

March 2022

Drive action through Data

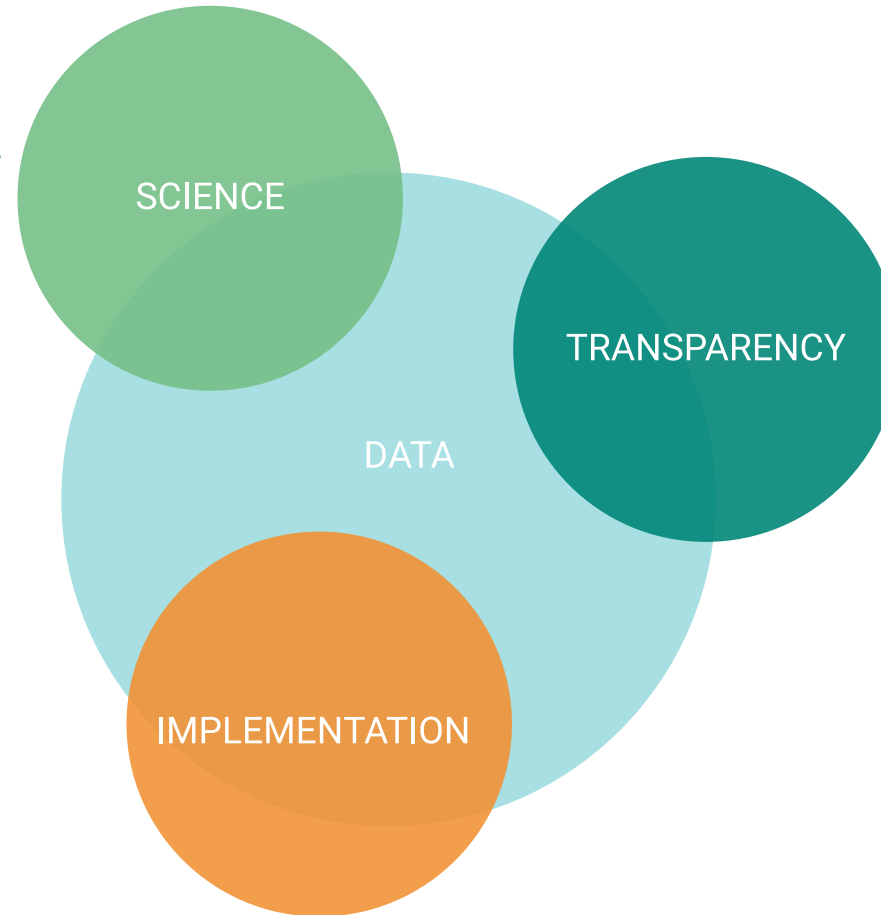
IMEO – International Methane Emissions Observatory



Steven Hamburg
Chair – Scientific Oversight Committee

IMEO interconnects better data with action on transparency, science, and implementation

Close the knowledge gap
peer-reviewed studies and data
reconciliation.

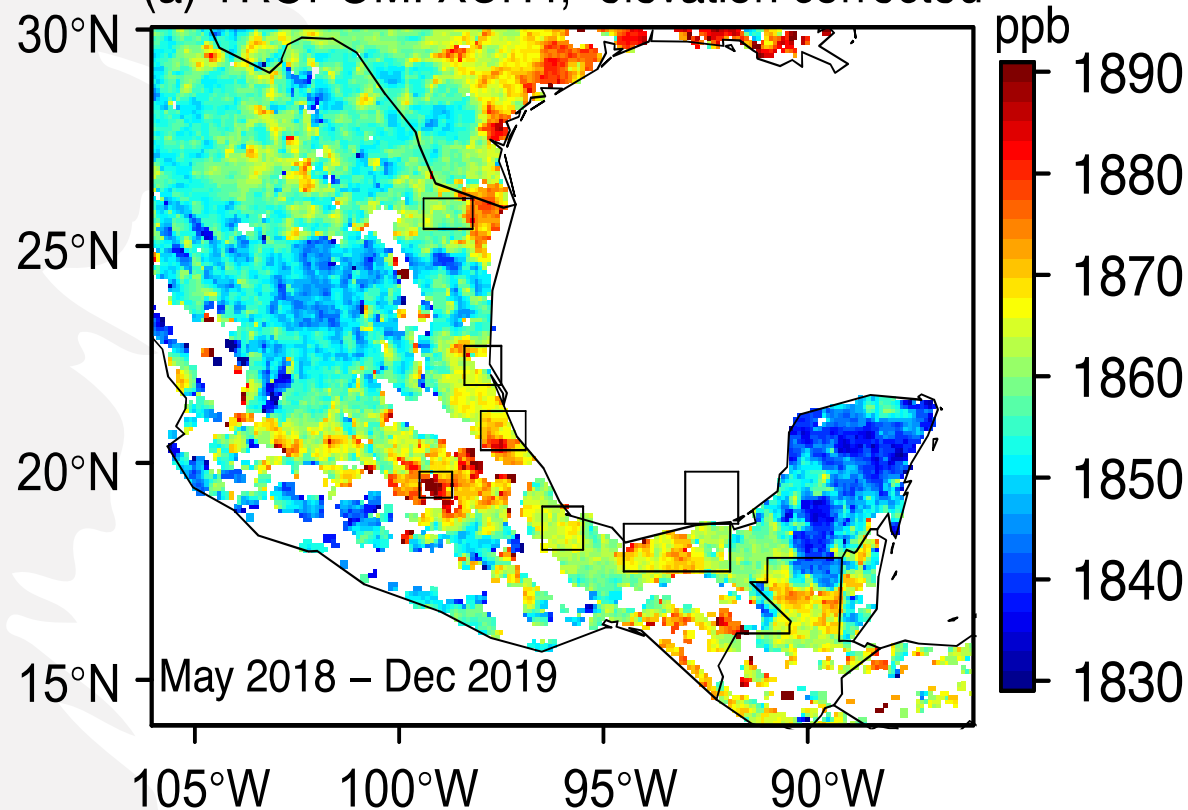


Provide accurate, unbiased and up-to-date information on methane emissions

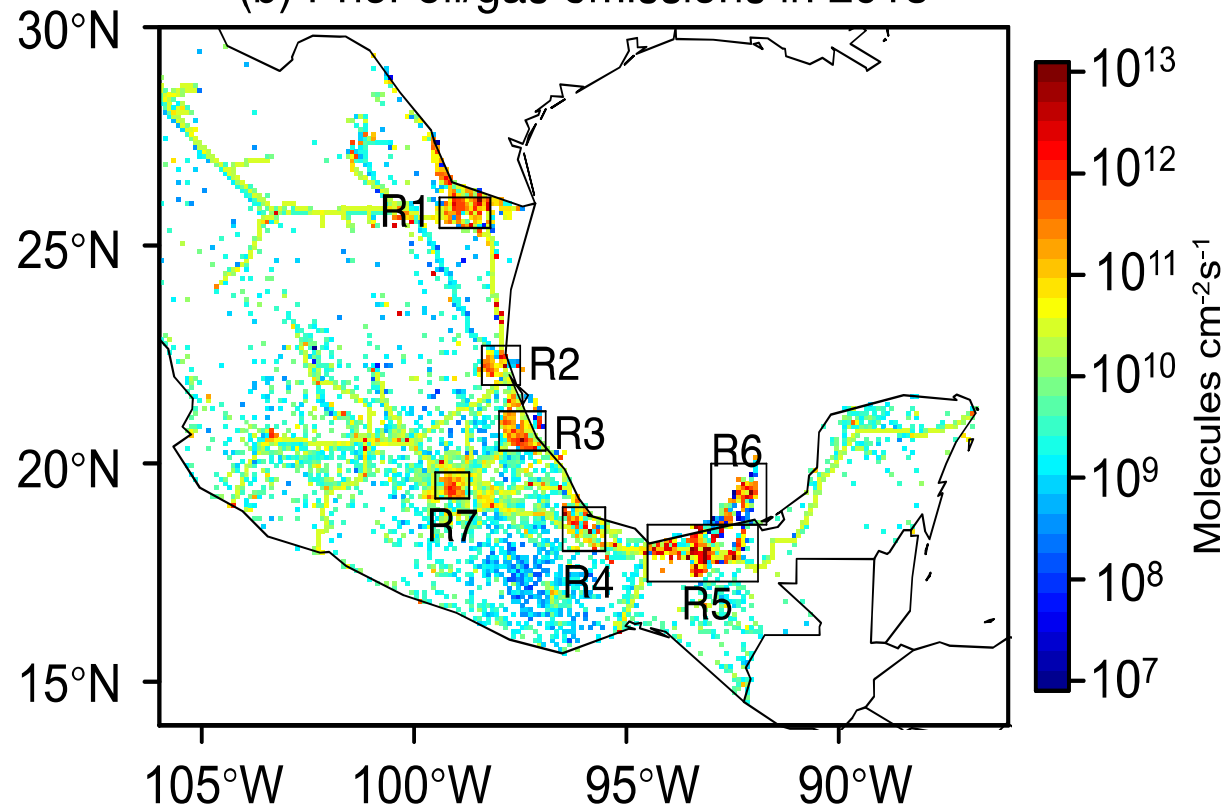
Raise awareness and increase the capacity of governments to pursue science based-policy options to manage methane emissions.

TROPOMI XCH₄ and Oil/gas emissions in eastern Mexico

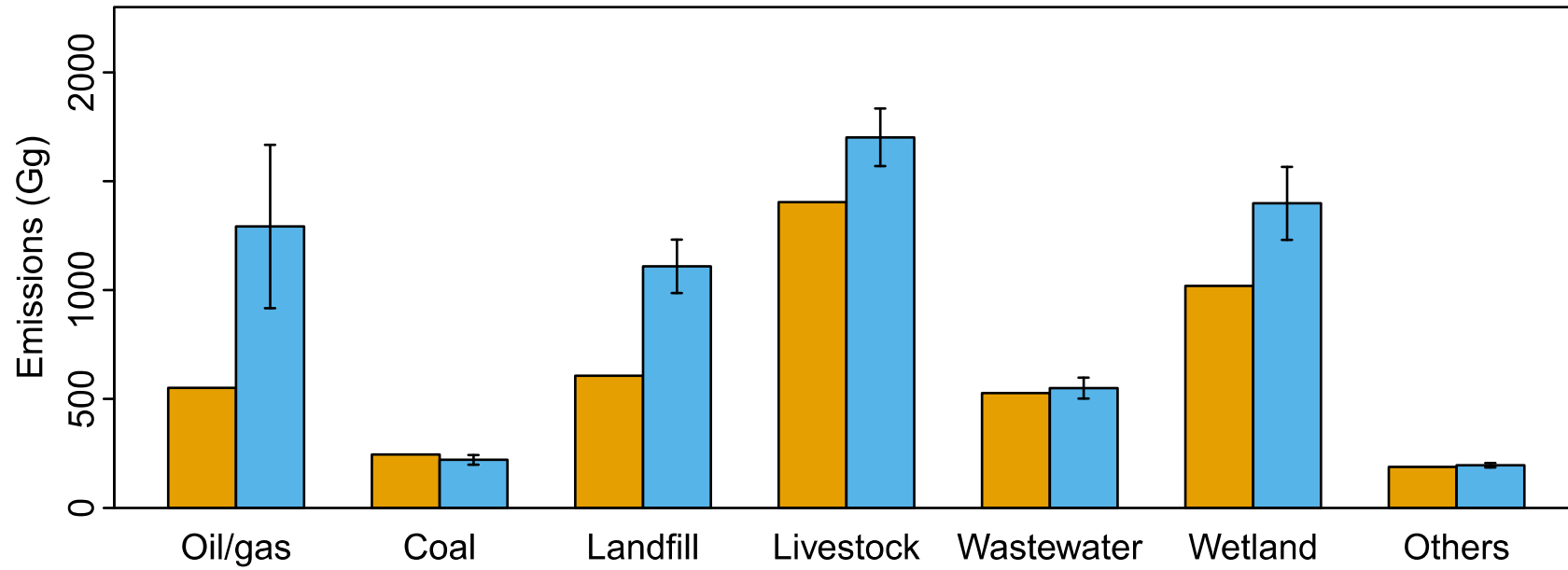
(a) TROPOMI XCH₄, elevation corrected



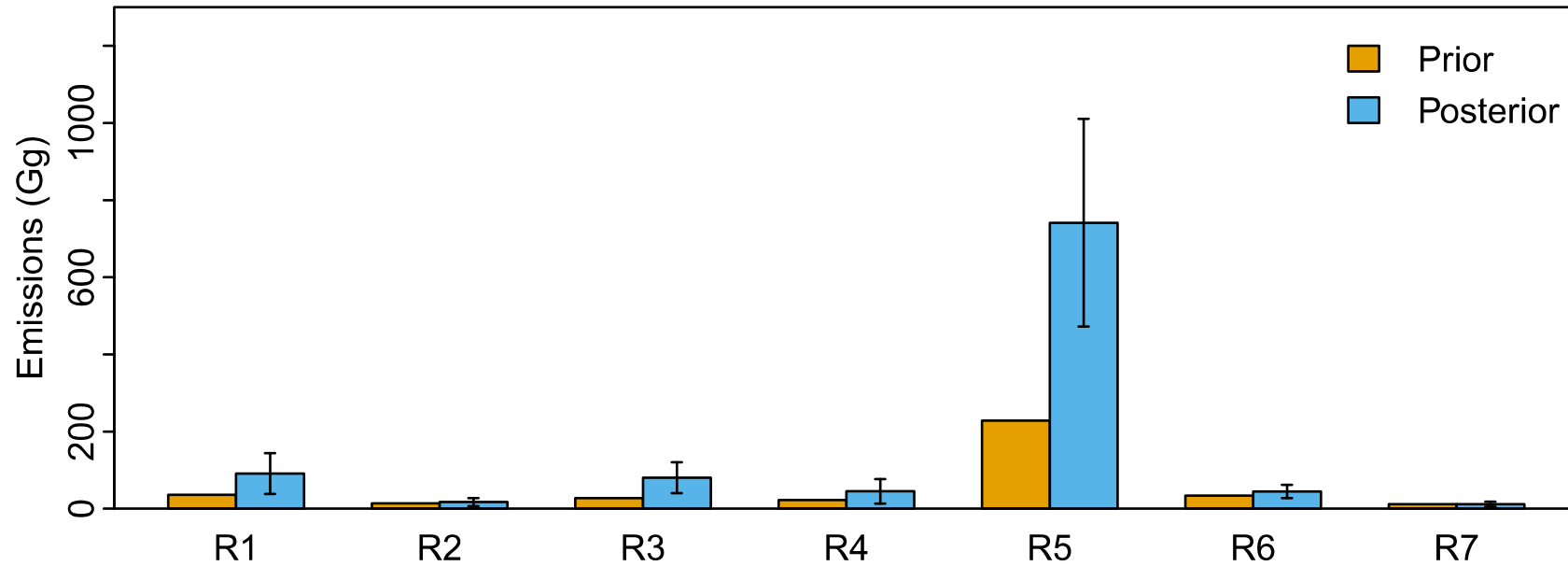
(b) Prior oil/gas emissions in 2015



(a) Prior and Posterior emissions from different sectors



(b) Prior and posterior emissions in major oil/gas basins



(a)

Flight no. — C191 — C193 — C197

Field type ■ Oil

■ Gas

■ Condensate

■ Mixed

Region 1

Kiruna

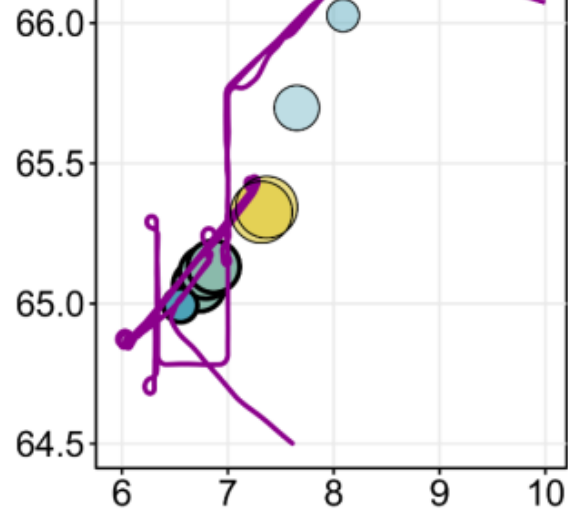
Region 2

Bergen

(b)

Region 1

Latitude (°N)



Flight no.

— C191

— C193

— C197

Surveyed

○ No

● Yes

Oil & gas production
(million Sm³)

0.5

0.4

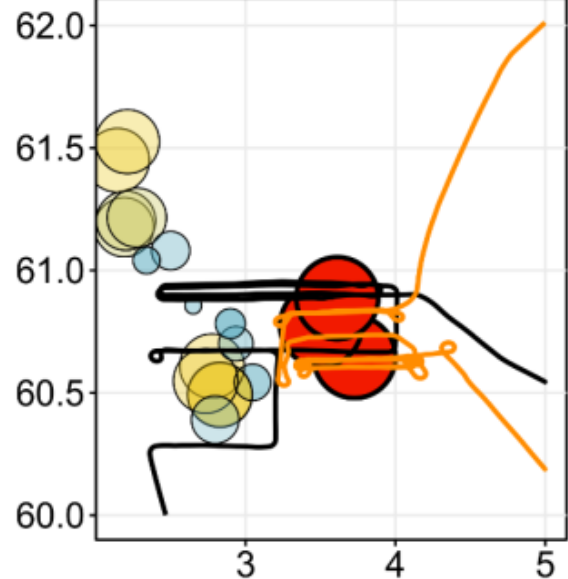
0.3

0.2

0.1

0.0

Region 2

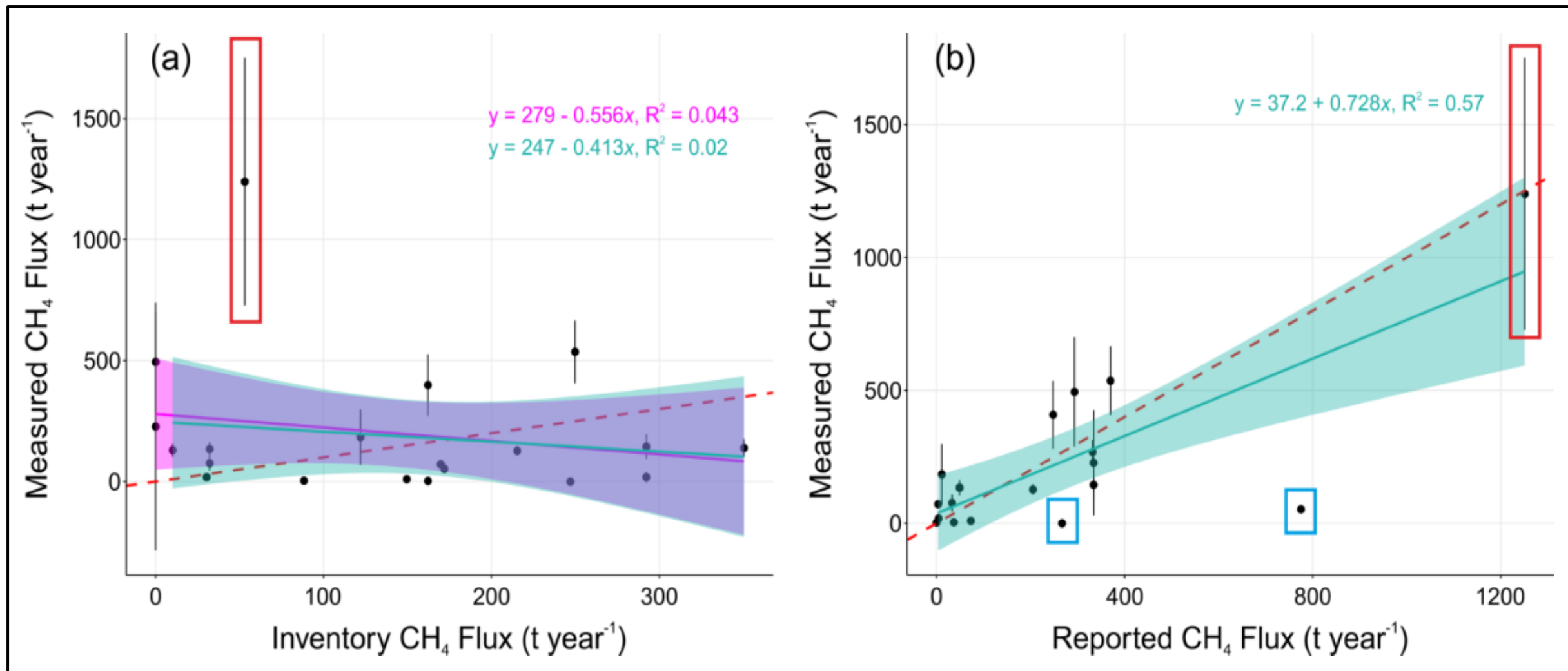


Longitude (°E)

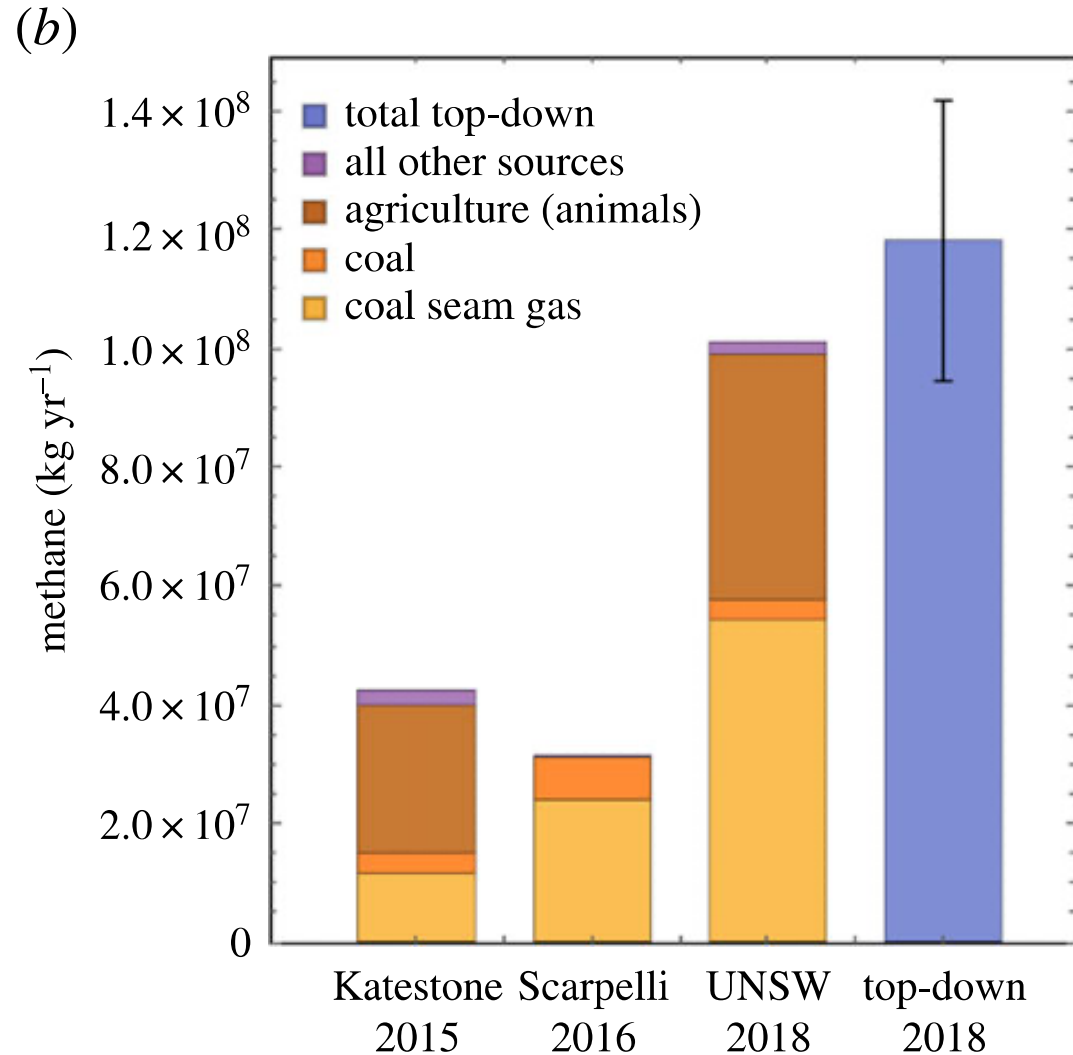
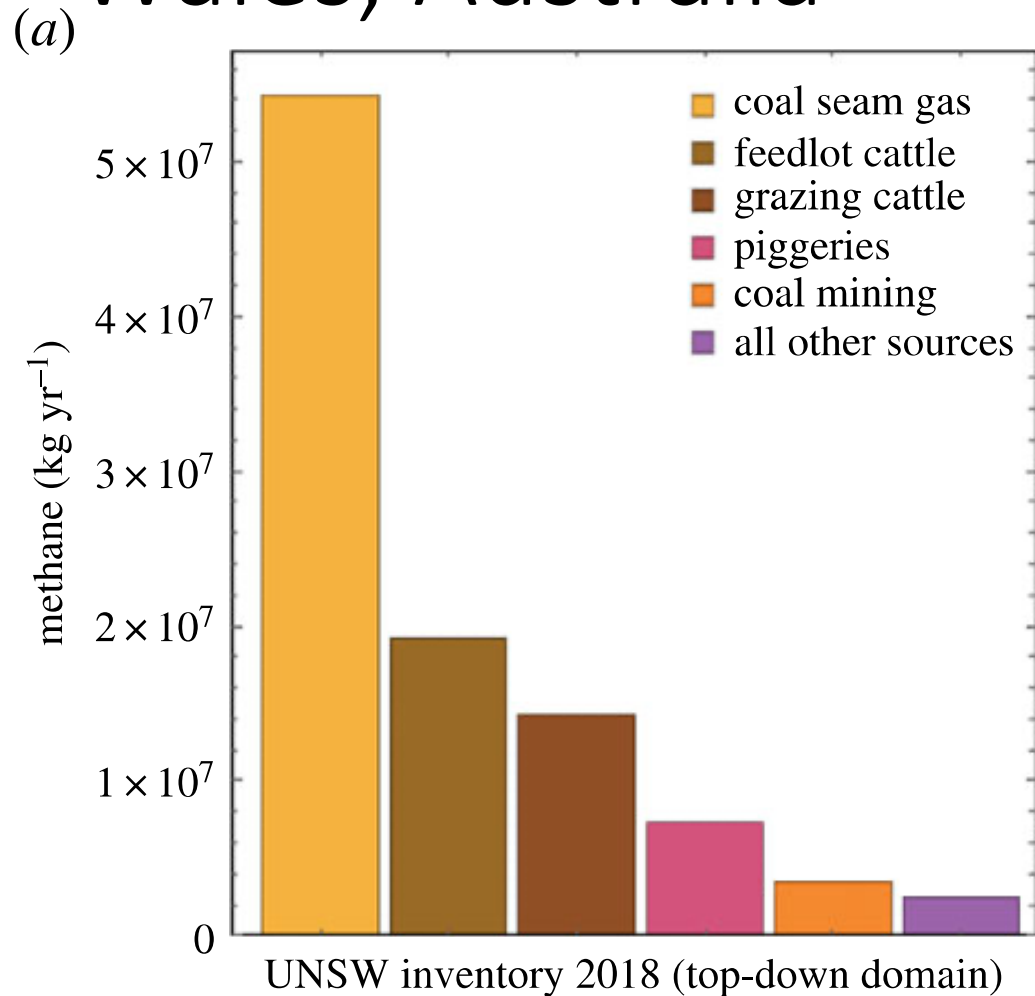
Norway Offshore
O&G production

Foulds et al. 2022
preprint

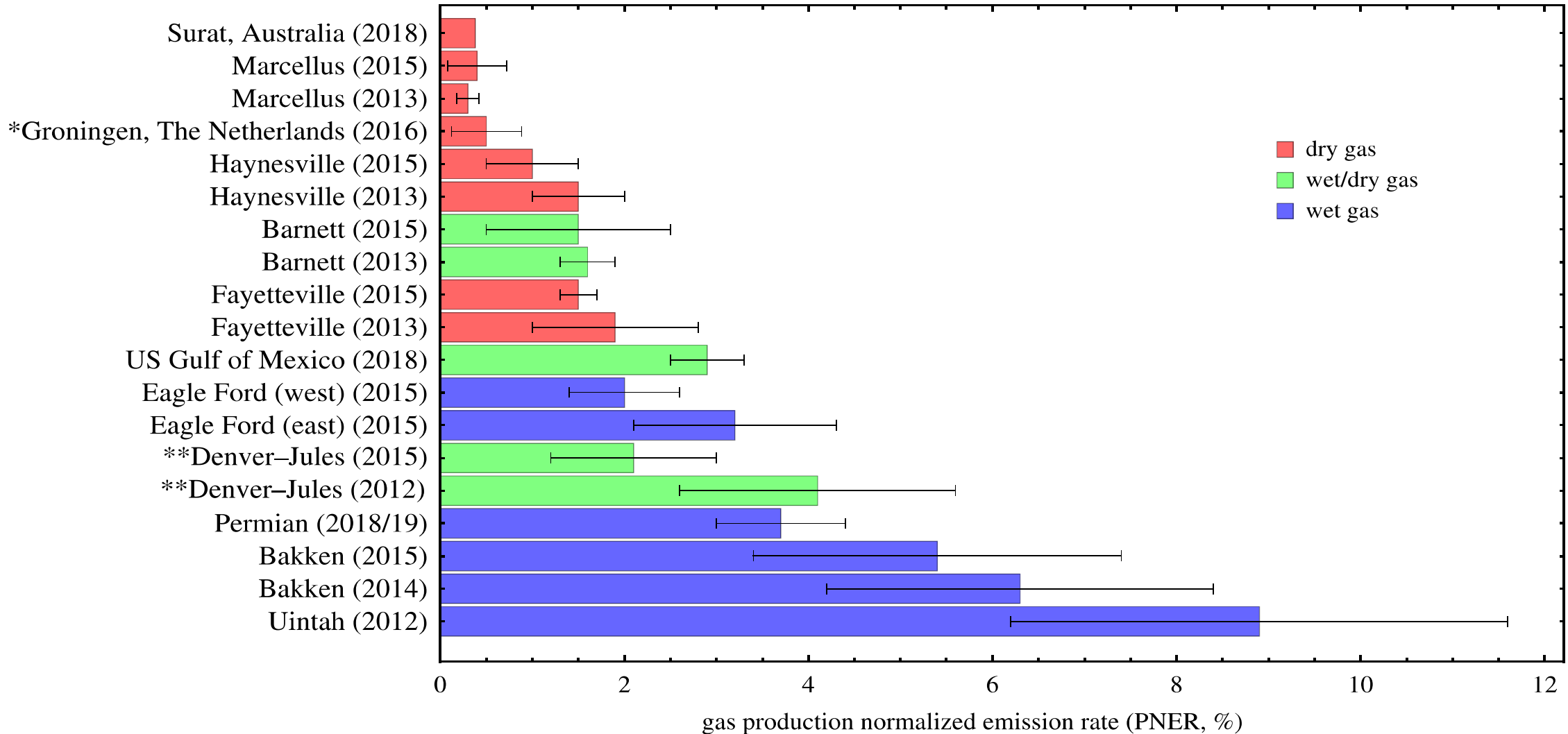
Norway Offshore O&G Methane Emissions



Methane emissions Surat Basin, New South Wales, Australia

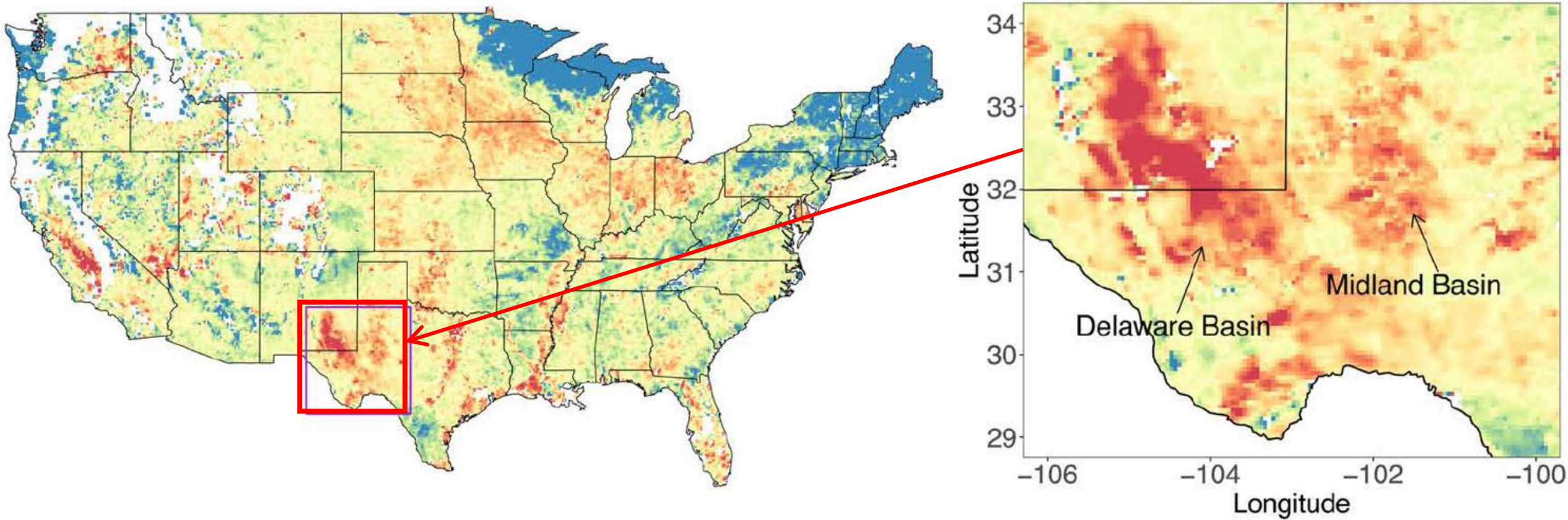


Methane Emissions across O&G Basins



Satellite observations quantify Permian methane emissions

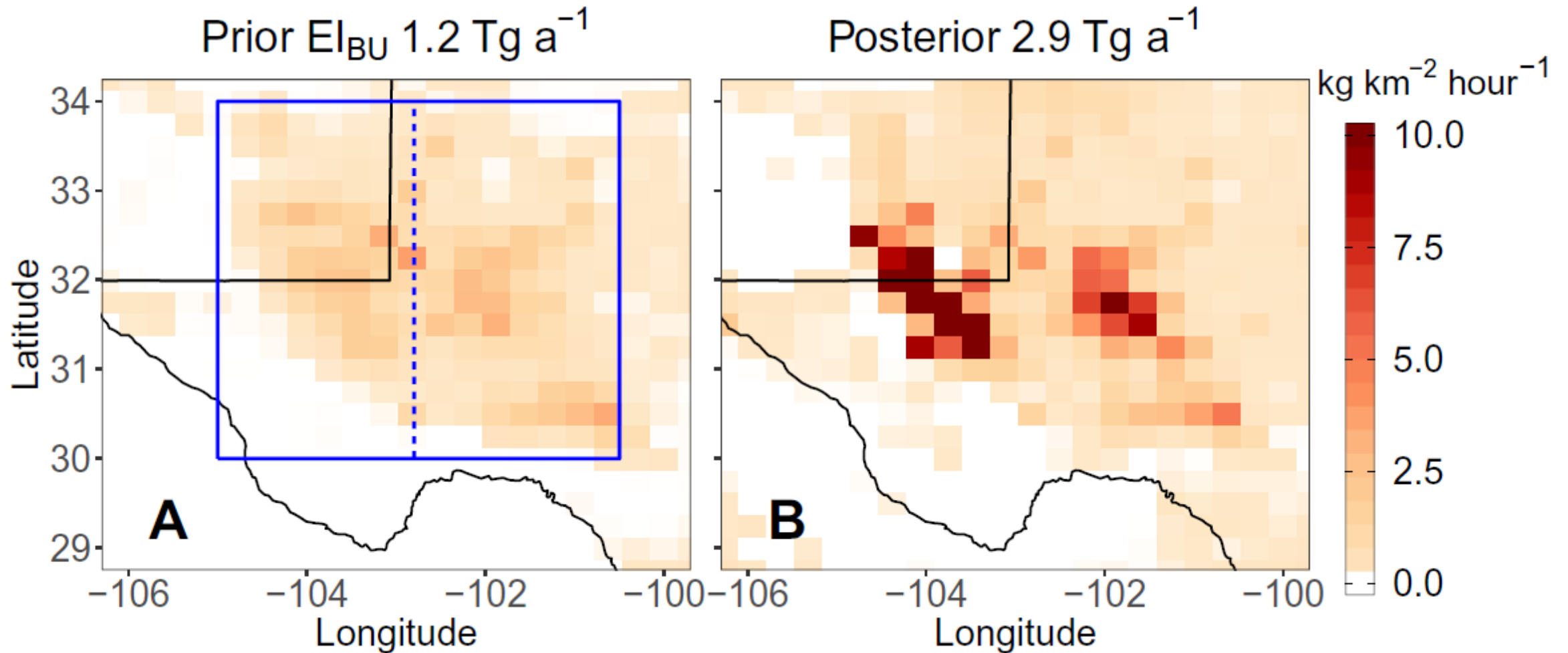
TROPOMI methane data averaged from May 2018 – March 2019



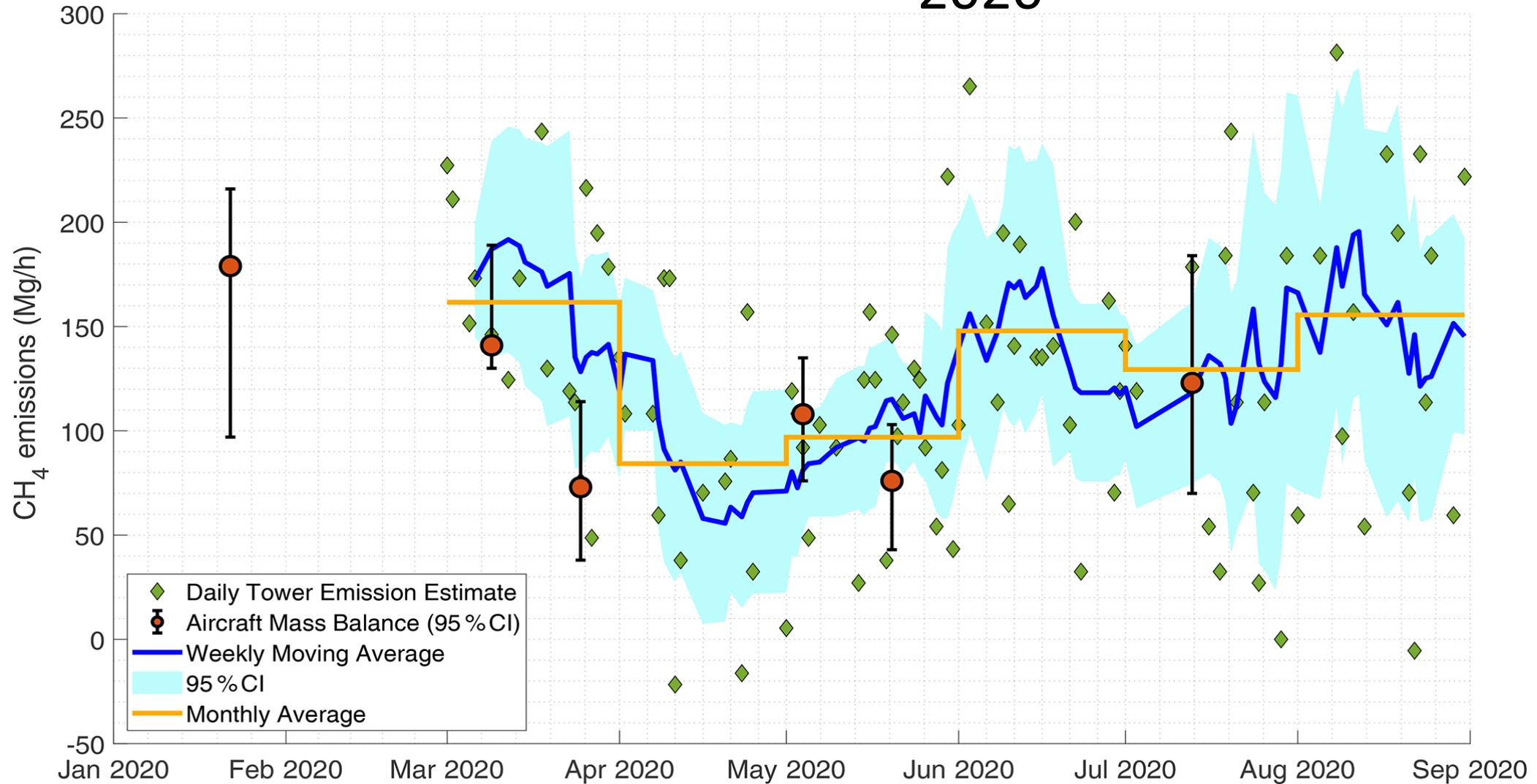
Zhang et al. (2020) *Science Advances*. **6**: eaaz5120

ppbv
1830 1840 1850 1860 1870

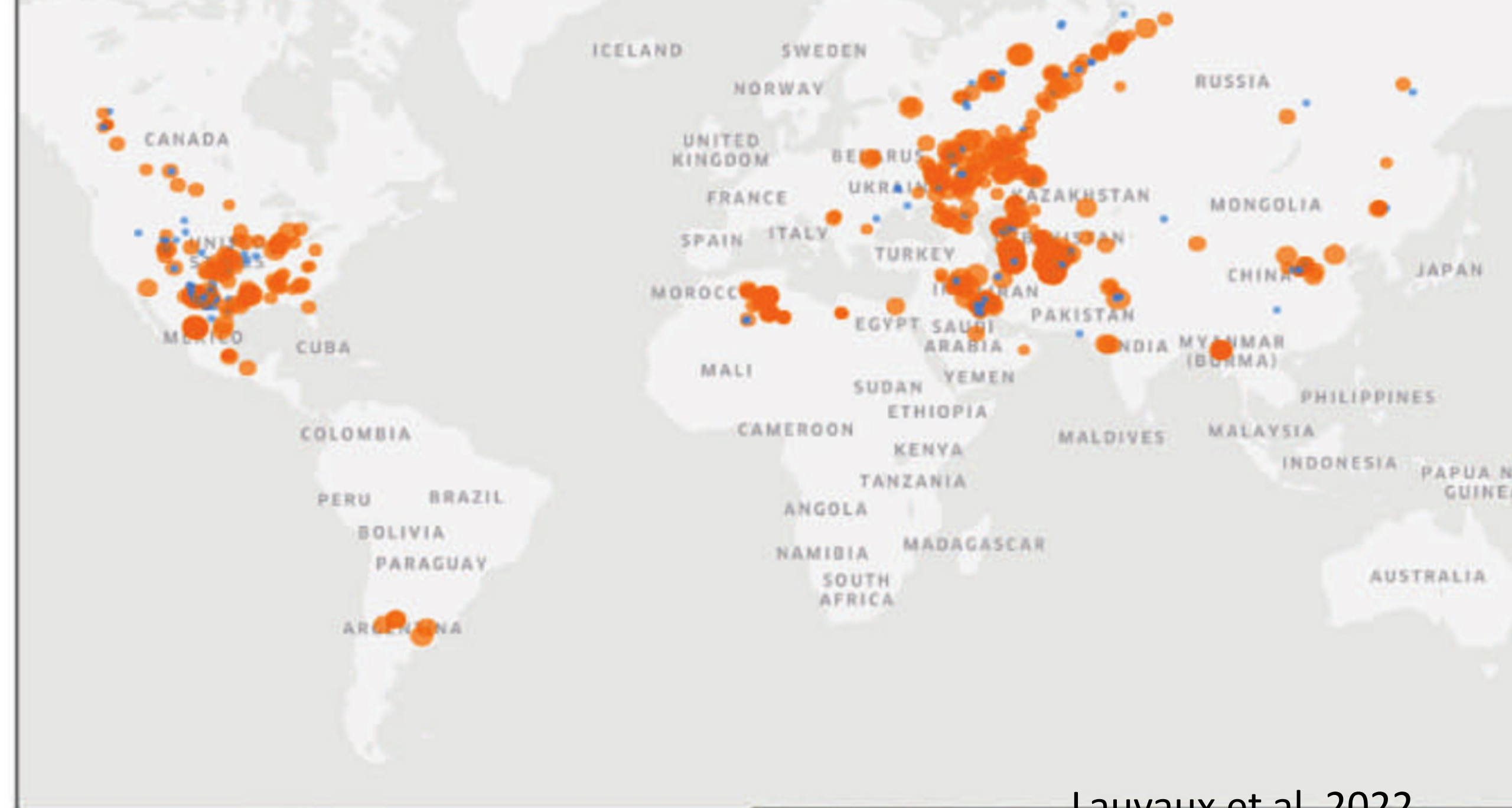
TROPOMI data reveal high methane emissions from the Permian Basin



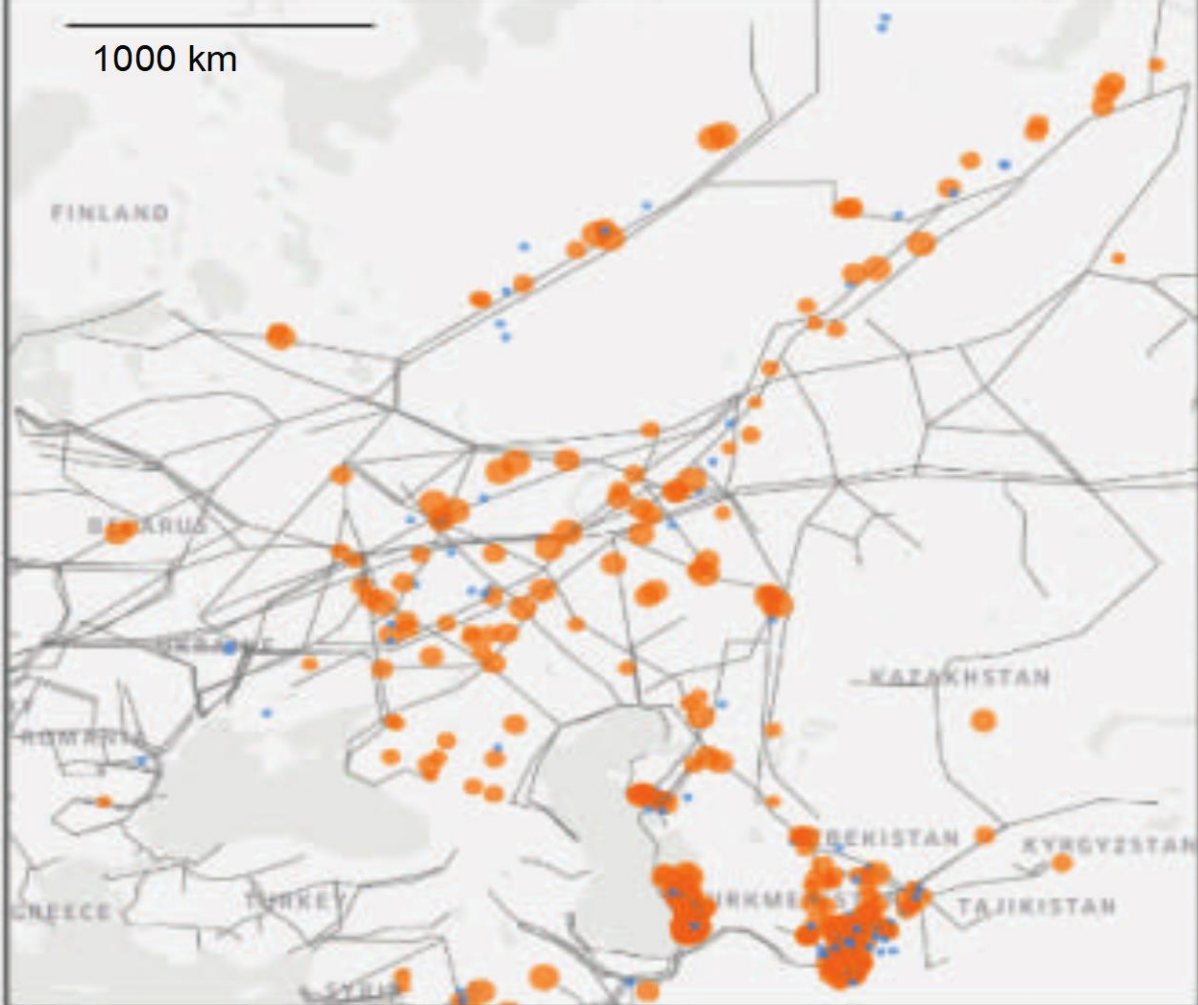
Permian Basin Methane Emissions Trends 2020



Lyon et al. 2021. Concurrent variation in oil and gas methane emissions and oil price during the COVID-19 pandemic. *Atmospheric Chemistry and Physics* 21: 6605–6626, <https://doi.org/10.5194/acp-21-6605-2021>



1000 km

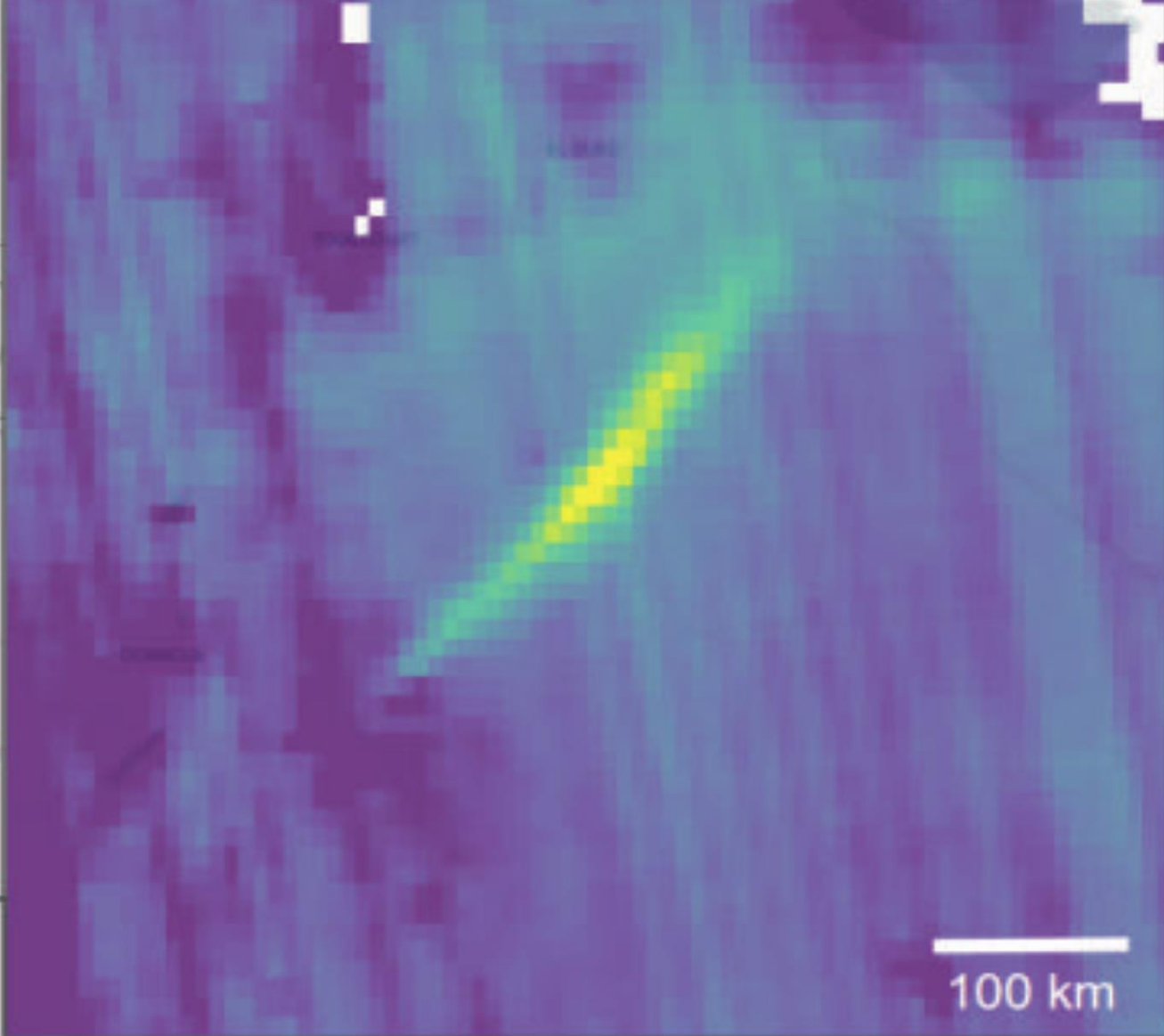


— Major oil and gas pipelines

Flow rates

- 150 t/h and above
- Linear scale between 10 and 150 t/h
- 10t/h and below
- Undetermined

Lauvaux et al. 2022



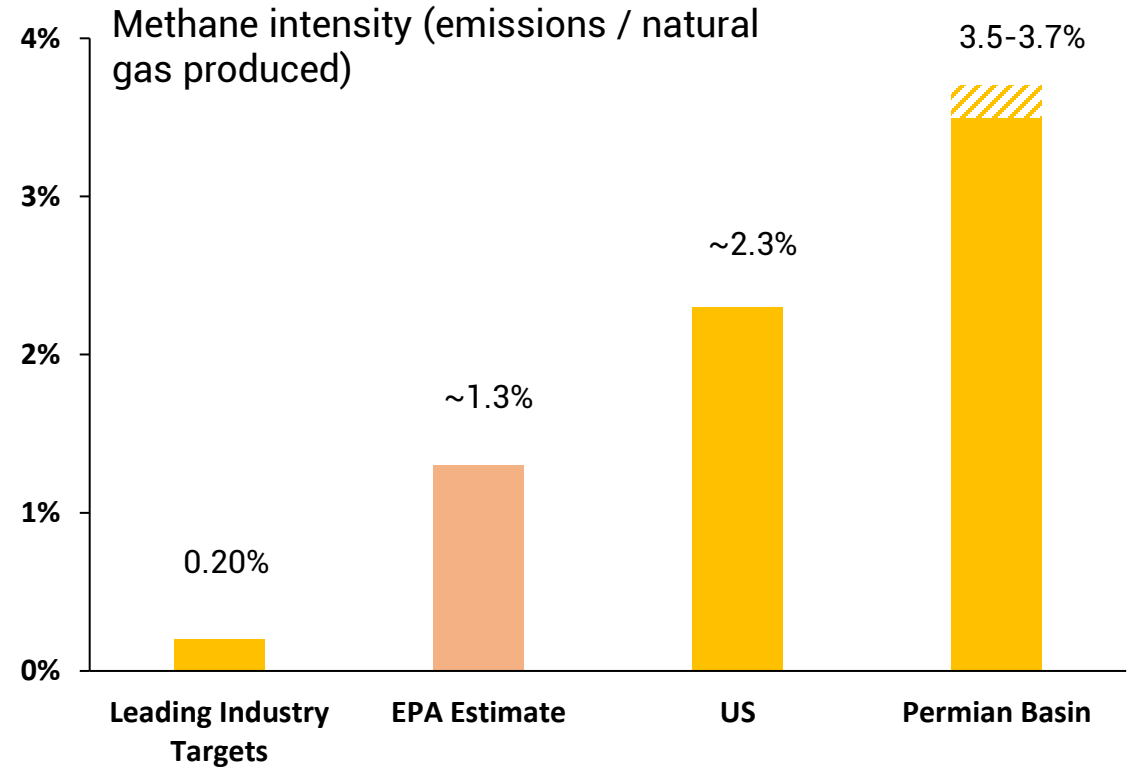
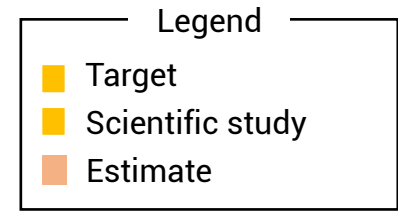
1860

1950

XCH₄ [ppb]

Why do better methane emissions data matter?

A lack of empirical, verified data on methane emissions limits action at the scale and speed needed to avoid the worst impact of climate change.



OGCI 2019 Annual Report; EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2018; Alvarez et al 2018, DOI: 10.1126/science.aar7204 (EDF Synthesis paper based on over 400 site-level measurements from 6 basins); Zhang et al 2020, DOI: 10.1126/sciadv.aaz5120 (Permian Basin assessment based on PermianMAP initiative and 2018/19 TROPOMI satellite observations).

Oil and Gas Methane Partnership 2.0

What is OGMP 2.0?

- Comprehensive, measurement-based reporting framework
- Global coverage and scope
 - 77 companies
 - Upstream, midstream and downstream
 - Public, private and national oil companies
- Assets in scope represent over 50% of global oil and gas production in over 60 countries



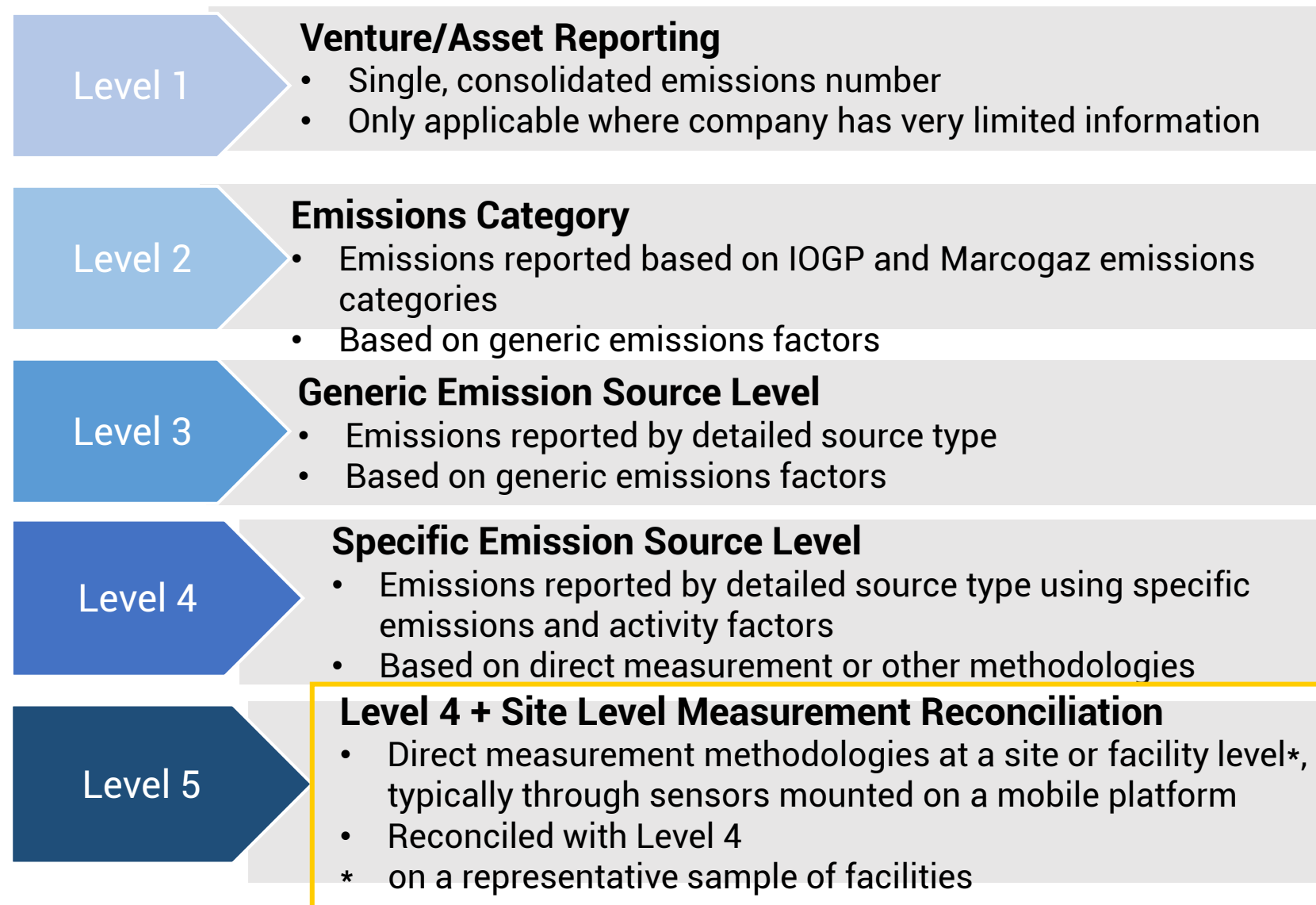
OGMP 2.0 Partners



Snapshot of Company Membership



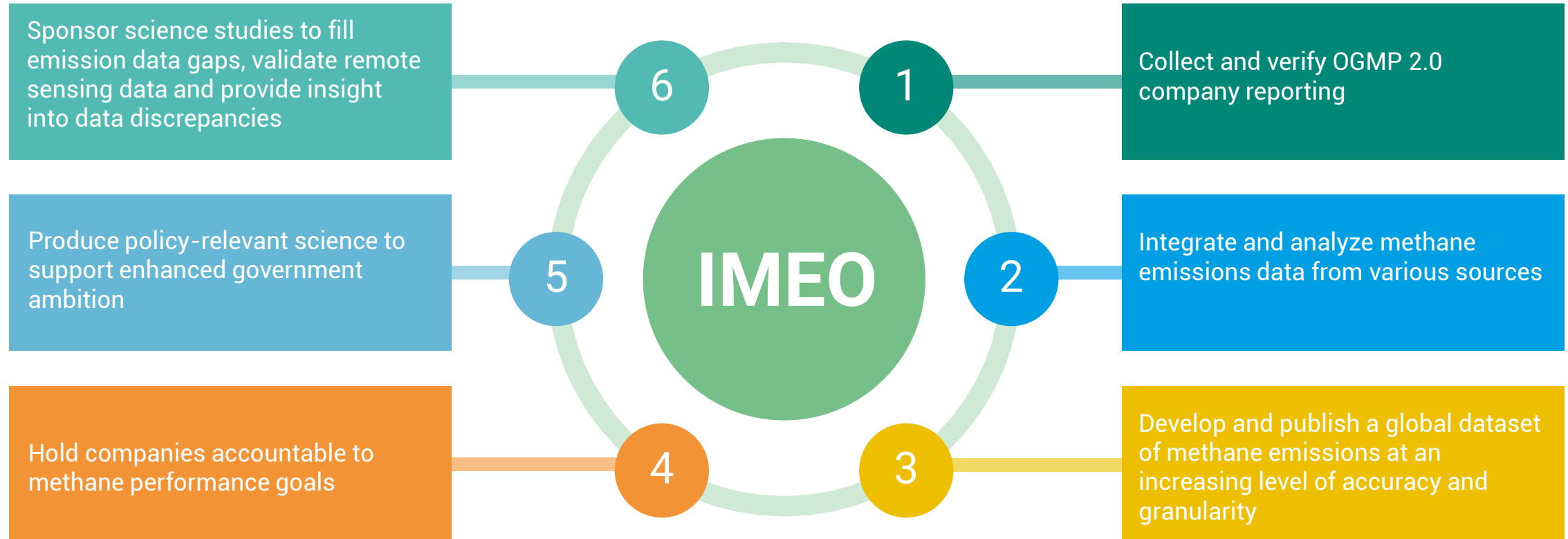
OGMP 2.0 Reporting Levels



GOLD STANDARD:

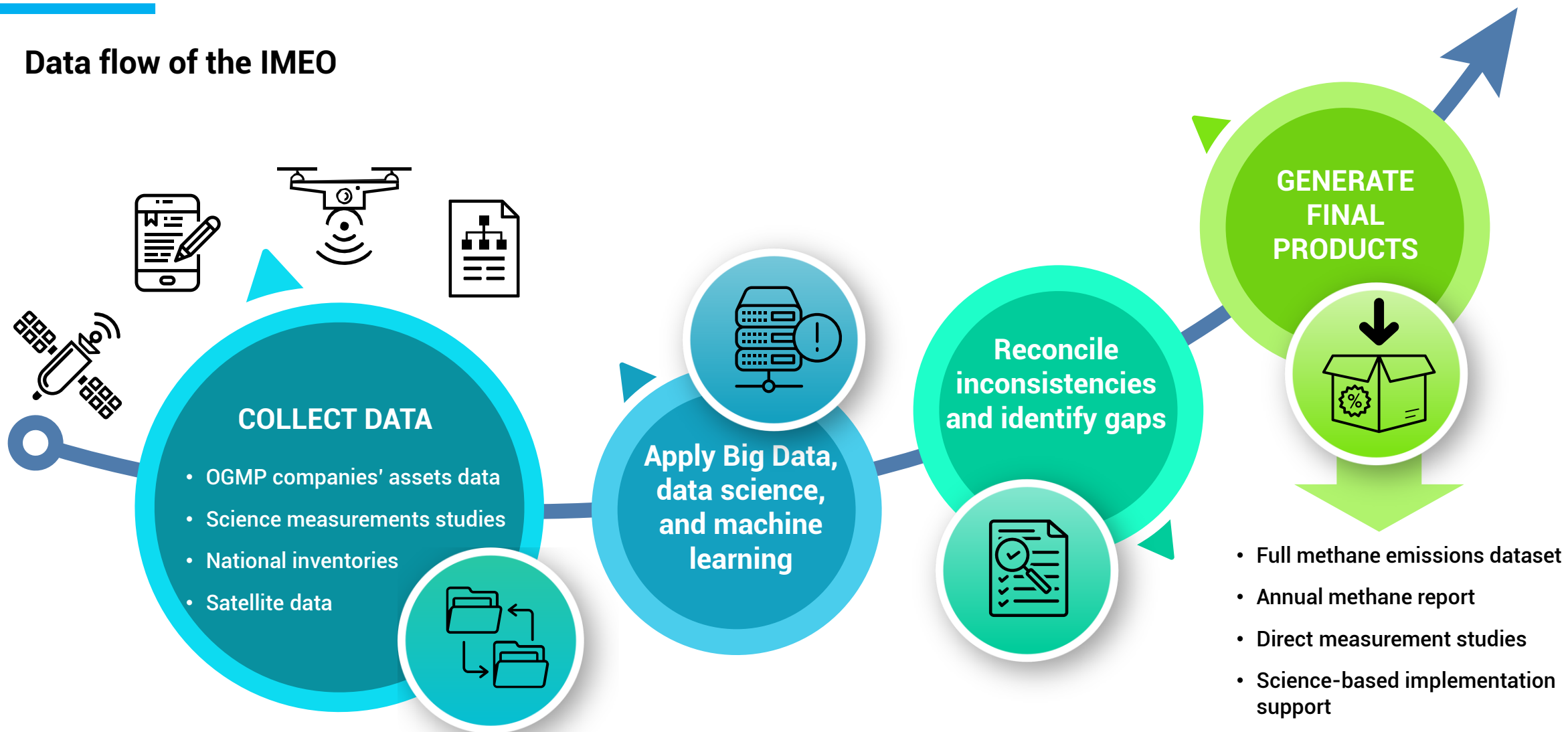
Integrates “bottom-up” source-level reporting, with independent “top-down” site-level measurements for the majority assets

IMEO Core Functions



How will IMEO answer the methane emissions data problem?

Data flow of the IMEO



Conclusion

- 1** Better data is urgent needed to catalyze the methane emissions reductions
- 2** Data from different sources and at different scales are crucial to accurately understand methane emissions.
- 3** Utilizing detection and measurement technology is critical for Monitoring, Reporting, and Verification process, but it must be connected to strategic mitigation action to successfully reduce emissions
- 4** IMEO will aggregate data from all these sources to develop a public dataset of methane emissions and work with stakeholders to use this data to direct targeted mitigation action.

March 2022

Drive action through Data



Steven Hamburg