

Interactive comment on “A global gridded (0.1’, × 0.1) inventory of methane emissions from oil, gas, and coal exploitation based on national reports to the United Nations Framework Convention on Climate Change” by Tia R. Scarpelli et al.

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Dear Editor, Dear authors,

We are contacting you regarding the afore mentioned article on discussion phase for publication.

As part of the findings, results are compared with publicly available data from EDGAR

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4.3.2; highlighting differences between EDGAR, their inventory and national submissions to the United Nations Framework Convention on Climate Change.

First, we would like to inform the authors that an updated version of the $0.1^\circ \times 0.1^\circ$ gridded EDGAR global greenhouse emission inventory has recently been released – including CO₂ emissions up to 2018 and non-CO₂ greenhouse gases up to 2015. Data for this new release (EDGAR v5.0_FT2018) can be accessed through our website: https://edgar.jrc.ec.europa.eu/overview.php?v=50_GHG.

Users can also download the “2019 Global Fossil CO₂ and Greenhouse Gas Emission report” (Crippa et al., 2019) , in which the most relevant methodological aspects for emission quantification from large emitting sectors and trends for large emitting countries are described. We also expect to publish an article in the coming months; analysing the role of socio-economic transitions and GHG mitigation policies on global emission trends (Oreggioni et al., in preparation).

Given that CH₄ fugitive emissions from fuel supply chain are the subject of undergoing discussion in the scientific community and in the policy making decision process, the EDGAR v5.0_FT2018 disaggregated fuel-based fugitive emissions are openly accessible from our site.

We have the following comments concerning the differences between EDGAR quantified emissions, this work and nationally reported data to the UNFCC:

- As the authors point out, there is significant uncertainty in the estimation of CH₄ fugitive emissions from the different stages of the fuel supply chain. CH₄ emissions from the exploration phase, the production facilities, flaring and fuel transport depend on: well characteristics, chemical and physical properties of the extracted fuel, operating conditions of the processes in the fuel production plant, pipeline design and ambient conditions respectively. These site-specific characteristics affect the representativeness of the emission factors; specially if Tier 1/ default IPCC factors are considered.

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- EDGAR is an independent tool that uses a consistent and transparent methodology for the estimation of greenhouse gas and air pollutant emissions for all the IPCC categories for all countries. EDGAR aims to use the most representative and up to date activity data, technology matrix and emission factors. However, given EDGAR global coverage, assumptions based on regional similarity or Tier 1 default emission factors may be needed for emission quantification; particularly for non-combustion sectors in Non-Annex I countries.

- Emissions from all IPCC categories are included in the EDGAR database. We frequently present aggregated values on our website, but the level of detail in the calculation is that recommended by the 2006 IPCC Guidelines. Attached, you can find a summary of the sources for the activity data, emission factors and methods for spatial disaggregation of emissions associated with the different IPCC sub-categories for CH₄ fugitive emissions. Further details can be found in Janssens-Maenhout et al. (2019) and Crippa et al. (2019). This may help the authors understand the differences between the approaches used in our database for the emission quantification, the methodology presented in the manuscript and national submissions to UNFCCC. Finally, we would like to remind the authors and other EDGAR users, that we can also be contacted either directly or via the functional e-mail JRC-EDGAR@ec.europa.eu, in case of questions or requests of information that is not available on our website or in our published papers and reports. We are committed to respond to queries as quickly as possible; providing a more detailed explanation of our methodology and more disaggregated results if needed, subject to any intellectual property agreements with our data suppliers.

Kind regards,

M. Crippa, G. Oreggioni, M. Muntean, F. Monforti-Ferraio, E. Schaaf, D. Guizzardi, M. Duerr

Cited references

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Please also note the supplement to this comment:

<https://www.earth-syst-sci-data-discuss.net/essd-2019-127/essd-2019-127-SC2-supplement.pdf>

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2019-127>, 2019.

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