellite Constellation

This first satellite is just the beginning. The Carbon Mapper Coalition is also working to launch their second satellite, Tanager-2, which is another milestone toward their efforts to scale up data to action. Carbon Mapper ultimately aims to build up to a full satellite constellation that can detect and track up to 90% of high emission sources globally with near-daily frequency.



Media Spokespersons

Core Team



Riley Duren

Carbon Mapper
Chief Executive Officer

Bio:

Duren spent 27 years at NASA's Jet Propulsion Laboratory serving as a laboratory fellow and Chief Systems Engineer for JPL's Earth Science and Technology Directorate from 2008 to 2019 with a broad portfolio of satellite mission and aircraft instrument development, research and analysis, and applied science. [Read full bio](#)



Jeff Guido

Planet Labs PBC
Senior Director of New Missions

Bio:

Guido leads Planet's cross-functional teams in incubating future space missions, improving the company's operational space systems, and maturing business processes. Formerly, Jeff led a team at Google automating operations of the largest ever high-resolution satellite constellation. He also served for the U.S. Air Force managing satellite sub-system development programs.



Dr. Robert Green

NASA JPL
Principal Investigator of EMIT

Bio:

Dr. Robert O. Green is also the Director of the Microdevices Laboratory and a Senior Research Scientist at the Jet Propulsion Laboratory, California Institute of Technology. For more than 25 years, his research has used advanced imaging spectrometer instrumentation to test hypotheses and pursue science investigations on Earth, Mars, Moon, and through the solar system. [Read full bio](#)

Additional Spokespersons



Deborah Gordon

RMI

Senior Principal, Climate Intelligence Program

Quote:

“RMI is proud to be part of this one-of-a-kind, public-private-nonprofit Carbon Mapper coalition. We routinely use Carbon Mapper data to sharpen RMI’s climate action tools to provide data insights and policy recommendations to slash global methane emissions.”

RMI is a member of the Carbon Mapper Coalition and uses Carbon Mapper data to underpin tools, insights, and policy recommendations to cut methane emissions in the oil and gas and waste sectors.



Marcelo Mena

Global Methane Hub

Chief Executive Officer

Quote:

“Reducing methane emissions is the fastest way to drive down global temperatures and collaboration and information-sharing are critical to methane reduction efforts. That’s why this and other methane-focused satellite programs are so critical to helping all players – communities, governments, NGOs, businesses and the science community.”

Global Methane Hub works with Carbon Mapper to use its data to form solutions that help decision makers cut methane and meet Global Methane Pledge targets.



Antha Williams

Bloomberg Philanthropies

Environment Program Lead

Quote:

“Tackling methane emissions is one of our biggest near-term opportunities to address the climate crisis. Bloomberg Philanthropies celebrates the launch of Tanager-1, which will provide access to accurate, localized, and publicly available data on the sources of methane emissions and allow us to drive transparency and accountability while also providing the necessary tools to mitigate the impact of methane pollution on local communities.”

Bloomberg Philanthropies is a funder of the Carbon Mapper Coalition. In 2021, Bloomberg Philanthropies, Carbon Mapper, and partners announced the Carbon Mapper Accelerator program to accelerate the deployment of emerging remote sensing technologies needed to pinpoint, quantify, and diagnose sources of high-emission methane and CO2 globally.



Jonathan Banks

Clean Air Task Force
Global Director, Methane Pollution Prevention

Quote:

"Cutting methane pollution is the most effective strategy to bend the curve on climate in our lifetimes. The breadth of methane pollution has been shrouded by a lack of data, but that time is thankfully ending. Carbon Mapper has been an excellent partner in CATF's efforts to help government and industry stakeholders identify, characterize, and address methane pollution from multiple sources. The granularity provided by the Carbon Mapper Coalition's Tanager satellites will drive further action on methane policy and mitigation and create a new era of transparency in climate data."

Clean Air Task Force works with Carbon Mapper to use their data to underpin policy recommendations and shape on-the-ground programs in a variety of global regions.



Katherine Blauvelt

Industrious Labs
Circular Economy Director

Quote:

"Technology like Tanager-1 doesn't just make methane visible; it provides actionable data to pinpoint large, planet-warming emissions at the source and make an immediate, positive impact on our climate. As the country's third-largest source of industrial methane emissions, the waste sector can benefit immensely from these game-changing insights. State and federal policymakers can achieve their ambitious greenhouse gas emission reduction targets by embracing these technologies as climate solutions."

Industrious Labs uses Carbon Mapper data to shape advocacy and develop community-based solutions to tackle methane emissions primarily in the waste sector.

FAQs

Who is Carbon Mapper?

Carbon Mapper Inc. is a nonprofit organization with the mission to drive greenhouse gas emissions reductions by making methane and carbon dioxide data accessible and actionable. They focus on filling gaps in the emerging ecosystem of methane and CO₂ monitoring systems by delivering data at facility scale that is precise, timely, and accessible to empower decision making and direct mitigation action. The organization leads a public-private coalition that is developing and deploying a constellation of satellites capable of detecting, quantifying, and verifying methane emissions worldwide.

What is the Carbon Mapper Coalition?

The Carbon Mapper Coalition is a philanthropically-funded public-private partnership led by Carbon Mapper and includes Planet Labs PBC, NASA JPL, RMI, Arizona State University and others. It is focused on developing and deploying two satellites designed to detect, pinpoint, and quantify methane and CO₂ super-emitters at a level of granularity needed to support direct mitigation action. This coalition assembles entities with the diverse technical, scientific, engineering, and policy expertise needed to develop and deploy satellites, and also make sure that data and insights get in the right hands to drive action. Funders include High Tide Foundation, Bloomberg Philanthropies, Grantham Foundation, and the Zegar Family Foundation.

Why are satellites an important tool to address methane emissions?

Methane has proven a challenge to track consistently. Emissions are highly complex and therefore very difficult to track and quantify. The first step is to better monitor emissions-causing events, and the facilities where they happen. Until recently, this tracking has been intermittent, with methane surveys mostly taking place on the ground with handheld devices. Other strategies like aerial flyovers have helped improve transparency but are not up to the task of monitoring the truly planetary scale of methane pollution and in prioritizing actions that can reduce emissions now. In recent years, satellite-based GHG emission measurements have emerged as a potentially game-changing solution, offering independent, objective, and international data collection. Emissions-sensing satellites with certain capabilities are able to more comprehensively monitor emissions from space, yielding data at different levels of granularity that can help decision makers better understand and act on methane.

How is the Carbon Mapper Coalition satellite program different from other methane monitoring satellite programs?

Different satellites provide data on different scales for different use cases. For example, the European Space Agency's TROPOMI images much of the Earth's land area daily, but with a high detection threshold it cannot see a large share of total emissions. Compare that with the GHGSat-C1 satellite, which is designed to provide high-resolution monitoring of industrial facilities down to the point-source level but does not make its data publicly available.

While regional-, sector-, and asset-level data enabled by satellite observations are all important, the time-bound urgency of the climate crisis led Carbon Mapper to focus on the need to pinpoint methane and CO₂ super-emitters. Such sources have historically proven difficult to track, yet they represent our biggest near-term opportunity to mitigate methane given their disproportionate impact and the fact that many — once identified — can be addressed quickly and cost-effectively.

Backed by philanthropy, Carbon Mapper is committed to making its data publicly accessible on the [Carbon Mapper data portal](#) — empowering a wide variety of stakeholders and global decision makers to act now.

How is the Carbon Mapper Coalition satellite program different from, and complementary to, EDF's MethaneSAT?

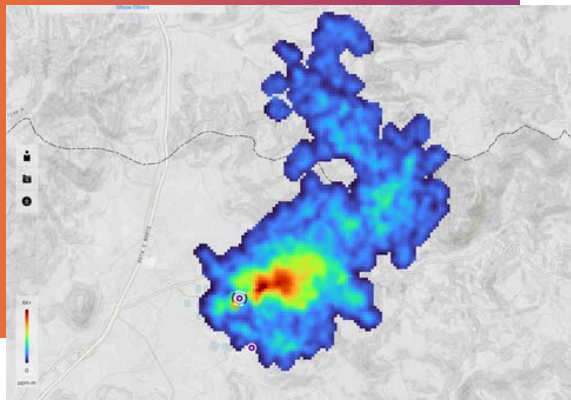
MethaneSAT and the Carbon Mapper Coalition's first Tanager satellite are the first non-profit-led satellite programs designed to detect and quantify methane emissions on a global scale. Their unique and complementary capabilities will provide comprehensive tracking of methane emissions worldwide. Both Carbon Mapper and MethaneSAT will make methane data and insights publicly available for noncommercial use, helping decision makers identify and reduce methane emissions faster.

At a high level, MethaneSAT is designed to identify where emissions are occurring, how large they are, and how they change over time at national, regional, basin and sub-basin scales. Carbon Mapper Coalition's Tanager satellites will drill down to individual facilities to provide the granularity needed for operators and regulators to quickly find and fix large emission events.

[This blog](#) breaks down how the different but complementary technological capabilities of both programs in greater detail.

Media Resources

Images



Carbon Mapper methane plumes

Plumes available on the Carbon Mapper data portal were observed by airborne surveys and NASA's EMIT instrument onboard the International Space Station. Launching Tanager-1 will enable Carbon Mapper to scale up its publicly available data.

Source: the Carbon Mapper Data Portal

[View all](#)



Tanager-1 testing

Images of Tanager-1 testing and preparation for transport to Vandenberg Space Force Base. Source: Planet Labs, PBC

[View all](#)



Tanager-1 renderings

Satellite images and animations.

Source: Planet Labs, PBC

[View all](#)

Additional Resources

SpaceX will provide a live stream of the launch at www.spacex.com starting approximately 15-minutes prior to liftoff.

SpaceX will make launch photos and video footage available approximately 2-hours after launch concludes.

Please contact [Kelly Vaughn](#) or [Claire Bentley](#) for SpaceX assets.