Supplement to the paper "Updated global and regional trends of ozone profiles"

1. Technical information related to computation of the combined trends and their uncertainties

The correlation coefficients of trend uncertainties are approximated by the correlation coefficients of fit residuals from the regression model. For post-2000 trends, they are:

$$C = \begin{pmatrix}
1 & 0.9 & 0.6 & 0.6 & 0.6 & 0.6 & 0.6 & 0.6 \\
0.9 & 1 & 0.6 & 0.6 & 0.6 & 0.6 & 0.6 & 0.6 \\
0.6 & 0.6 & 1 & 0.95 & 0.6 & 0.65 & 0.6 & 0.6 \\
0.6 & 0.6 & 0.95 & 1 & 0.6 & 0.7 & 0.65 & 0.6 \\
0.6 & 0.6 & 0.6 & 0.6 & 1 & 0.82 & 0.8 & 0.7 \\
0.6 & 0.6 & 0.65 & 0.7 & 0.82 & 1 & 0.8 & 0.7 \\
0.6 & 0.6 & 0.6 & 0.65 & 0.8 & 0.8 & 1 & 0.8 \\
0.6 & 0.6 & 0.6 & 0.6 & 0.7 & 0.7 & 0.8 & 1
\end{pmatrix} \tag{1}$$

The order of the datasets: SBUV NOAA, SBUV NASA, GOZCARDS, SWOOSH, SAGE-CCI-OMPS+, SAGE-SCIAMACHY-OMPS, SAGE-OSIRIS-OMPS, SAGEII-OSIRIS-SAGEIII.

2. Analyses of sensitivity of ozone trends
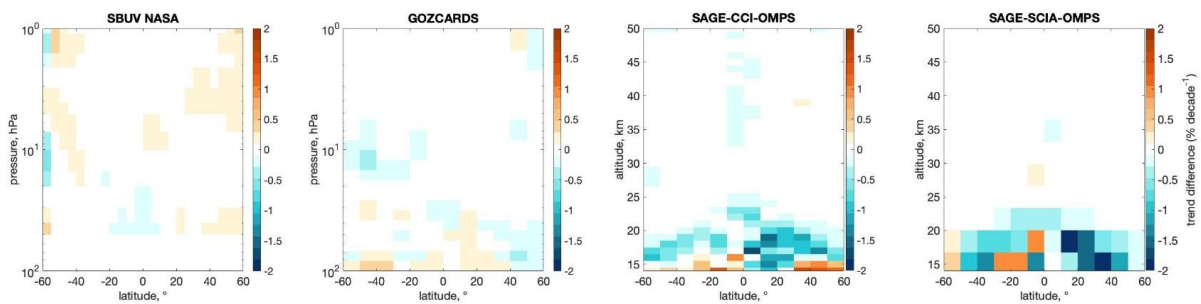
Figure S1. Differences (% per decade) in 2000-2020 trends calculated using the old and updated LOTUS regression model (see Table 3).
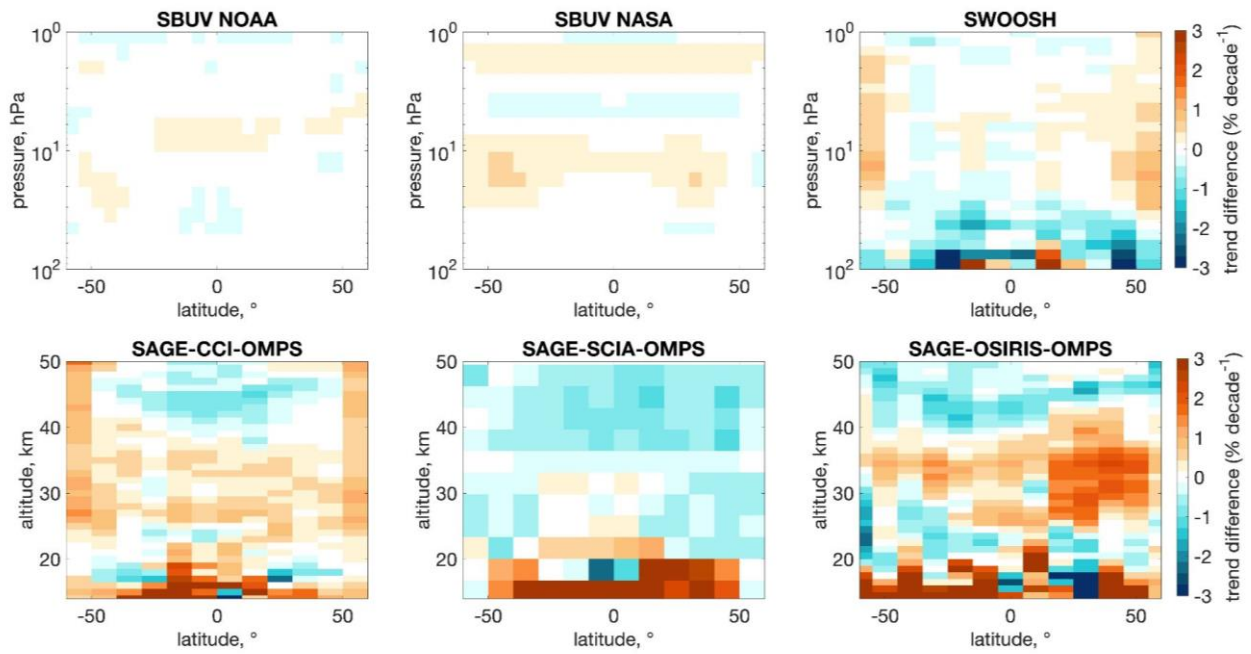
Figure S2. Difference (% per decade) in 2000-2020 trends derived from the new and old dataset versions using the same regression model setup.
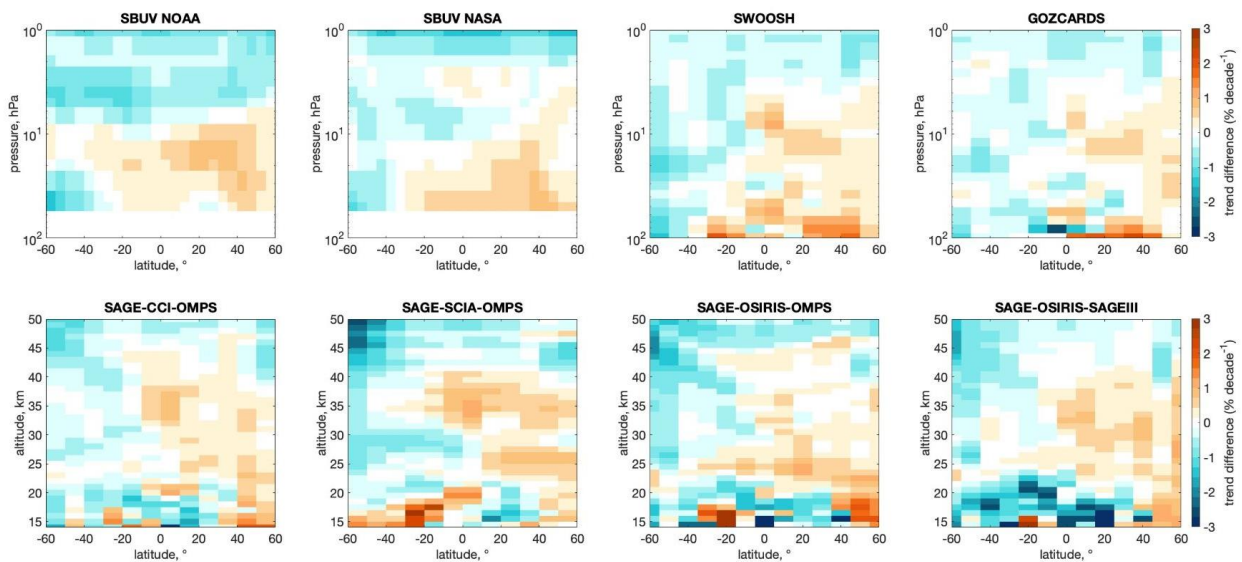
Figure S3. Differences (% per decade) in ozone trends between the 2000-2024 and 2000-2020 periods, based on analyses using the updated data versions.
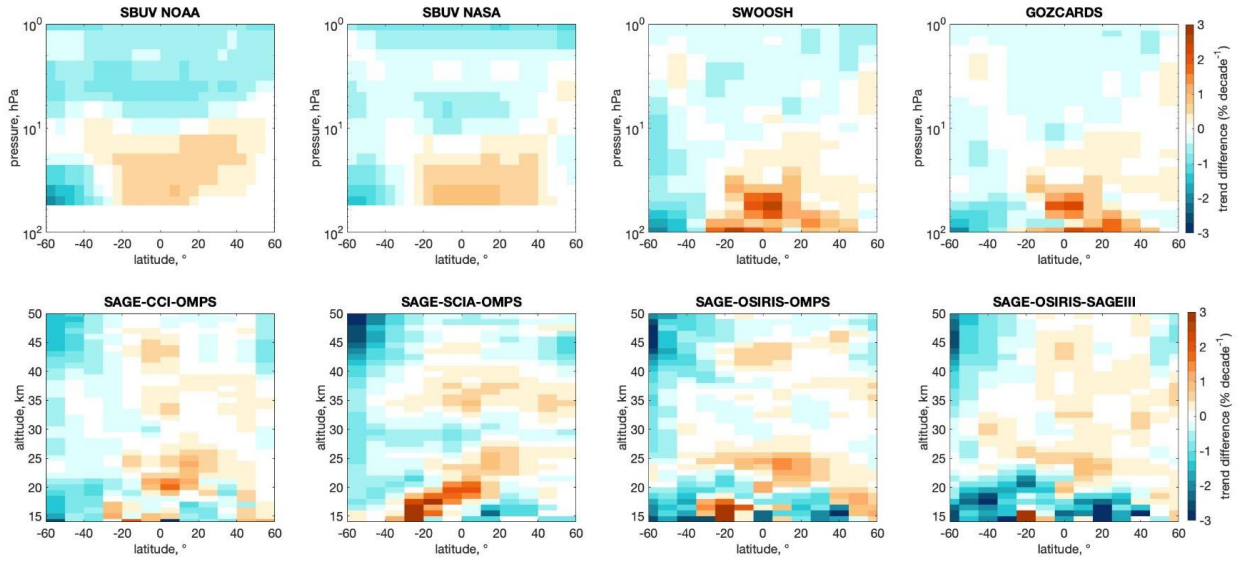
Figure S4. Same as Figure S3, but for the differences between the 2000-2023 and 2000-2020 periods.
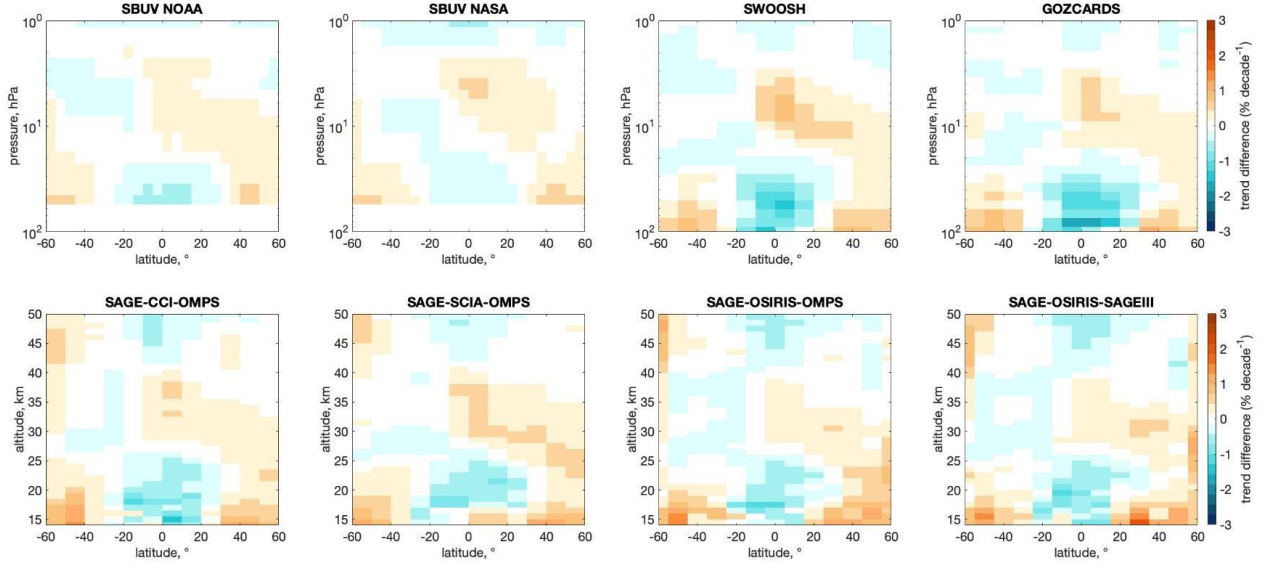
Figure S5. Effect of the inclusion of the exceptional year 2024 on trend estimates, expressed as the difference between ozone trends for 2000-2024 and 2000-2023 periods.
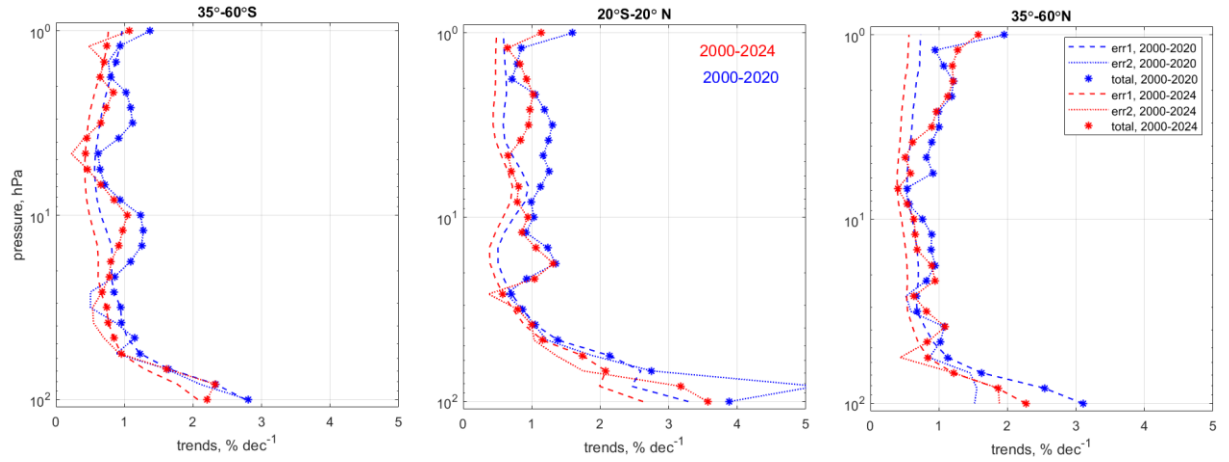
Figure S6. Uncertainties of combined trends with error contributions: propagation of errors from fit residuals (err1, dashed lines) and standard error of the trend sample (err2, dotted lines). The total trend uncertainty is shown by star symbols that indicate the maximum of err1 and err2. Blue lines: 2000-2020 trends (as in WMO-2022), red lines: 2000-2024 trends.