

Interactive comment on “The Open-source Data Inventory for Anthropogenic Carbon dioxide (CO₂), version 2016 (ODIAC2016): A global, monthly fossil-fuel CO₂ gridded emission data product for tracer transport simulations and surface flux inversions” by Tomohiro Oda et al.

Anonymous Referee #1

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This paper outlines a major update and improvement to the well documented ODIAC emissions inventory data set. With the withdrawal of funding for CDIAC, this data set becomes increasingly important. The fact that this new version makes use of collaborative efforts with CDIAC combines many features of the CDIAC data set that was not formerly a part of the CDIAC emissions inventory is a huge bonus.

Of course, there are some minor issues that need to be cleared up, but they are minor.

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In general the presentation is excellent and a few phrasings are particularly nice.

One difficulty is that CDIAC is/was a whole center and has multiple products. In this paper it is sometimes difficult to distinguish between the data products from CDIAC. It would be nice to settle on a standardized way of representing each, perhaps CDIAC_EI for the emissions inventory (?) and something else for the other data.

As the authors know, uncertainty is a big issue and has yet to be incorporated in an appropriate fashion into these inventories. However there is progress and this paper does a better job than most in outlining where its faults lie. There are still some challenges, such as the mysterious global scaling, but I can see ODIAC getting a handle of the uncertainty in the next few years by putting together that various pieces that are already in the literature and cited in this document.

A few technical issues:

1. There are a number of places with missing or incorrect articles ("the", "a"). I think it would be fairly quick for one of the authors to run through the paper with that in mind and do a quick correction. There is not a difficulty with understanding the intent, it would just be a bit smoother.
2. Page 3, line 41. The upgrades to the CDAIC data are never outlined. It might be nice to revisit this at the end to summarize the differences. The following sentence on line 43 needs to be reworded for clarity.
3. Page 4, line 14. "adopt" should be singular.
4. Page 4, line 24. Sentence beginning here is awkward and needs rephrasing.
5. Page 6, line 9-10. This really needs better explanation and resolution. This is kind of a big issue since the world total is simply "scale" to compensate. It sounds like you are doing something "fishy" and rather than actually fixing the issue, that your are just assuming it doesn't matter. It does matter and may be a source, for some countries, of significant error. My suspicion is that a simple scaling may not reflect the proper

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distribution of those emissions.

6. on page 7, you outline the use of spatial data of power plants but wait until much later to explain the source of that data. It would be good to reference eGrid here as well. You might also investigate the use of other EPA data products to supplement the eGrid data. If you are planning to eventually pull out concrete production, you might as well get other major industrial sources as well.

7. Several places, such as on page 7, line 38, you explain the use of a data product without citing it. Another place, you cite a paper that also references the data product but not the product itself. The name of the data product should be cited, as well as a paper that might provide an explanation.

8. Page 17, line 25-27. the "/" is awkward and should easily be reworded.

9. The summary has some awkward tense issues. The authors should discuss what should be past tense and what should be present tense. It is this reviewers opinion that anything that the paper does should be present tense and that work done in the past should be past tense.

Overall this is a well written and important paper. Clearing up the few technical issues should be done quickly so that the paper can be officially published.

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