

Response to the editor for essd-2021-216

We are very grateful for the comments and suggestions from the reviewers that contributed to improve the manuscript. We appreciate the time they spent to evaluate our work. All comments were taken into account and were individually addressed. Note that answers are in blue and sentences added/adjusted in the manuscript are in quotation marks. Lines and figures numbers are to be understood in reference to the first submitted manuscript, so as to be consistent with the reviewer's comments.

Responses to Reviewer #1.

R. Lines 88-89: CO₂ and SO₂ are still expressed as dioxideS when should be carbon dioxide and sulfur dioxide.

Authors: Changed as suggested

R. Line 97: rewrite phrase to avoid confusion between annual emissions and emission fluxes in spatially disaggregated inventories.

A: The sentence has been modified by removing the second part of the phrase. The sentence now reads: "Throughout this paper we will follow the EDGAR nomenclature and use the term "sectors" to refer to emission activities (Crippa et al., 2018)."

R. It is suggested to review Table A1, since although authors state that they use EFs tier 1 of the IPCC 2006 for CH₄, they continue to declare the same values for CH₄ regardless of the technology (conventional stoves, catalytic stoves, etc.).

A: Indeed, the same EFs for CH₄ are used within the residential sector regardless of the technology. This is based on the fact that these tier 1 EFs from IPCC 2006 vary according to the fuel and not the technology (Table 2.5 in IPCC 2006). In our study firewood is the only fuel considered in the residential sector and therefore we believe it is correct to apply the same EF for CH₄ regardless of the technology.

R. Lines 398-399: according to what is stated in Table A1, this statement only applies to PM and NO_x and not to several species.

A: The sentence has been changed and now the species are specified. The new sentences now reads: "In contrast, the current inventory (INEMA) considers emission factors for PM₁₀, PM_{2.5}, NO_x, and SO₂ that take these conditions into account"

R. In the caption of Figure 7 the authors have added the following clarification: "We note that the residential sector from EDGAR corresponds to category 1A4 from IPCC. This category, in addition to residential emissions, also include emissions from commercial, agriculture, forestry, fishing and fish farms". I think they should not fail to mention that the main difference with said category in EDGAR is the omission of emissions from burning of fuels other than firewood.

Authors: The caption of Figure 7 has been changed and now the second sentence reads:

"We note that the residential sector from EDGAR corresponds to category 1A4 from IPCC, while for INEMA the residential sector corresponds to IPCC code 1A4b with only firewood combustion. The category 1A4, in addition to residential emissions, also include emissions from commercial, agriculture, forestry, fishing and fish farms"