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## A52G-06: Airborne in-situ observations during the CoMet campaign 2018: Quantification of CH<sub>4</sub> emissions from coal mining activities in Upper Silesia, Poland

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Friday, 14 December 2018

11:35 - 11:50

📍 Walter E Washington Convention Center - 151B

The Upper Silesian Coal Belt (USCB) represents one of the largest European CH<sub>4</sub> emission source regions, with a total sum of ~0.5 Tg CH<sub>4</sub>/a released by individual ventilation shafts spread over an area of ~4000 km<sup>2</sup>. During the CoMet campaign in late spring 2018, airborne in-situ measurements were carried out aboard the DLR research aircraft Cessna Grand Caravan. The Caravan was equipped with a cavity ring-down and a quantum cascade laser system to measure CH<sub>4</sub> and CO<sub>2</sub>, as well as related tracers such as CO, C<sub>2</sub>H<sub>6</sub> and N<sub>2</sub>O. Additionally, air samples were collected and analyzed for greenhouse and trace gases, including isotopic ratios of CH<sub>4</sub>. The aircraft itself is equipped with a boom mounted sensor package for the measurement of meteorological parameters.

During nine research flights, CH<sub>4</sub> emissions were studied by using an airborne Mass Balance Approach. Depending on the wind situation, different areas of the USCB region were targeted. To account for the lower part of the plume not accessible by the aircraft, a number of vans were instrumented with mobile in-situ measurement systems and conducted ground-based measurements in a coordinated manner. We will present derived emission fluxes, discuss related uncertainties, and compare our results with bottom-up estimates.

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