

# Methane Global Fuel Emission Inventory (GFEI v2)

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## Science Question

Oil, gas, and coal are major emitters of methane. Using inversions of satellite observations to better quantify these emissions requires high-resolution prior estimates that build on policy-relevant national inventories.

## Analysis

We used UNFCCC emission reports, infrastructure databases, and additional information to build spatially allocated bottom-up emission inventories for individual sectors (oil, coal, gas) and subsectors (production, processing, transmission, distribution). We evaluated the resulting inventories with inversions of satellite (GOSAT) and in situ (GLOBALVIEWplus) data

## Results

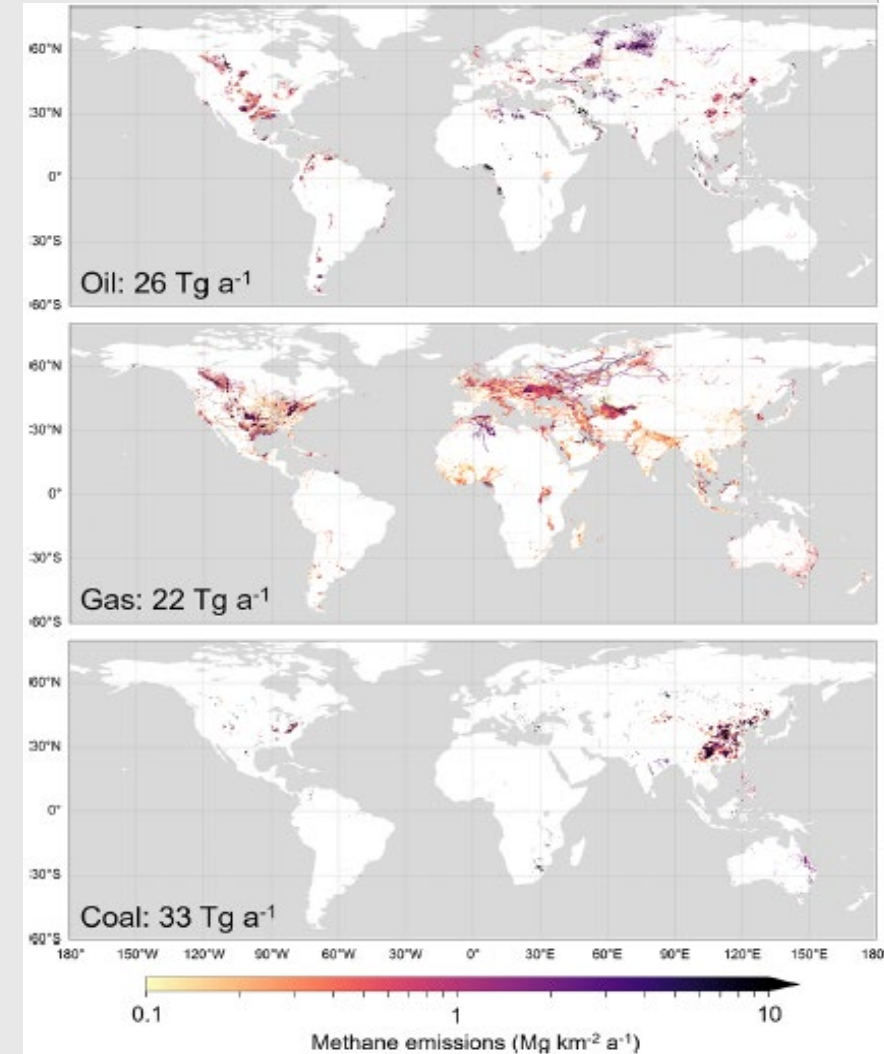
- GFEI v2 provides high-resolution ( $0.1^\circ \times 0.1^\circ$ ), annual (2010-2019) methane emission inventories for individual fuel subsectors indexed to the UNFCCC national inventory reports;
- Comparison to inversions of GOSAT satellite data indicates that oil/gas emissions are generally under-reported in the national inventories submitted to UNFCCC;
- The recent downward revision of Russian emissions reported to the UNFCCC is consistent with satellite data.

## Significance

The GFEI enables the evaluation of national methane emission inventories with satellite data, setting the stage for monitoring of these emissions and their trends from space.

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GFEI methane emissions from oil, gas, and coal exploitation in 2019.