Supplement

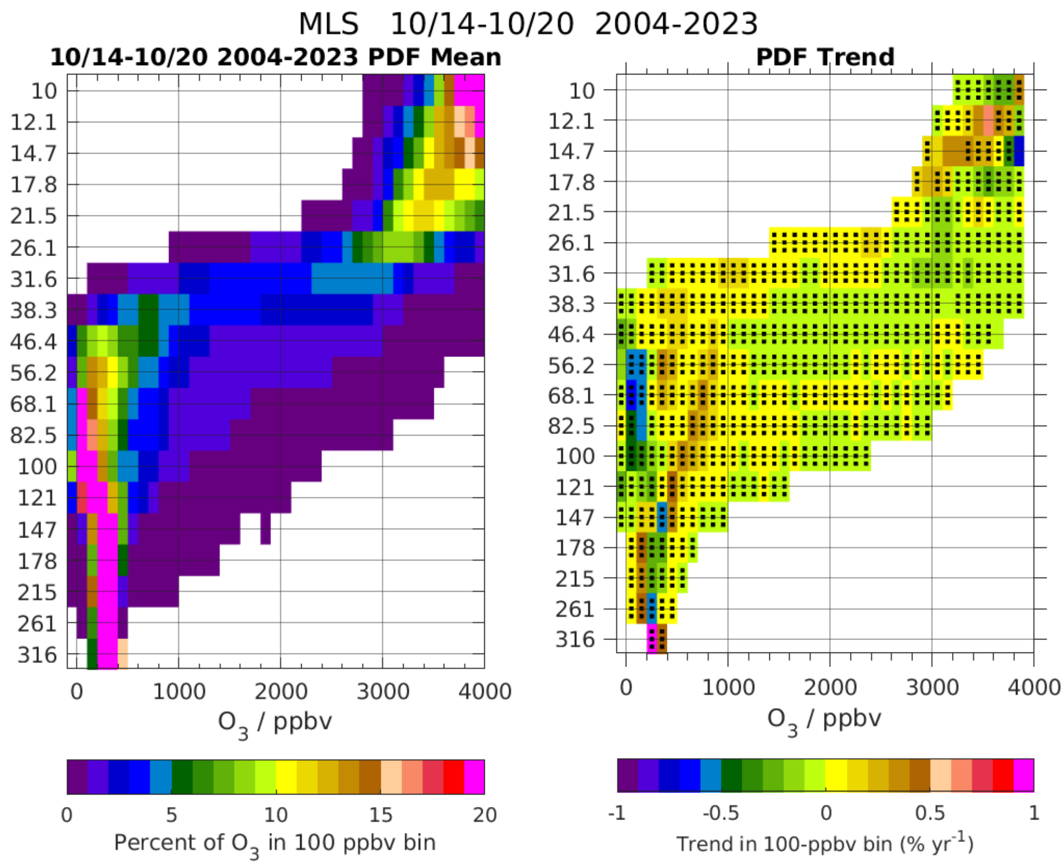

Figure S1. Same as the MLS-related panels in Fig. 4 in the main text, but for the week of October 14–20.

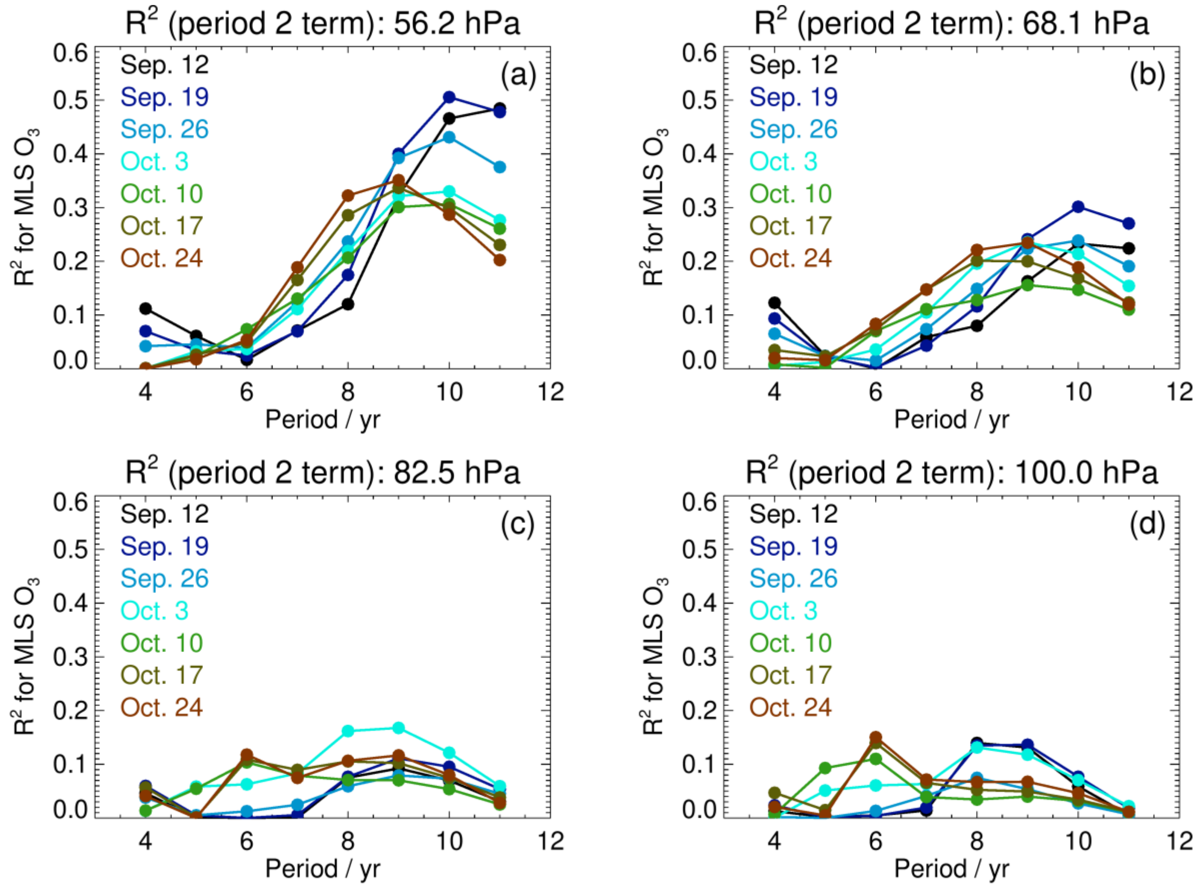

Figure S2. Dependence of R^2 for the period 2 (P_2) component of the MLR fits to the ozone vortex-average time series on the value of P_2 at (a) 56, (b) 68, (c) 82, and (d) 100 hPa for different September and October weeks (see legend).

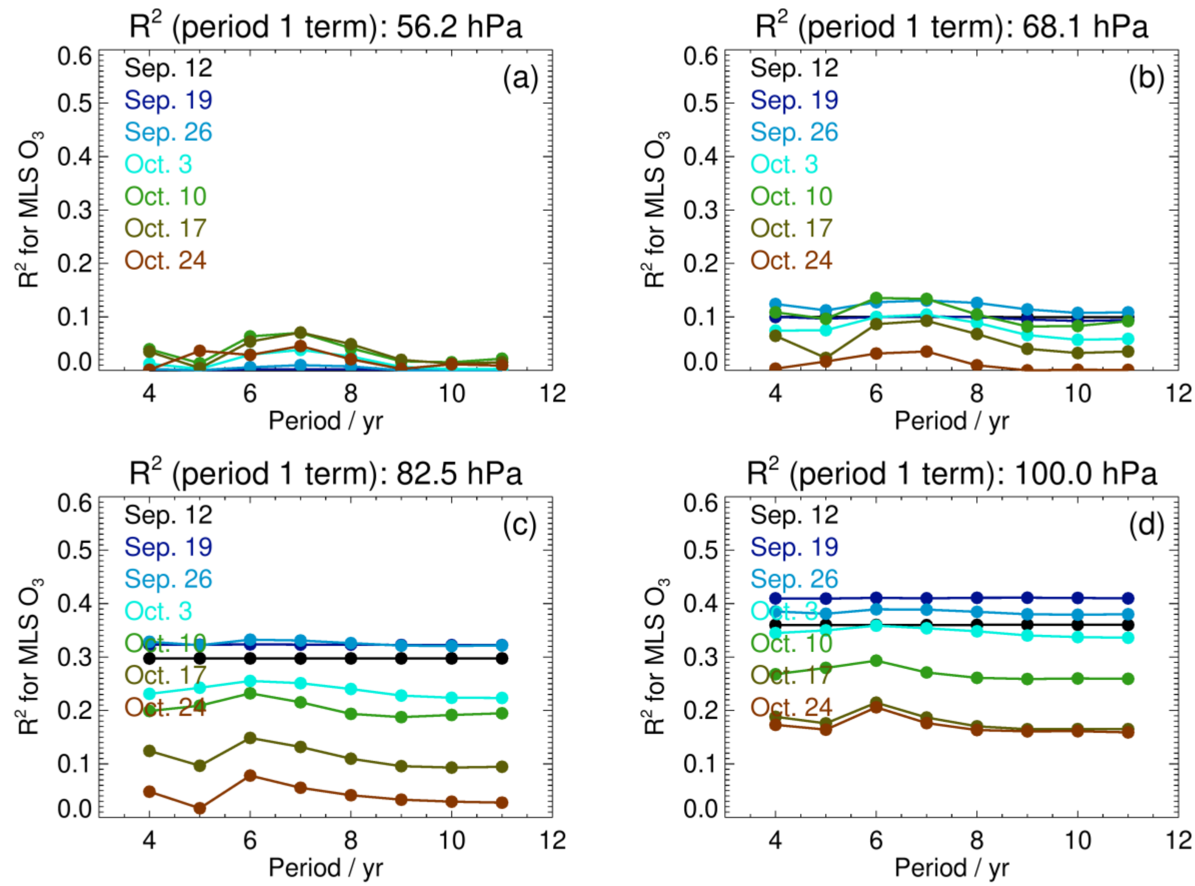

Figure S3. Same as Fig. S2 but for dependence of the period 1 (P_1) component of the MLR fits on P_2.

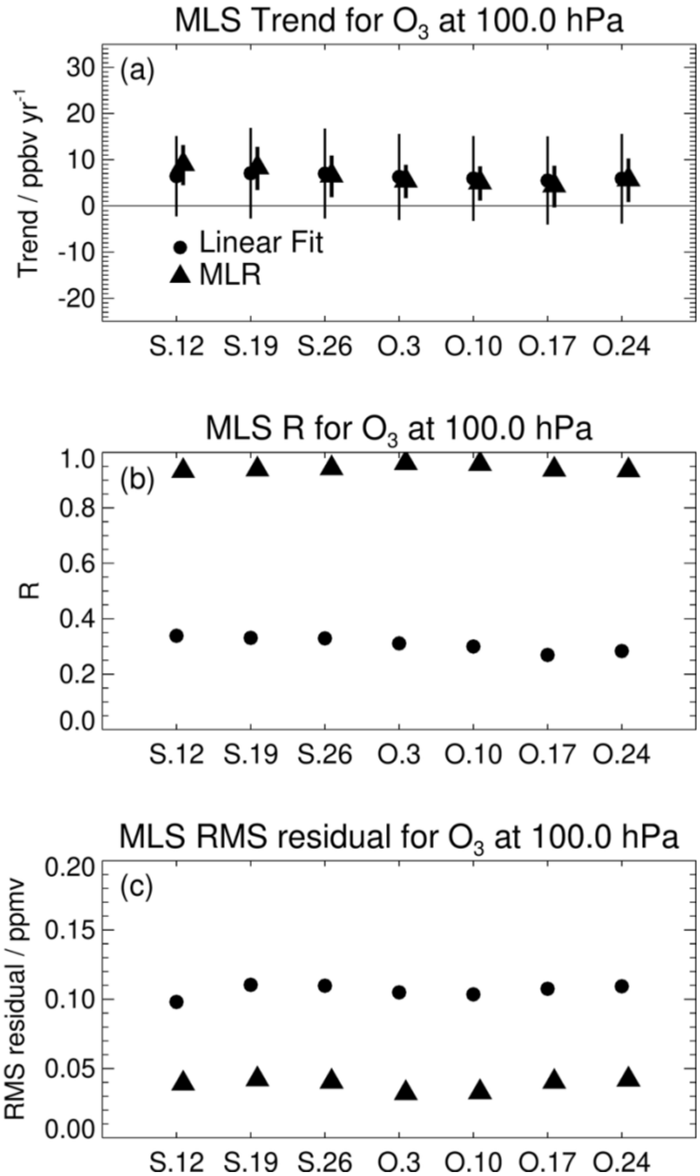

Figure S4. Same as Fig. 12 in the main text, but for the trends and diagnostics of fits to MLS vortex-average ozone series (over 2005–2023) at 100 hPa.

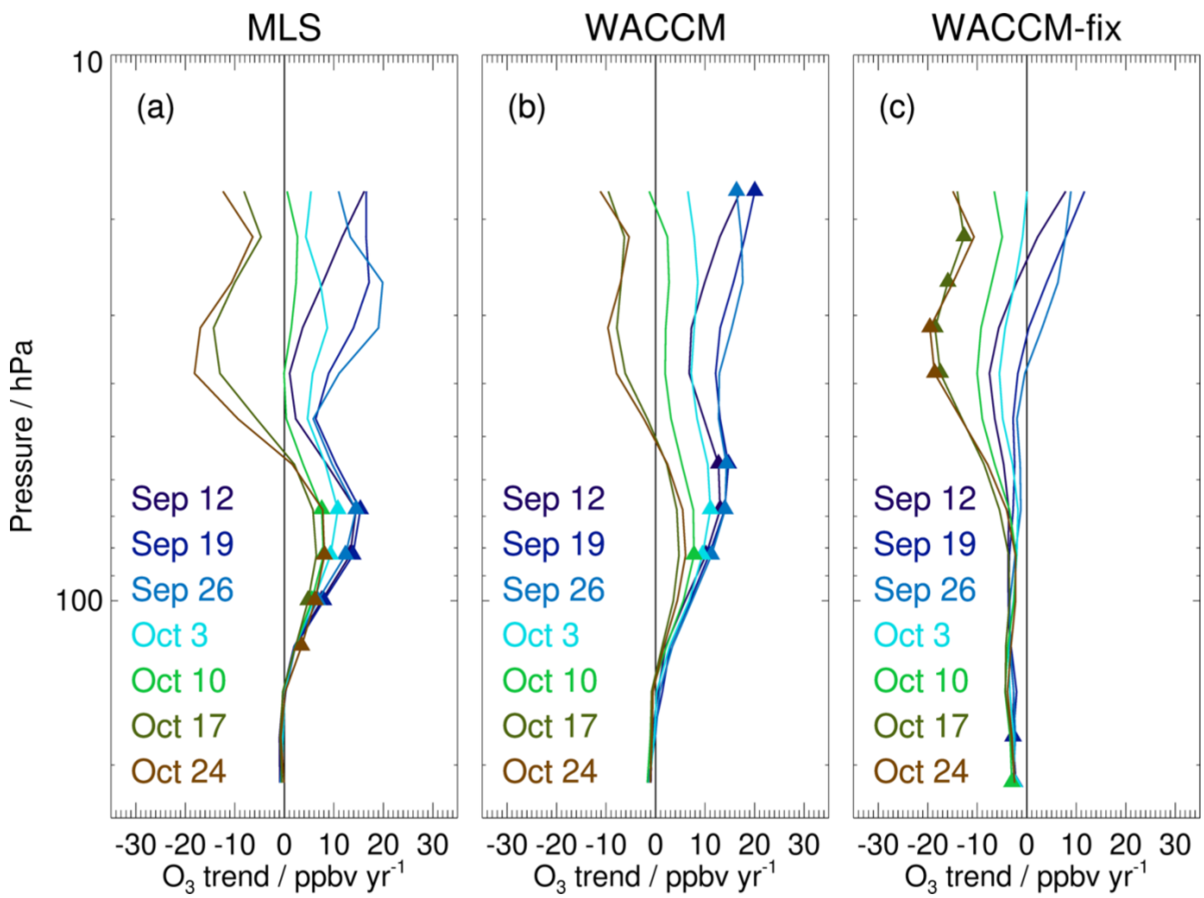

Figure S5. Same as Fig. 17 in the main text, but for trend results obtained with the addition of an AAO index term to the basic MLR analysis (see text) of vortex-average ozone over Antarctica for 2005–2023.

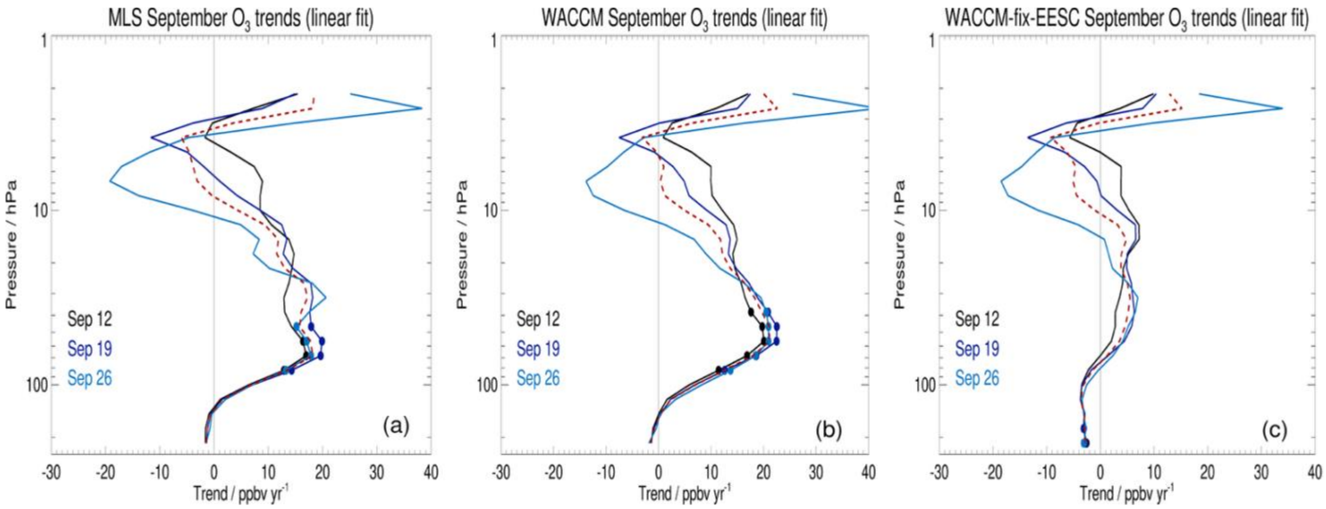

Figure S6. Results from simple linear trends for the lower and upper stratospheric vortex-average ozone change for three weeks in September (see legend) for (a) MLS, (b) WACCM, and (c) WACCM-fix-EESC. The average trend from these three weeks is shown by the red dashed lines. Statistical significance is markedmarked by filled circles when the trend exceeds twice the error in the trend.

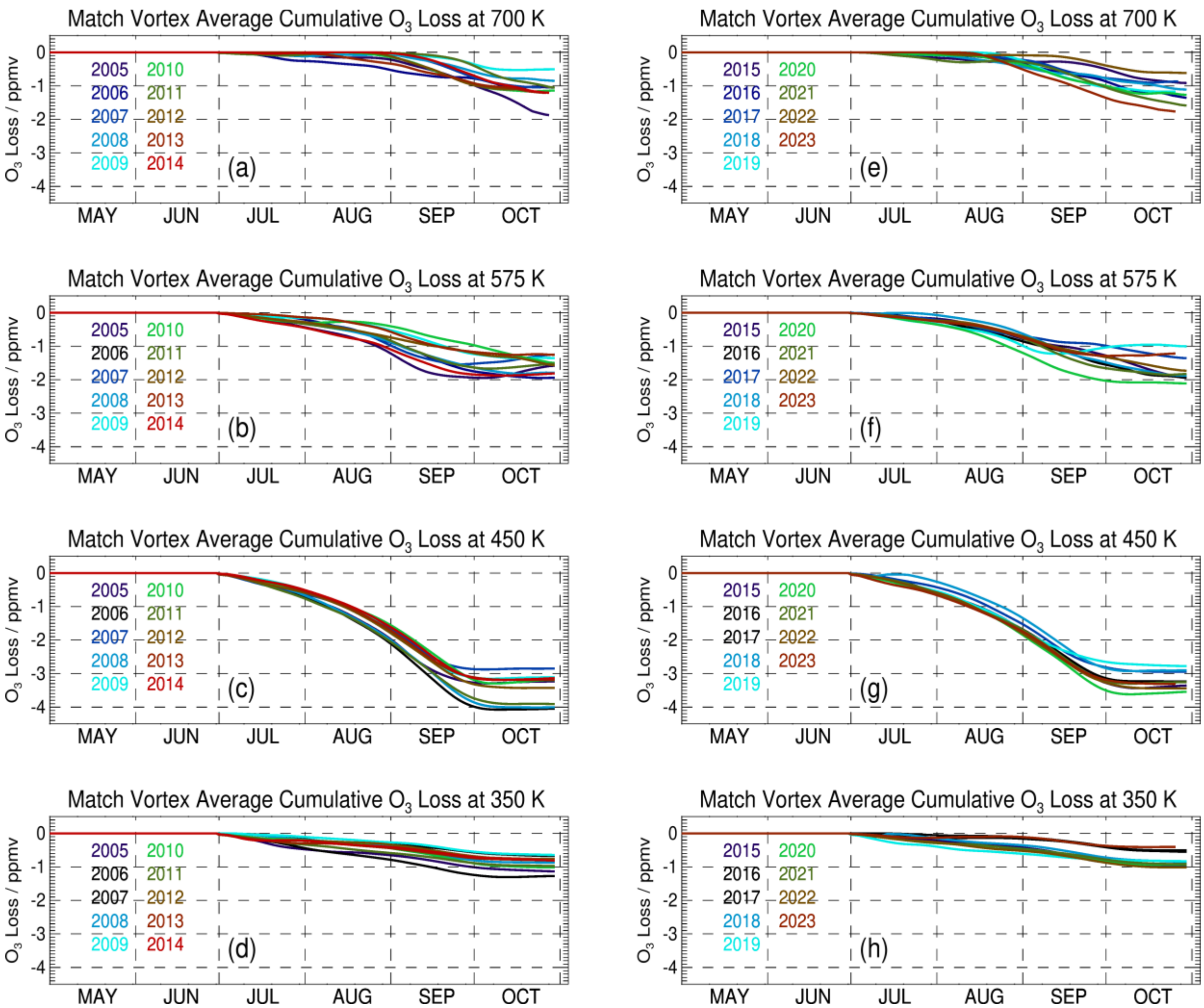

Figure S7. Cumulative ozone losses from the Match technique inside the Antarctic vortex as a function of day, from May to October, at four different θ levels; (a), (b), (c), and (d) show results for 700K, 575K, 450K, and 350K, respectively, for 2005 through 2014, while (e), (f), (g), and (h) show results for the same levels, respectively, for 2015 through 2023.

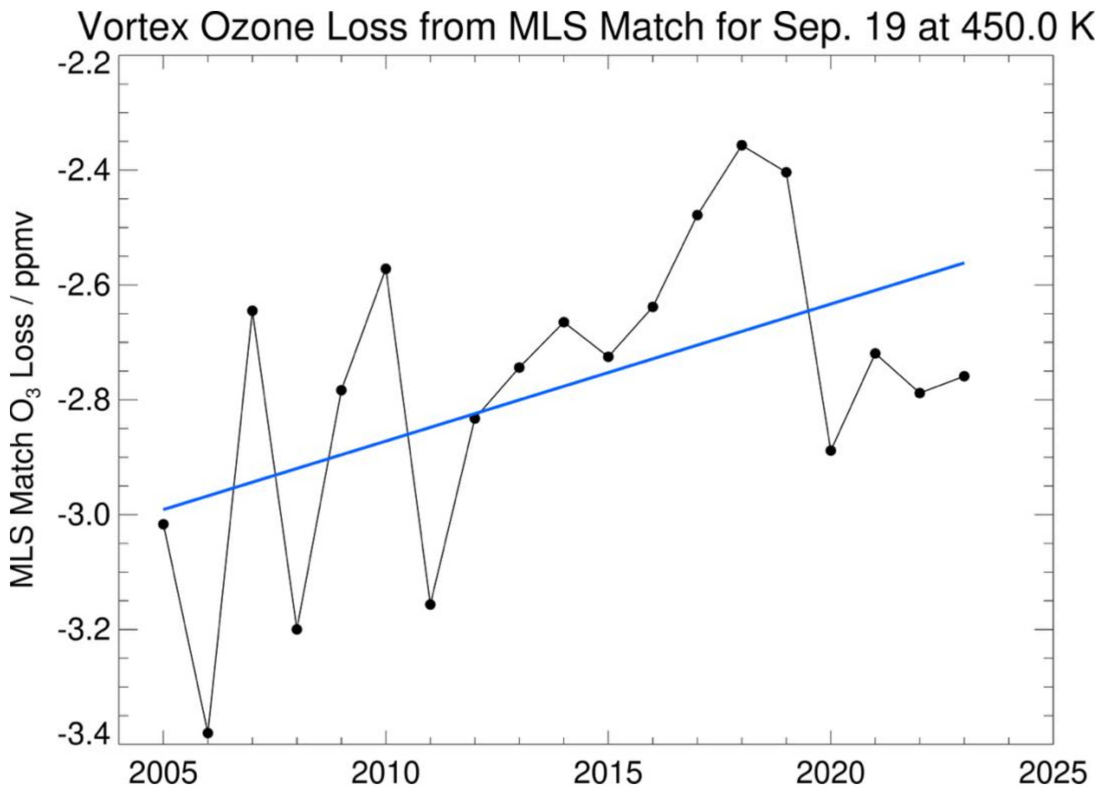

Figure S8. Match-derived weekly average ozone loss values centered on September 19 at 450 K for 2005–2023, based on MLS data inside the Antarctic vortex. The blue line shows a simple linear fit.

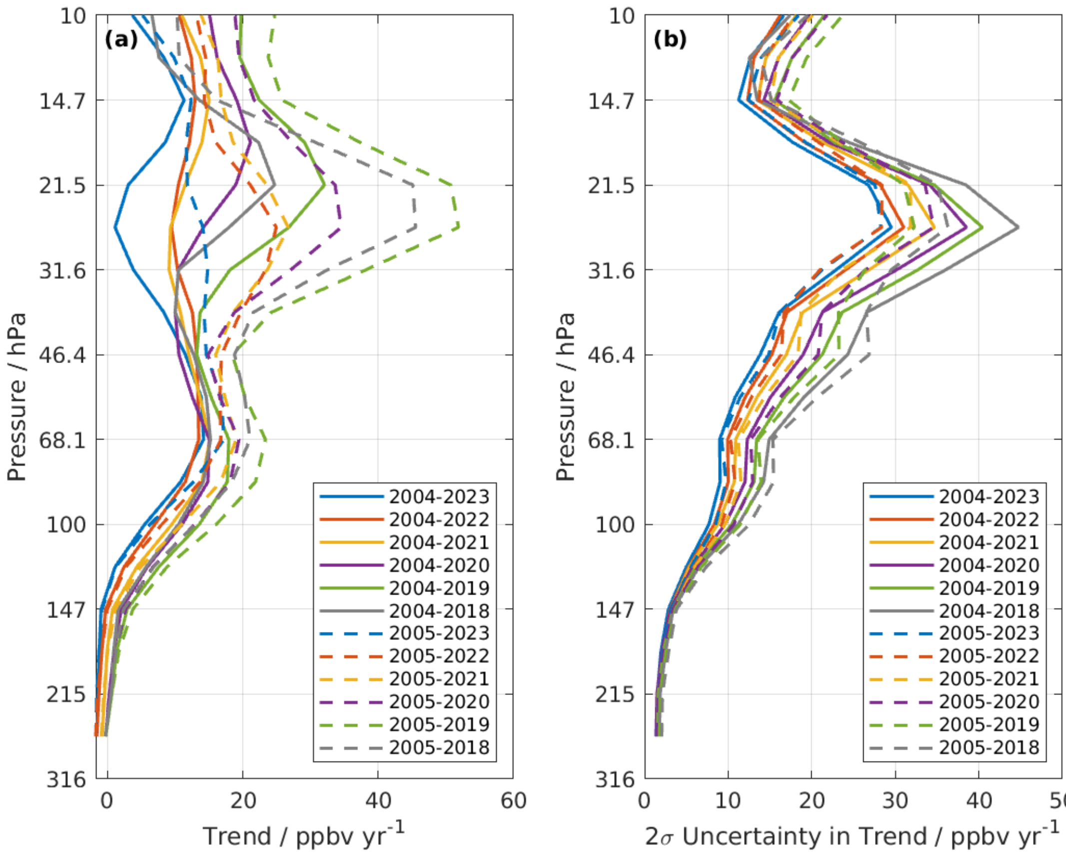

Figure S9. (a) Linear trends from fits to September means of MLS v5 ozone daily vortex averages from the year ranges shown. Solid lines correspond to epochs starting in 2004 and dashed for those starting in 2005, while colors denote the different ending years. (b) 2σ uncertainties in the trends shown in (a).