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Corrigendum to "The historical ozone trends simulated with the SOCOLv4 and their comparison with observations and reanalyses" published in Atmos. Chem. Phys., 22, 15333–15350, 2022

Arseniy Karagodin-Doyennel[1,2,★], Eugene Rozanov[1,2,3,★], Timofei Sukhodolov[1,3,4,★], Tatiana Egorova[1], Jan Sedlacek[1], William Ball[5,†], and Thomas Peter[2]

[1]Physikalisch-Meteorologisches Observatorium Davos/World Radiation Center (PMOD/WRC), Davos, Switzerland
[2]Institute for Atmospheric and Climate Science (IAC), ETH, Zurich, Switzerland
[3]Ozone layer and upper atmosphere research laboratory, Saint Petersburg State University, Saint Petersburg, Russia
[4]Institute of Meteorology and Climatology, University of Natural Resources and Life Sciences, Vienna, Austria
[5]Department of Geoscience and Remote Sensing, TU Delft, Delft, the Netherlands
★These authors contributed equally to this work.
†deceased

Correspondence: Arseniy Karagodin-Doyennel (darseni@student.ethz.ch)

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Due to the revealed error in the processing of the MERRA-2 and ERA-5 reanalyses, namely the missing unit conversion from $\mathrm{kg\,kg^{-1}}$ to $\mathrm{mol\,mol^{-1}}$ before the vertical integration over specific atmospheric layers, the MERRA-2 and ERA-5 results presented in Fig. 3 of the paper (published in Atmos. Chem. Phys., 22, 15333–15350, 2022) are incorrect. The amplitudes of calculated ozone anomalies in these datasets are too large compared to those in BASIC and SOCOLv4, which also affects the resulting dynamical linear regression modeling (DLM) trends. The corrected figure is presented below. Despite the implemented correction, discrepancies in ozone evolutions at different atmospheric layers between reanalyses and model data/observations are still large. It is important to note, though, that many of the remaining differences between MERRA-2 and BASIC are well understood and discussed in Wargan et al. (2017, 2018) and Gelaro et al. (2017).

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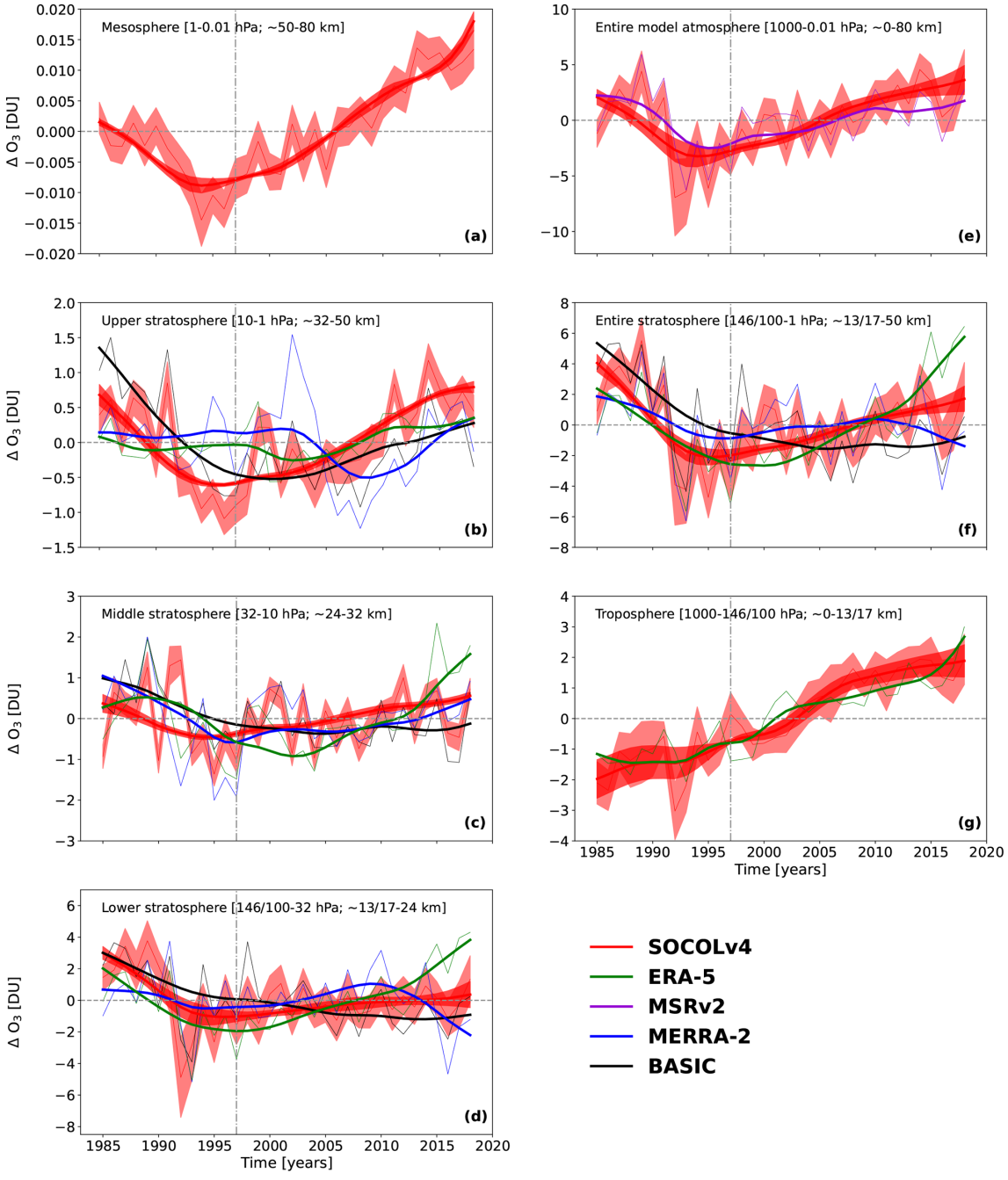

Figure 3. Extra-polar (55° N–55° S), annual mean evolution of partial and total column ozone changes (in Dobson Units, DU) and DLM fits for the 1985–2018 period simulated with SOCOLv4 (red), from the Bayesian BASIC ozone composite (black), and from the reanalyses, including MERRA-2 (blue), ERA-5 (green), and MSRv2 (purple) for different atmospheric levels. Column ozone evolution and DLM fit presented for the **(a)** mesosphere; **(b)** upper stratosphere; **(c)** middle stratosphere; **(d)** lower stratosphere; **(e)** entire model atmosphere; **(f)** entire stratosphere, and **(g)** troposphere. The solid thin lines represent the ozone column anomalies; the solid curves represent the regression model fits computed by DLM, marked with the same color as the ozone anomalies. Red shadings represent 1σ standard deviation of ozone evolutions and DLM fits between ensemble members of SOCOLv4 results. Dashed-dotted vertical gray line marks the year 1998; dashed horizontal gray line marks the zero level.