Review of revised essd-2020-103_v4 "A global anthropogenic emission inventory of atmospheric pollutants from sector- and fuel-specific sources (1970–2017): An application of the Community Emissions Data System (CEDS)" by McDuffie et al.

I would like to compliment and thank the authors for a very detailed response to this reviewer's comments and suggestions. Personally I think this has increased the clarity of an already well-written manuscript. All points made are well addressed in the revised MS. To mention a few;

- I am glad to read that the authors agree with my reservations on the use of the term "calibration" (inventories) and have adjusted the MS accordingly.
- The new Figure S2 provides interesting information and this is well discussed in the revised manuscript. It is a general fact that using a (scaling) relationship outside its domain (e.g., application on historic years not present in the regional scaling inventory) can rapidly increase uncertainty. By making that visible in Fig S2 the discussion is immediately more clear, shows that it generally goes quite well but some outliers exist and are flagged. I truly like the additions made, partly inspired by this figure, starting on Line 676 (4.2.1 Uncertainties in Activity Data) and further in Line 761.
- The new split in the group 'Other Asia / Pacific/ Middle East region into the Australasia, Middle East, and Other Asia / Pacific regions has no doubt been some work in making new figures but makes the discussion sections in which this country group occurs immediately more focussed on where the changes/ or large contributions are really happening. Even in Fig 8, which is of course more crowded with the additional country groups, it can be seen that the trends in the now broken down groups for some pollutants (e.g. NMVOC) are different.

I will not mirror all changes the authors implemented, just state here that they did an excellent job.. In this reviewer's opinion the description but also discussion of the data in this (well-written) MS has substantially improved and I warmly recommend publication.