Comment on gmd-2021-96

Anonymous Referee #1

Referee comment on "The CHIMERE v2020r1 online chemistry-transport model" by
Laurent Menut et al., Geosci. Model Dev. Discuss.,
https://doi.org/10.5194/gmd-2021-96-RC1, 2021

The document is well written and organized in a clear way.

A positive aspect of the approach in this model development, is the transparency of the model code, good documentation and therefore also the possibility to pursue reproducibility.

In order to **improve/increase** this reproducibility and to increase the interaction with the users, it would be a good idea to push the source code on a git repository.

Some major issues:

When performing the validation for Europe, you are focusing only on the rural stations, arguing that those stations are indeed most representative for this type of domain. However, the CHIMERE model is at the same time running operational within the framework of Copernicus (CAMS) at a much higher resolution. Why didn't you consider this resolution in order to also show the performance of the model for local sources (traffic stations, industrial, ..)?

Section 4

The meteorological forcing is ECMWF, please give more details on the model version (ERA5? IFS cycle ?) and which resolution is extracted.

Section 4.5 O3 profiles

Here I would suggest to be very careful with the choice of the ozonesonde stations, since most of the stations are in the process of reprocessing their data. Please, mention the type of sensors used (ECC, BM) and if a reprocessing took already place. Only consider stations, where you have the full yearly cycle available in order to exclude a possible seasonal effect on your results.

minor typos:

- line 170: OzoneSonde measurements should be ozonesonde measurements
- line 688: 'BCclim"