

A new deep learning model maps global methane emissions from space.

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In a new study published in PNAS, Google and NASA's Jet Propulsion Laboratory (JPL) introduced MAPL-EMIT, an AI model that tracks methane emissions globally from space using NASA's EMIT instrument.

Methane is a potent greenhouse gas. Over a 100-year timeframe, its warming potential is 30 times greater than that of carbon dioxide. MAPL-EMIT tackles a critical bottleneck in methane detection. Trained on 3.6 million physics-simulated methane plumes (clouds of methane gas released into the atmosphere), it cuts through complex, noisy terrain to detect 50% more plumes than human experts and identifies more than 23,000 additional plumes globally, including 24 out of 25 of the world's largest-emitting landfills. By making methane sources easier to find at scale, MAPL-EMIT enables faster, more targeted climate mitigation.

Google has released the global plume database on Earth Engine alongside an Earth Engine app to visualize the data. Open-source models are available on Kaggle and inference tools are on GitHub to support researchers, policymakers, and operators. Read more on the Google Research blog.

<https://blog.google/innovation-and-ai/models-and-research/google-research/mapping-global-methane-emissions-from-space>