

## ***Interactive comment on “Gridded Emissions for CMIP6” by Leyang Feng et al.***

### **Anonymous Referee #1**

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This manuscript documents the methods used for generating gridded emission inventory particularly for the CMIP6. The authors described the automated framework that has been developed along with a brief diagnostics and interpretation of the products. In the end, they also discussed the uncertainties, limitations, and potential future work. I believe this paper is suitable for publication after addressing the following comments.

General comments:

(1) This manuscript documents the methods used for generating gridded data sets, instead of describing the CMIP6 emission product itself (which is the focus of Hoesly et al. [2018]). The title of this manuscript “Gridded Emissions for CMIP6” may not match the content and focus of this manuscript.

(2) Section 2 (“Data and Methodology”) has only one sub-section 2.1 (“Methodology overview”). Since there’s no sub-section 2.2, it seems unnecessary to have the sub-

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section 2.1. I assume the “Data” in the title “Data and Methodology” indicates the input data such as GFED and EDGAR that are described in the “Methodology overview”, as there is no separate sub-section 2.2 for Data.

(3) The main text and the figures seem to be de-coupled. Many of the figures (such as Figures 8-10) are only mentioned but not discussed in detail in the main text. I’m wondering if these figures could be explained more, or moved to Supplementary Material.

(4) Section 4 Discussion and Potential Future Work are very long. Perhaps the authors could have sub-sections (e.g., 4.1 Spatial errors, 4.2 Temporal errors, 4.3 potential strategies and future directions ...) for this Section.

(5) The discussion on the uncertainties in Section 4 appears to be qualitative. If possible, please provide more numbers and/or references for quantified or estimated uncertainties.

Minor comments:

(1) Page 1 Line 17. “The development of ... future scenarios were coordinated”. Please change “were” to “was”.

(2) Page 2 Lines 24-25. “As discussed below, the future gridded emissions builds on these two historical datasets and, in large part, inherits their properties such as within-country spatial distribution and seasonality.” Please change “builds” and “inherits” to “build” and “inherit”, respectively.

(3) Page 6 Lines 27-28. “carbon-cycle modelers indicated that a global distribution would be sufficient for use in future scenarios.” Please provide reference(s) for this statement.

(4) Page 6 Lines 32. Please provide a full name for CCS.

(5) Page 7 Lines 16-19. Figures S3-7 and S9 are mentioned here. However, I can’t find the Supplementary Material for this manuscript. Please provide it.

(6) Section 3.2. Please describe how the chosen grid cell is selected and if this chosen grid in the US is representative.

(7) Page 11 Lines 27. “, is will be important to better assess . . .”. I believe you have a typo in this sentence.

(8) Table 1. In the third row, the Emission Species Provided are shown by the names of the species, while in the fourth row, the Emission Species Provided are shown by chemical formulae. Please use consistent representation in this Table.

(9) Figures 2-6. The font in the Figures is too small to be seen. Please adjust it.

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