

EGU21-9536

<https://doi.org/10.5194/egusphere-egu21-9536>

EGU General Assembly 2021

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## Quantification of methane emissions from offshore oil & gas platforms in the Norwegian Sea

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Atmospheric methane (CH<sub>4</sub>) is an extremely potent greenhouse gas, with ever-increasing global emissions expected to have a significant influence on the Earth's climate. The Oil and Gas sector is considered to be a significant source of CH<sub>4</sub> to the atmosphere, estimated to make up approximately 22% of global emissions. Offshore facility emissions are poorly ground-truthed, with their quantification being heavily dependent on "bottom-up" scaling of inventory data. It is therefore important to devise reliable methods for locating these emissions and to pinpoint their sources, as this will aid emission quantification and validation against reported data.

As part of the United Nations Climate and Clean Air Coalition (UN CCAC) project, this study aims to characterise CH<sub>4</sub> emissions from oil and gas infrastructure in the Norwegian Sea. The campaign comprised surveys of selected operational oil and gas platforms in this region and included targeted observations of CH<sub>4</sub>. These surveys were conducted by the Facility of Airborne Atmospheric Measurements (FAAM) and Scientific Aviation Mooney research aircrafts in July and August 2019, with a total 14 flights. Fluxes are derived using a mass balance approach and aircraft sampling. The Lagrangian particle dispersion model "FLEXPART" is used to aid the attribution of the observed CH<sub>4</sub> emissions to the platform(s). We will present results for derived fluxes and uncertainties for individual facilities in the Norwegian Sea. These fluxes will be compared with emissions estimates from platform operators, as well as a global, gridded emission inventory.

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