

EGU22-13337

<https://doi.org/10.5194/egusphere-egu22-13337>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



Methane emissions from upstream oil and gas production in Canada are underestimated

David Risk¹, Katlyn MacKay¹, Martin Lavoie¹, Evelise Bourlon¹, Emmaline Atherton², Elizabeth O'Connell², Jennifer Baillie³, Chelsea Fougere¹, Afshan Khaleghi¹, Lindelwa Coyle¹, and Judith Vogt¹

¹St. Francis Xavier University, Antigonish, Canada B2G 2W5

²Arolytics Inc, Halifax, Canada, B3K 1H7

³Environment and Climate Change Canada, Ottawa, Canada K1A 0E4

Methane emissions were measured at ~7000 sites across major oil and gas producing regions in Canada to examine regional emission trends, and to derive an inventory estimate for Canada's upstream oil and gas sector. Emissions varied by fluid type and geographic region, with the heavy oil region of Lloydminster ranking highest on both absolute and intensity-based scales. Emission intensities varied widely for natural gas production, where older, low-producing developments showed high emission intensities, and where emissions intensity in newer developments was amongst the lowest in North America. Emissions from offshore production were in-line with reported estimates. When allocated to individual producers, we found that methane emissions intensity varied more than 1000-fold as determined by geographical factors and infrastructure portfolio. Reporting and disclosure frameworks in Canada are improving but we found that producers could easily under-report emissions and emissions intensity if relying only on regulatory requirements. Overall, we estimate that the Canadian upstream oil and gas methane inventory is underestimated by a factor of 1.5, which is consistent with previous studies of individual regions.