

ACOM Seminar

Quantifying methane emissions from point source level to the global budget

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Link: <https://operations.ucar.edu/live-acom>

ABSTRACT

Emission reductions for methane (CH₄) have strong promise for mitigating climate change on a decadal time scale. With a global warming potential 85 times that of carbon dioxide over 20 years, methane also affects tropospheric ozone and related air quality issues and modulates the atmosphere's self-cleansing capacity. The atmospheric methane growth rate has been accelerating over the past decade, with causes that are unclear. This talk explores key knowledge gaps for the atmospheric methane budget from point-source to global scales. Analyses focus in particular on identifying missing methane sources, improving model predictions of their underlying drivers, and evaluating how uncertainties in atmospheric oxidation rates impact methane source estimates. We will also discuss the capabilities of current-generation satellite sensor for high-resolution mapping of methane sources through Observing System Simulation Experiments, and new estimates of the global methane budget based on 4D-Var inverse analysis using GEOS-Chem adjoint model.