Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on essd-2021-221

Anonymous Referee #1

Referee comment on "Global soil NO emissions for Atmospheric Chemical Transport Modelling: CAMS-GLOB-SOIL v2.2" by David Simpson and Sabine Darras, Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2021-221-RC1, 2021

Review of "Global soil NO emissions for Atmospheric Chemical Transport Modelling: CAMS-GLOB-SOIL v2.2"

General comments:

This study implemented the YL95 soil NO emissions scheme with various updates from other publications in the EMEP MSC-W chemistry transport model, and generated global soil NO emissions at the spatial resolution of 0.5 degree by 0.5 degree during 2000-2018. Soil NO is a significant contributor to global NO emissions, and generating global NO emissions inventory is important. However, it is very difficult to find innovation in this study, thus I cannot recommend its publication in ESSD.

Specific comments:

- This study just implemented an old NO emissions scheme with various updates from other publications, but it lacks innovation. Moreover, Weng et al. (2020) has already generated global soil NO emissions at the resolution of 0.5 degree by 0.625 degree for 1980-2017. What is the innovation of this study compared with Weng et al. (2020). A little finer resolution is not sufficient to make it publish.

- Although Sect. 3.3.2 explain a bit, I still cannot understand why use air temperature rather than soil temperature. Do you mean soil temperature has very large uncertainty or it requires more coding work to implement?
- The introduction lacks the review of current soil NOx emission algorithm.
- Line 3: delete “degrees”
- There are many grammar errors, and the writing should be polished.

References

Weng, H., Lin, J., Martin, R., Millet, D. B., Jaeglé, L., Ridley, D., et al. (2020). Global high-resolution emissions of soil NOx, sea salt aerosols, and biogenic volatile organic compounds. *Scientific Data, 7*(1), 148. https://doi.org/10.1038/s41597-020-0488-5