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Interactive comment on "Silicone v1.0.0: an open-source Python package for inferring missing emissions data for climate change research" *by* Robin D. Lamboll et al.

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Thanks for your helpful comments Robert!

1. l. 207 Maybe it could be worded more clearly what is compared with which aim instead of just "CO2 nor methane ..."?

    - We have significantly expanded this section as follows: To determine the appropriate statistics to apply on the errors, we first perform a Shapiro-Wilks test to detect any non-Gaussian aspect for the error distribution. This indicated that neither CO2 nor CH4 are statistically significantly non-Gaussian,

    either when analysed separately for each cruncher or as an aggregate.

2. l. 264 The reference to PRIMAP-crf here is not clear to me. On https://climateactiontracker.org/methodology/historical-data/ it is described as one of the sources of historical input data for the CAT. Maybe a link to the CAT methodology (or the CAT website in general) would be a good reference (https://climateactiontracker.org/methodology/)

    - Yes, we cited it as being a significant data source. We note that the paper prefers not to cite grey literature, but will probably make an exception here, so the CAT website is now cited as well.

3. General comment: It is hinted at in the paper but maybe it could be made more clearly that any approach based on relation to other available scenarios or ensembles is bound by the available scenarios which are not part of a distribution of likely futures but rather shaped by intercomparison exercises (e.g. certain technologies, or climate policy goals). In any case, excellent that Silicone provides the possibility to filter and select input scenarios and mentions these considerations.

    - This is very true. We have dedicated a lot of space in the notebooks to it, but not really foregrounded it in the paper. We have added a short passage at the beginning of the methods section as follows: "In all cases, the infillers will perform best if the target data comes from a scenario that is socioeconomically similar to scenarios found in the infiller database. The performance of most crunchers can be improved by filtering out scenarios that are known to assume radically different characteristics like population number before infilling, provided that comparable emissions statistics can be found in the remaining database."

Best wishes

Robin

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