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Interactive comment on "CAMS-TEMPO: global and European emission temporal profile maps for atmospheric chemistry modelling" *by* Marc Guevara et al.

Anonymous Referee #2

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This manuscript covers one of most important key aspects in emissions modeling for air quality and climate modeling communities. While climate modeling community does not need the emission input in hourly level, air quality modeling community does requires temporally highly resolved hourly emission inputs which play a key role in its modeling performance. This manuscript descries all the updates and enhancements made to most latest temporal profiles available and does a fairly great jobs on documenting those processes. However, sometime it lacks on describing the details on how those latst region-specific activities/emissions get used to develop the updated temporal profiles. As an example, it does not describe well on how does the U.S. EPA's NEI emissions were used to develop the county-level temporal monthly, weekly„

profiles while there are so much of variation between the source sectors and regional temporal variations. I am aware of that it will be impossible to cover the details but at least it can describes higher level of statistical methods and assumptions to meet its requirements. My second comment is that I understand that it has to cover quite range of information and data to describe its detail methodologies. However, right after reading this manuscript into this, I realized that I do not have enough based knowledge of CAMS-related emissions inventory development. This manuscript expects some level of technical understanding prior to what this manuscript can offer. I felt sometime that this manuscript was written as a project technical report originally and then converted to this manuscript. I hope this manuscript can cover some base knowledge for readers who are not so familiar with CAMS_GLOB_ANT and CMAS_REG_AP/GHG inventory development, and many other studies used in this manuscripts. Other than these two comments, there are a few minor comments listed below: Line 63: Full description of TNO Line 67: Full description of EPA Line 84: Add any reference(s) for gridded temporal data development statement. Line 107: "all the domain" to "entire domain" Line 107: " or gridded values" to "temporal-meteorology" (?) Line: 109: "yearly" to "year" (?) Line: 122: "power and heat plants and refineries" to "power/heat plants, and refineries" Line 124: Full description of GNFR_A category Line 146: "includes, among other, processed„" to "includes, ???? high resolution temporal profiles by source category???? , processed„" Line 151: "„hydro, geothermal/other) and country" to "„hydro, and geothermal/other) and country" Line 188: Please explain the details on what is MBS. . .. . .

Line 195: Fig.S1.. Question: How did you come up with US energy sector weekly by fuel type? How did you overcome the regional differences between the CEMS locations? What were the assumptions made for this approach? . . .. Overall, I would like for authors to go over the manuscripts more thoroughly and describes underline knowledge, and generalize many technical information based on the readers with minimum knowledge stand point.

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