

Detection and quantification of Methane and CO₂ hot spot emissions with MAMAP aircraft observations

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Large parts of the anthropogenic greenhouse gas emissions of CO₂ and CH₄ are released from localised and point sources such as power plants or as fugitive emissions from fossil fuel mining sites. These emissions, however, are often not readily assessed by current measurement systems and networks. A tool developed to better understand point sources of CO₂ and CH₄ is the optical remote sensing instrument MAMAP, operated from aircraft. MAMAP delivers the column averaged dry air mole fractions for methane XCH₄ (or for carbon dioxide XCO₂) derived from absorption spectroscopic measurements in the short-wave infrared with a precision of about 0.3 %. This high precision allows us to estimate the emission of the point source under study. During the last years measurement and data analysis techniques were refined and the method was successfully applied to estimate point source emissions from power plants, coal mines ventilation shafts, landfills, geological seeps and oil production sites. The presentation will summarise the achievements and limitations of this new and unique method to verify emissions using passive remote sensing techniques.