EGU21-3244
https://doi.org/10.5194/egusphere-egu21-3244
EGU General Assembly 2021

MEMO^2: MEthane goes MObile – MEasurements and MOdelling

Sylvia Walter[1], Thomas Röckmann[1], and the the MEMO2 Team[*]
[1]Utrecht University, IMAU, Utrecht, Netherlands (s.walter@uu.nl)
[*]A full list of authors appears at the end of the abstract

MEMO^2 was a 4-years European Training Network with more than 20 collaborators from 7 countries. The project contributed significantly to the targets of the EU with a focus on methane (CH_4). CH_4 emissions are a major contributor to Europe's global warming impact, and the official inventories of emissions and estimates derived from direct atmospheric measurement show significant discrepancies. However, effective emission reduction can only be achieved if sources are properly quantified, and mitigation efforts are verified. MEMO^2 contributed to advanced combinations of measurement and modelling which are needed to achieve such quantification.

With respect to the recently released EU methane strategy and the implementation of independent verification of emissions by atmospheric measurements, we will present some examples of relevant results from MEMO^2 up to now:

Urban CH_4 emissions: We can now detect and quantify CH_4 leaks in cities at the street-level with mobile nigh precision analysers. Similar studies have been carried out in >10 EU cities and in collaboration with interested network operators those measurements are ready to be rolled out at larger scale.

Oil and gas production: We carried out a large study in the oil and gas production region in Romania (ROMEO), with aircraft, drones and vehicles. The final results are close to publication and help to improve the emission verification.

Coal mining: In collaboration with CoMet, another science project, we quantified the CH_4 emissions from the Upper Silesian coal mining area. The collaboration and its results contribute to the development of an independent and objective emission monitoring system

Modelling: Micro-scale plume modelling is significantly improved. Those models e.g. help to simulate a measurement day as we had during our field campaign in Romania and improve sampling and measurement strategies.

the MEMO2 Team: Arjan Hensen (TNO), Isabelle Pison (LSCE), Huilin Chen (RUG), Camille Yver-Kwok (LSCE), Anja Raznjevic (WUR), Chiel van Heerwaarden (WUR), Katarina Vinkovic (RUG), Malika Menoud (UU), Julianne Fernandez (RHUL), Patryk Lakomiec (ULUND), Lukas Emmenegger (EMPA), Semra Bakkaloglu (RHUL), Philippe Bousquet (LSCE), Jean-Daniel Paris (LSCE), David Lowry (RHUL),

Alessandro Sarno (AfalSverige), Hossein Maazallahi (UU), Dominik Brunner (EMPA), Piotr Korben (UHEI), Martina Schmidt (UHEI), Hans Oonk (Oonkay), Magdalena Hofmann (Picarro), Justyna Swolkien (AGH), Mila Stanisavljevic (AGH), Sara Defratyka (LSCE), Rebecca Fisher (RHUL), Randulph Morales (EMPA), Bill Hirs (Shell), Barbara Szenasi (LSCE), Hugo Denier van der Gon (TNO), Gregoire Broquet (LSCE), Marielle Saunois (LSCE), Maarten Krol (UU), Jutta Holst (ULUND), Ilona Velzeboer (TNO)