**Supplemental data to *“A 3D-model inversion of methyl chloroform to constrain the atmospheric oxidative capacity”*, Naus et al. (2020)**

**(submitted to Atmospheric Chemistry and Physics)**

Optimized OH variations and optimized MCF emissions as derived following methods presented in Naus et al. (2020). These data are distributed as follows:

1. **OH\_priors/**: The prior OH fields used in the REF/POP and TM5OH inversions. These are 12 monthly fields, which are annually repeating.
2. **OH\_scaling\_latitudinal/**: Contains monthly scaling factors for each of the 45 latitudinal bands, from each of the three (REF/POP/TM5OH) ten- and twenty-year inversions (i.e. 6 files in total). These can be combined with 2a) for optimized OH fields.
3. **kOH\_scaling\_global/**: Contains monthly scaling factors for global mean *k*(*T*).OH, as in Figure 1 of the main text. I.e. these scaling factors are a combination of the scaling factors in b) and the temperature fields used in TM5, from the ECMWF Era-Interim analysis product. These can be combined with a) for optimized OH fields, without the extreme latitudinal adjustments from b), or they can be used in box models. Some robustness with respect to prior OH distribution suggests they can also be used to introduce -monthly- interannual variability in any OH distribution.
4. **MCF\_emissions/**: Prior and optimized MCF emission fields.

**General recommendations for data usage:**

* We *highly* recommend to first read the main manuscript before using any of these data.
* If using only one set of optimized OH anomalies (or optimized MCF emissions), we recommend to use the results from the REF-20y inversion.
* As discussed in the main text of Naus et al. (2020), the latitudinal OH adjustments (given in 2b) contain a large time-invariant spatial adjustment to the prior that is perhaps unrealistic and reflective of errors in other MCF budget terms (e.g. the ocean flux). Therefore, we recommend to use only the global scaling factors given in 2c) for most purposes, possibly in combination with 2a), except when the purpose involves more in-depth analysis of our inversions than presented in this study.
* Please consider when using optimized OH and/or MCF emission products in any form that especially the first one/two and the final one/two years can be influenced by spin-up and spin-down effects. I.e. be careful when using these years for any analysis.