

## ***Methane emissions from industrial activities: A novel airborne concept applied to coal mines in Poland also applicable for quantifying methane emissions from the oil & gas exploration and production in Oman?***

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Theme: Air pollution measurement

Methane (CH<sub>4</sub>) is one of the most powerful greenhouse gases. Due to its short lifetime (~10 years) compared to carbon dioxide (~100-1000 years), methane is in focus of current mitigation policies to reduce global warming.

A novel airborne concept to measure CH<sub>4</sub> emissions from coal mines in Poland is presented with the focus on quantifying emissions from single point sources. During two recent field experiments in June/October 2022, a unique helicopter towed probe was equipped with a variety of meteorological, trace gas and particle instrumentation. Two different measurement techniques were applied for CH<sub>4</sub> (Picarro: cavity ringdown spectroscopy / Licor: non-dispersive infrared spectroscopy, open path). To estimate the CH<sub>4</sub> mass flux of single sources, the airborne CH<sub>4</sub> and wind measurements are complemented by mobile ground-based CH<sub>4</sub> measurements.

In autumn 2023, a similar setup is foreseen for an airborne field experiment in Oman focusing on CH<sub>4</sub> emissions from the O&G exploration and production.

Our collected data, funded by the International Methane Emissions Observatory (IMEO), will help coal, oil and gas companies and governments, to prioritize their methane emission mitigation actions and policies.