



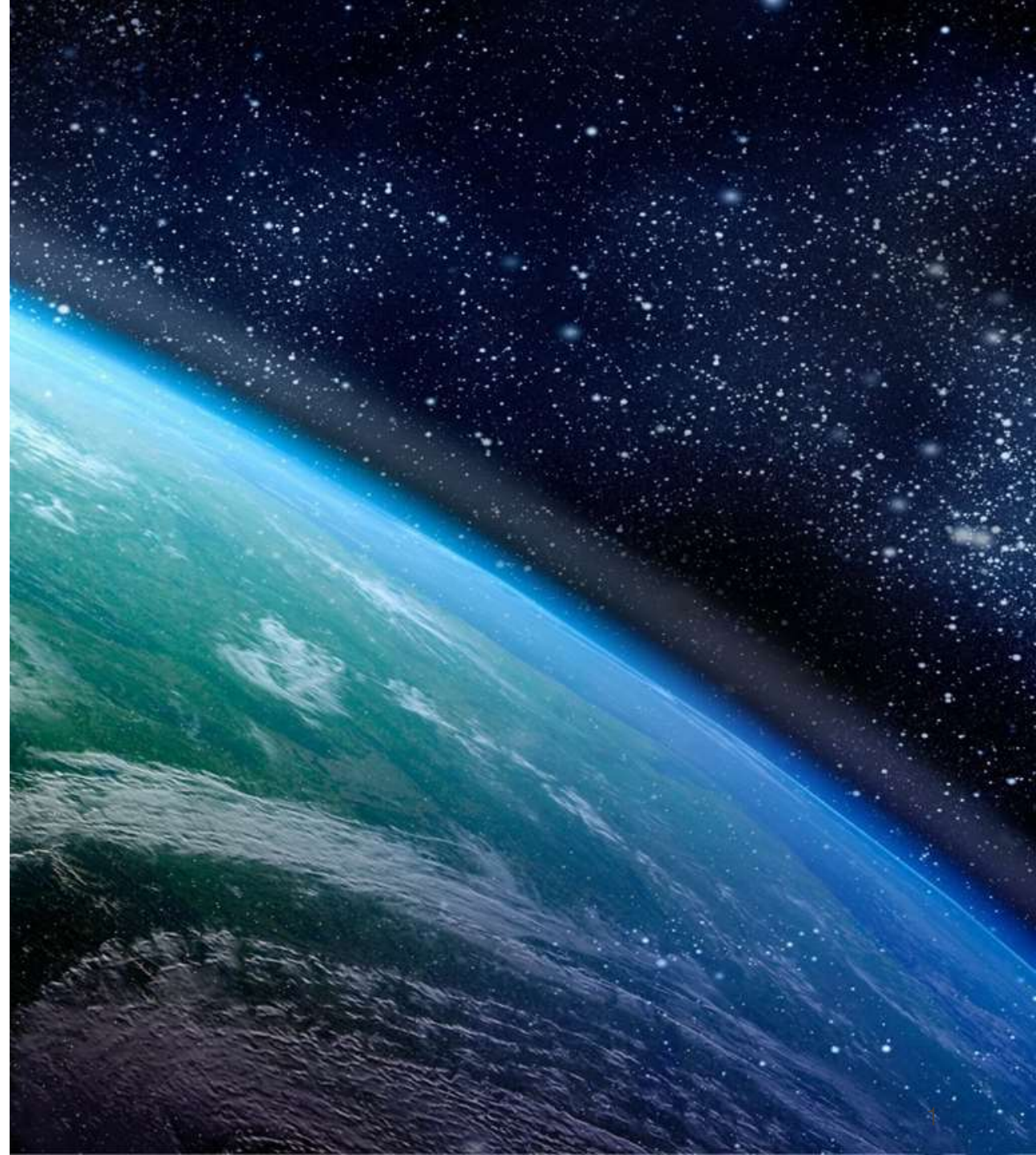
# Carbon Mapper

Locating, Quantifying, and  
Tracking Methane & CO2  
from Air & Space

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[carbonmapper.org](https://carbonmapper.org)

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GeoGov Conference



# Carbon Mapper is a nonprofit focused on making methane and CO<sub>2</sub> data actionable and accessible

*Our mission is to help drive the world toward direct, comprehensive, transparent global GHG monitoring to facilitate science-based decision-making and reduce GHG emissions*

**Data**

- **Filling data gaps on methane and carbon dioxide emissions** by delivering data that is precise, timely, and accessible through our free and open data portal

**Science**

- **Advancing scientific understanding of super-emitters** at the point-source level and the research and development of remote sensing tools that enable this

**Policy**

- **Supporting strong policy and regulatory actions** that incorporate the development and adoption of remote sensing capabilities to tackle emissions and that enhance monitoring and measurement of GHG emissions

**Collaboration**

- **Collaborating with industry, nonprofits, and other stakeholders** to develop and support emission mitigation solutions based on science

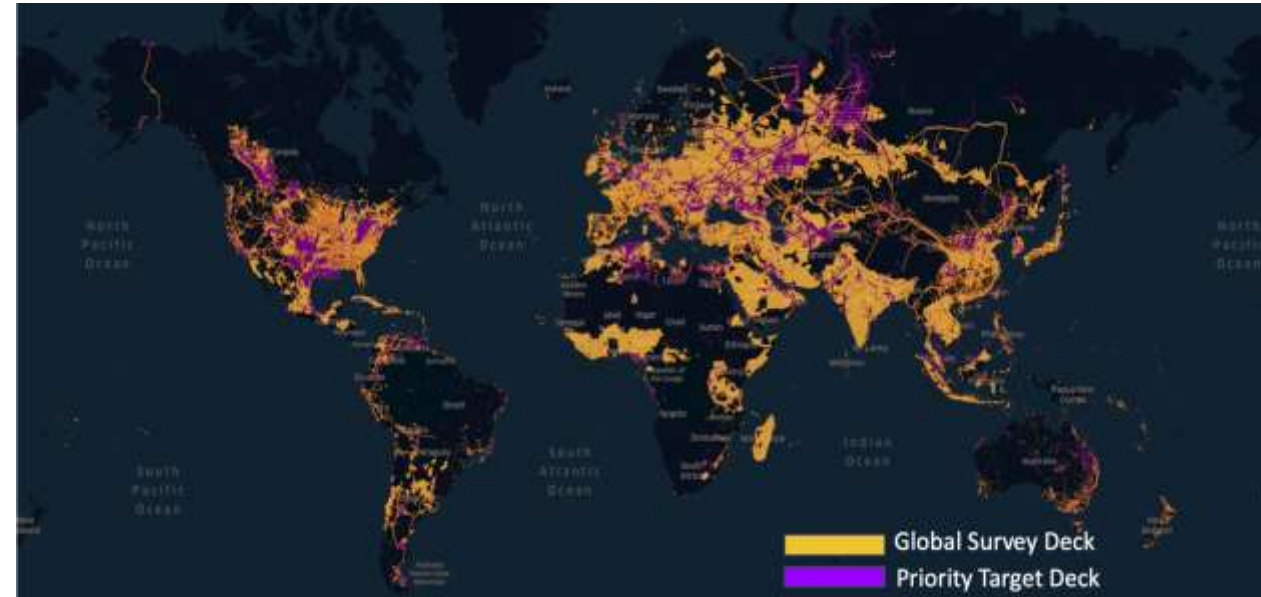
*To achieve these goals, we work with a broad coalition of partners to deploy **satellites and aircraft** equipped with high performance visible/infrared imaging spectrometers with the ability to **identify, quantify and attribute global methane and CO<sub>2</sub> point-source emissions at the scale of individual facilities.***



# Carbon Mapper Remote Sensing Technology: Global Observations at Facility Scale



Over 9,000+ methane plumes detected by aircraft and NASA's EMIT instrument available now on <https://data.carbonmapper.org>



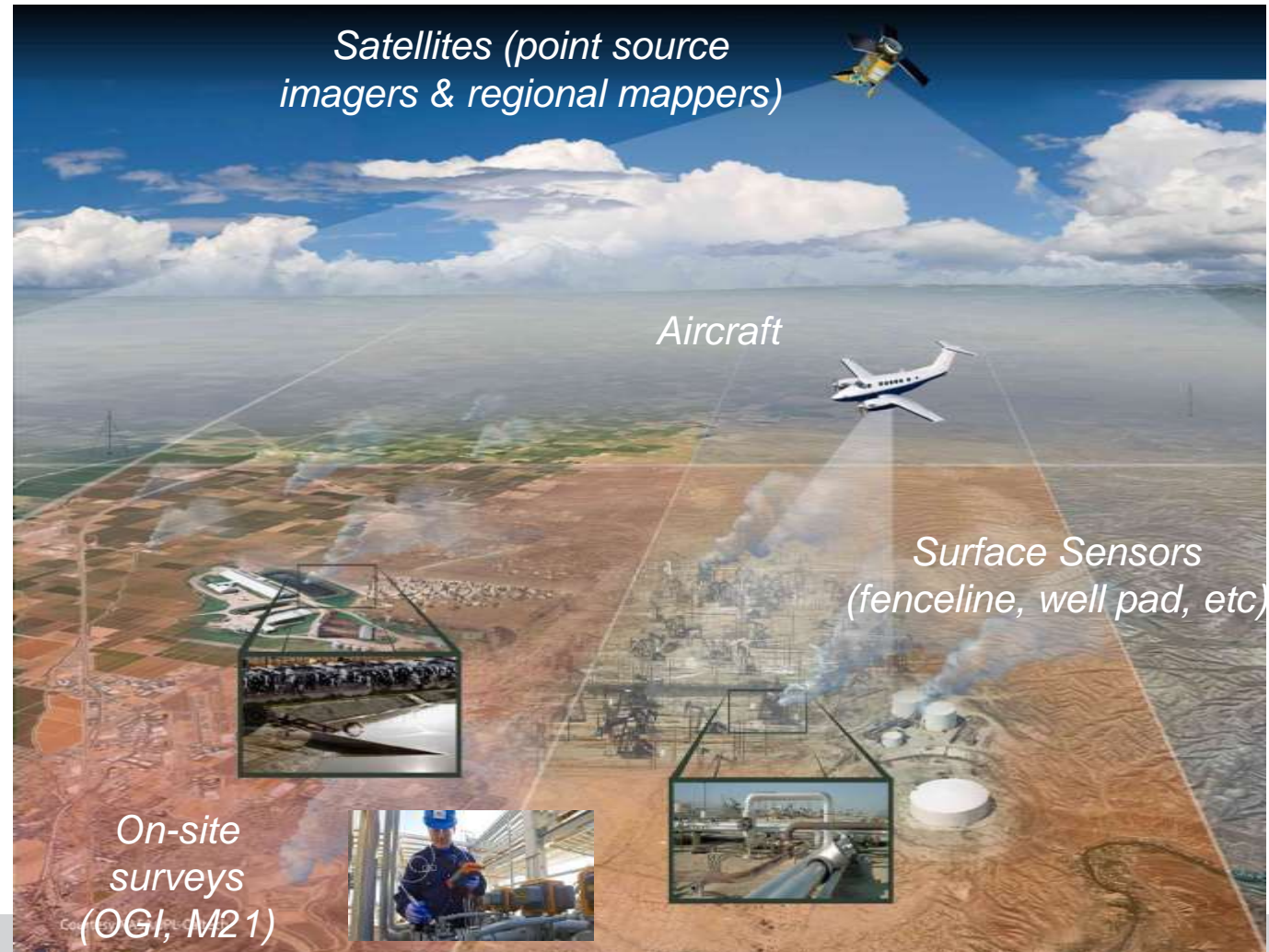
Global satellite coverage beginning in 2024 with the Carbon Mapper Coalition / Planet Tanager satellites



# Emerging system of systems for methane & CO<sub>2</sub> monitoring

- Many use-cases for GHG monitoring & mitigation
  - Local mitigation guidance (point sources)
  - Improving GHG inventories
  - Trending mitigation progress
- No single measurement method can address all of these questions
- Observing systems & data products should be driven by stakeholder use-cases

## **Multi-tiered Observing System & Analytic Framework**

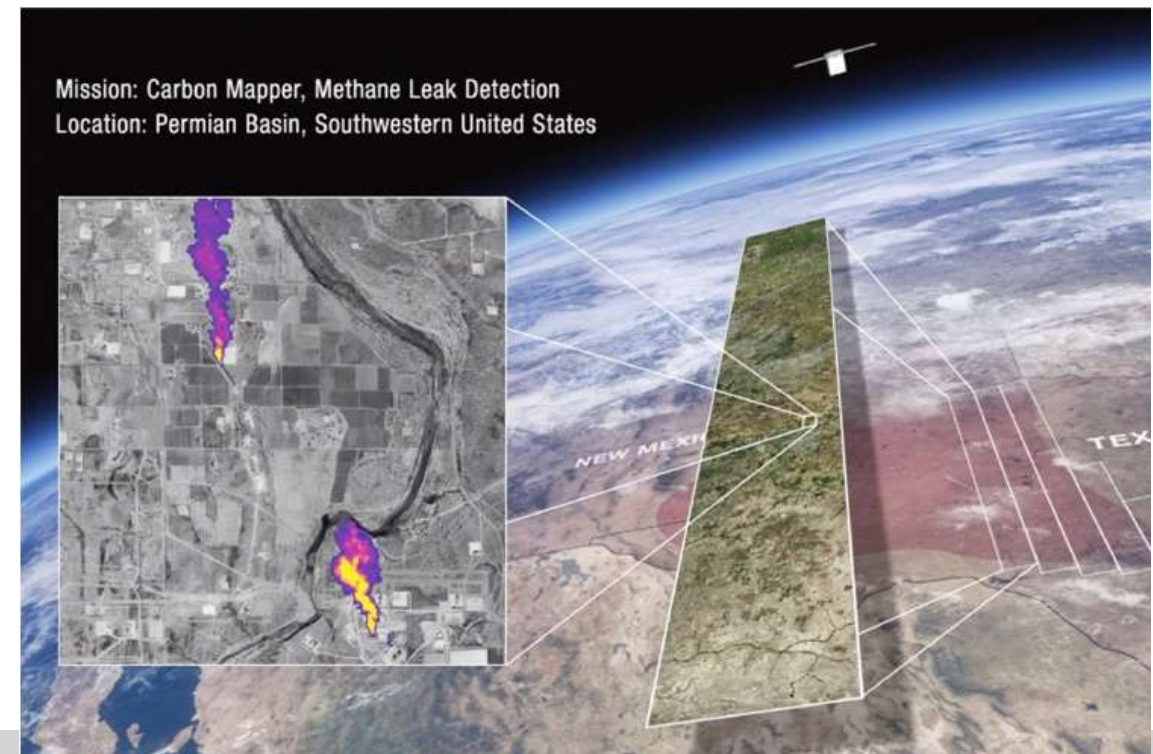


# Backup



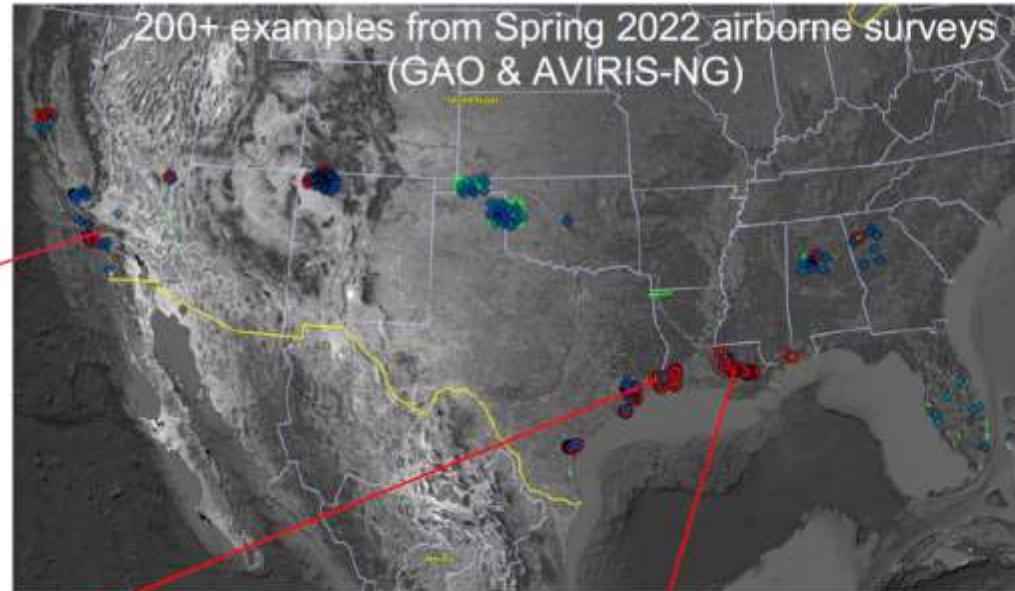
# Carbon Mapper Coalition

- Public-private partnership to build and operate satellites
- Phase 1: Launch first 2 satellites in late 2023/early 2024
- Phase 2: Goal to expand full constellation to enable daily to bi-weekly monitoring
- Long term goal: Track 90% of high emitting CH<sub>4</sub> & CO<sub>2</sub> point sources at facility scale globally
- All quantitative CH<sub>4</sub> & CO<sub>2</sub> emissions data publicly available from Carbon Mapper within 90 days
- Rapid leak detection service from Planet
- Continuing airborne surveys prepare for and support satellites

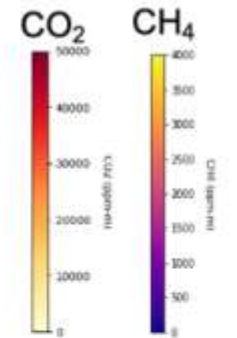


# Joint CH<sub>4</sub> and CO<sub>2</sub> point source quantification

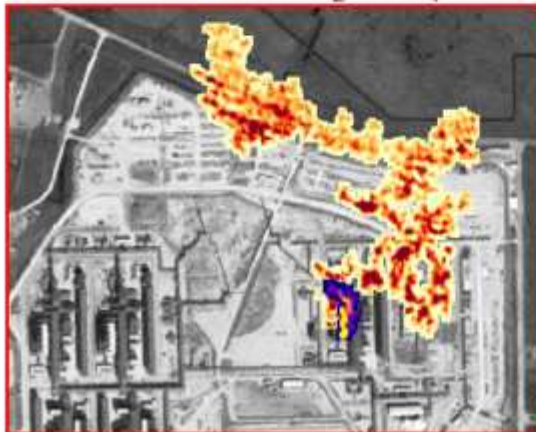
REFINERY: MULTIPLE CO<sub>2</sub> SOURCES



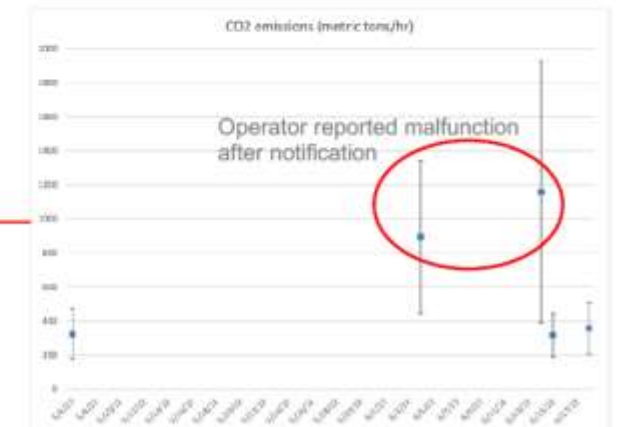
- ◆ CH<sub>4</sub> source
- CO<sub>2</sub> source
- Flight coverage



LNG TERMINAL:  
CO-EMITTED CO<sub>2</sub> & CH<sub>4</sub>

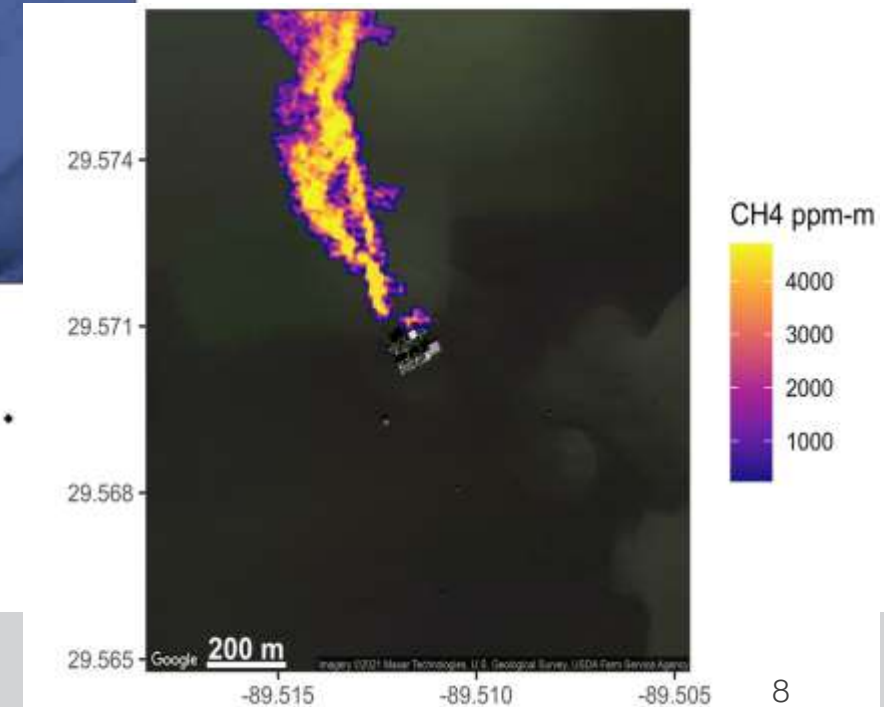
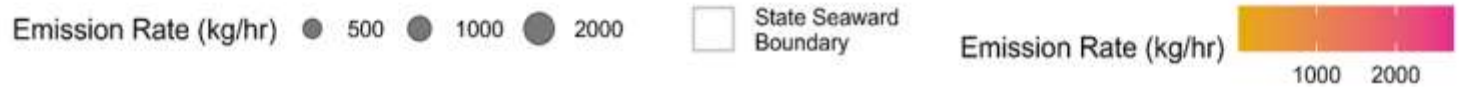
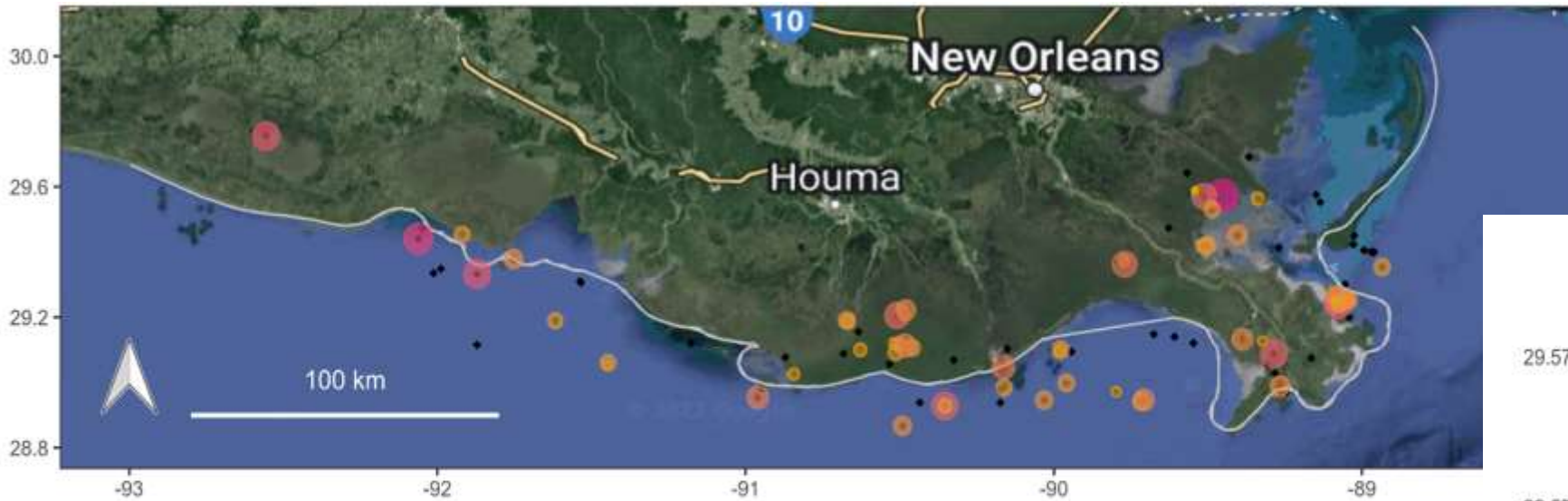


CO-GEN PLANT:  
CO-EMITTED CO<sub>2</sub> & CH<sub>4</sub>



# Case Study: Shedding Light on Gulf of Mexico Offshore Oil & Gas

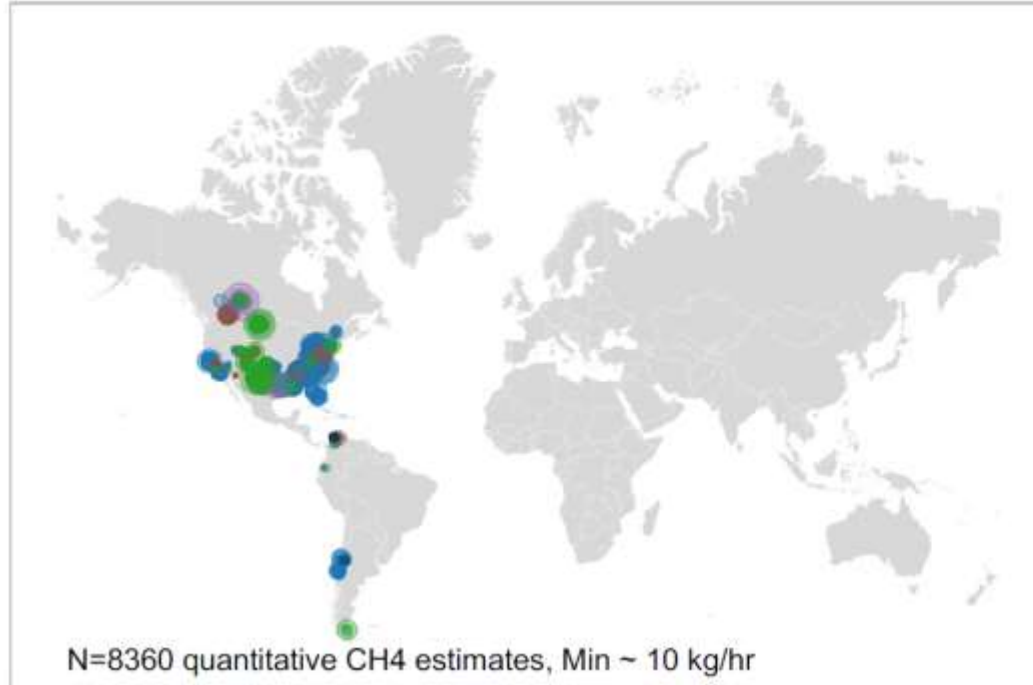
Methane emission from **offshore platforms are significantly understudied** compared to onshore. Carbon Mapper **surveyed over 150 platforms** in the Gulf of Mexico in 2021. We identified examples of **persistent venting, underwater emissions/ pipeline**, and **general process emissions**.



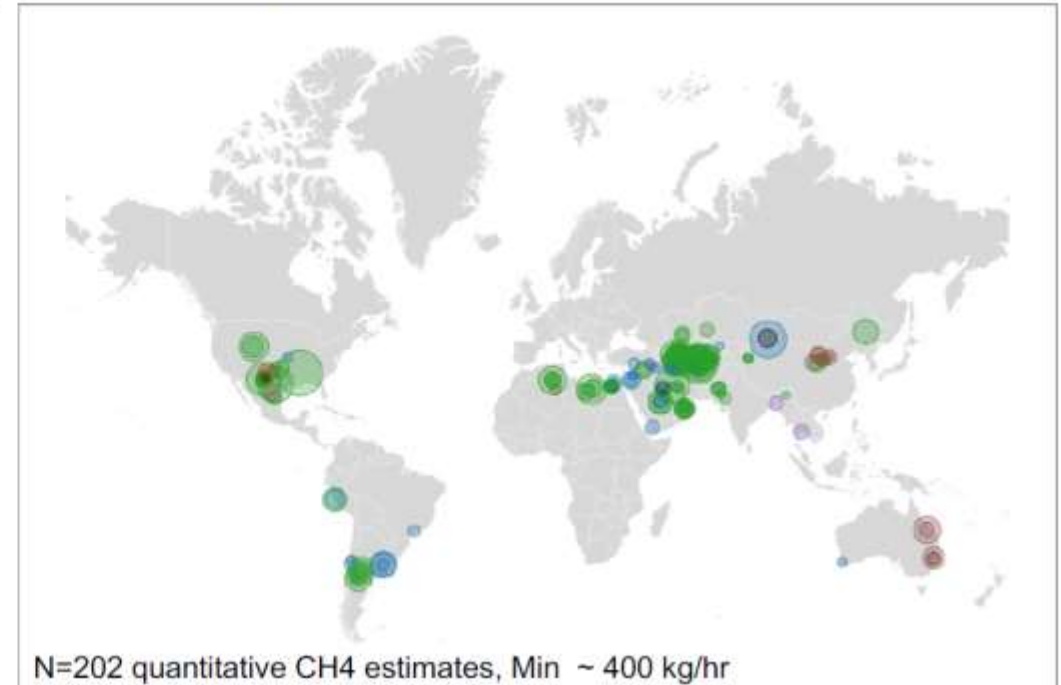


# Methane Point Source Emissions Quantification from Carbon Mapper multi-sensor data platform

AVIRIS-NG/GAO Sept 2019 - March 2023



EMIT Aug-Sept 2022; Jan-March 2023



- Sector
- Oil and Gas
  - Waste
  - Electricity Generation
  - Coal
  - Livestock
  - Other

- Emission Rate (kg/hr)
- 4000
  - 8000
  - 12000
  - 16000
  - 20000

