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On-site and ground-based remote sensing measurements of methane emissions from four biogas plants: a comparison study

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Abstract

Methods for quantifying methane (CH_4) emissions from biogas plants are needed, in order to ensure that emissions are within acceptable levels and to identify options for emission mitigation. Two emission measuring approaches were used at four biogas plants: an on-site approach, whereby emission sources were identified and subsequently quantified one at a time, and a ground-based remote sensing approach, which was applied to measure total CH_4 emissions. The emissions were between 5.5 to 13.5 kg CH_4 h^{-1} from the four plants, measured using ground-based remote sensing. Even though the measurements were performed on the same days at each facility, the sum of on-site emission rates varied between the remote sensing measurements (up to ~100%). Several factors may have caused this difference: emission sources not measured using an on-site approach and