Supplement of Atmos. Chem. Phys., 22, 10635–10656, 2022
https://doi.org/10.5194/acp-22-10635-2022-supplement

Atmospheric Chemistry and Physics
Open Access

Supplement of

Effects of reanalysis forcing fields on ozone trends and age of air from a chemical transport model

Yajuan Li et al.

Correspondence to: Yajuan Li (yajuanli@njxzc.edu.cn) and Sandip S. Dhomse (s.s.dhomse@leeds.ac.uk)

Table S1. Correlation values for the explanatory variables averaged in DJF during 1979-2018

Corr.	Solar	QBO30	QBO10	ENSO	Aerosol	AO	AAO
Solar	1	-0.03	0.08	0.02	0.07	0.37*	0.06
QBO30		1	0.04	0.03	-0.04	0.22	-0.08
QBO10			1	0.01	0.21	0.10	-0.12
ENSO				1	0.35*	-0.18	-0.21
Aerosol					1	0.22	-0.34*
AO						1	0.31
AAO							1

* 95% confidence level

Table S2. Correlation values for the monthly mean explanatory variables during 1979-2018

Corr.	Solar	QBO30	QBO10	ENSO	Aerosol	AO	AAO
Solar	1	-0.05	0.02	-0.02	0.02	0.26*	-0.03
QBO30		1	0.03	0.02	-0.08	0.09	0.13*
QBO10			1	0.02	0.13*	0.03	0.03
ENSO				1	0.21*	-0.10*	-0.16*
Aerosol					1	0.13*	-0.22*
AO						1	0.09
AAO							1

* 95% confidence level

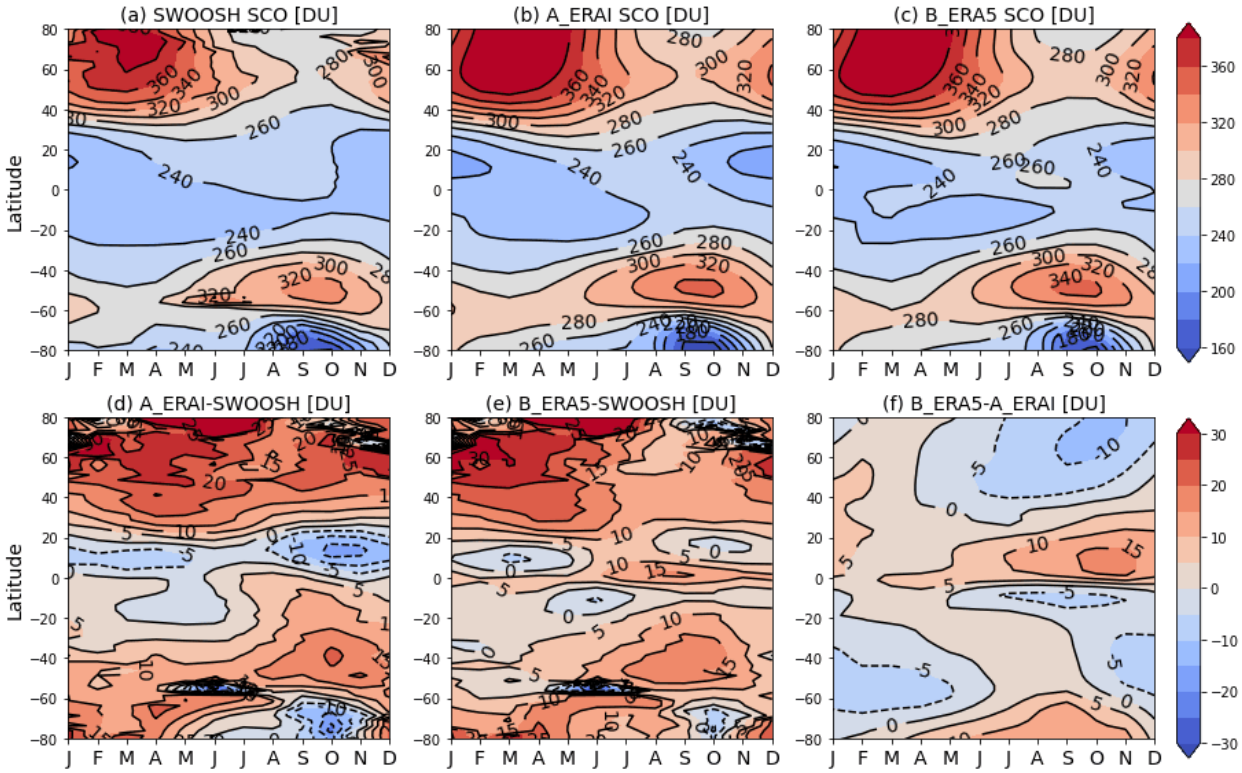

Figure S1: Zonal and monthly mean stratospheric column ozone (SCO, in DU) climatology over the period 1979-2018 based on (a) SWOOSH and two model simulations (b) A_ERAI and (c) B_ERA5. The absolute differences between each simulation and SWOOSH, as well as between the two simulations, are shown in (d) A_ERAI - SWOOSH, (e) B_ERA5 - SWOOSH and (f) B_ERA5 - A_ERAI, respectively.

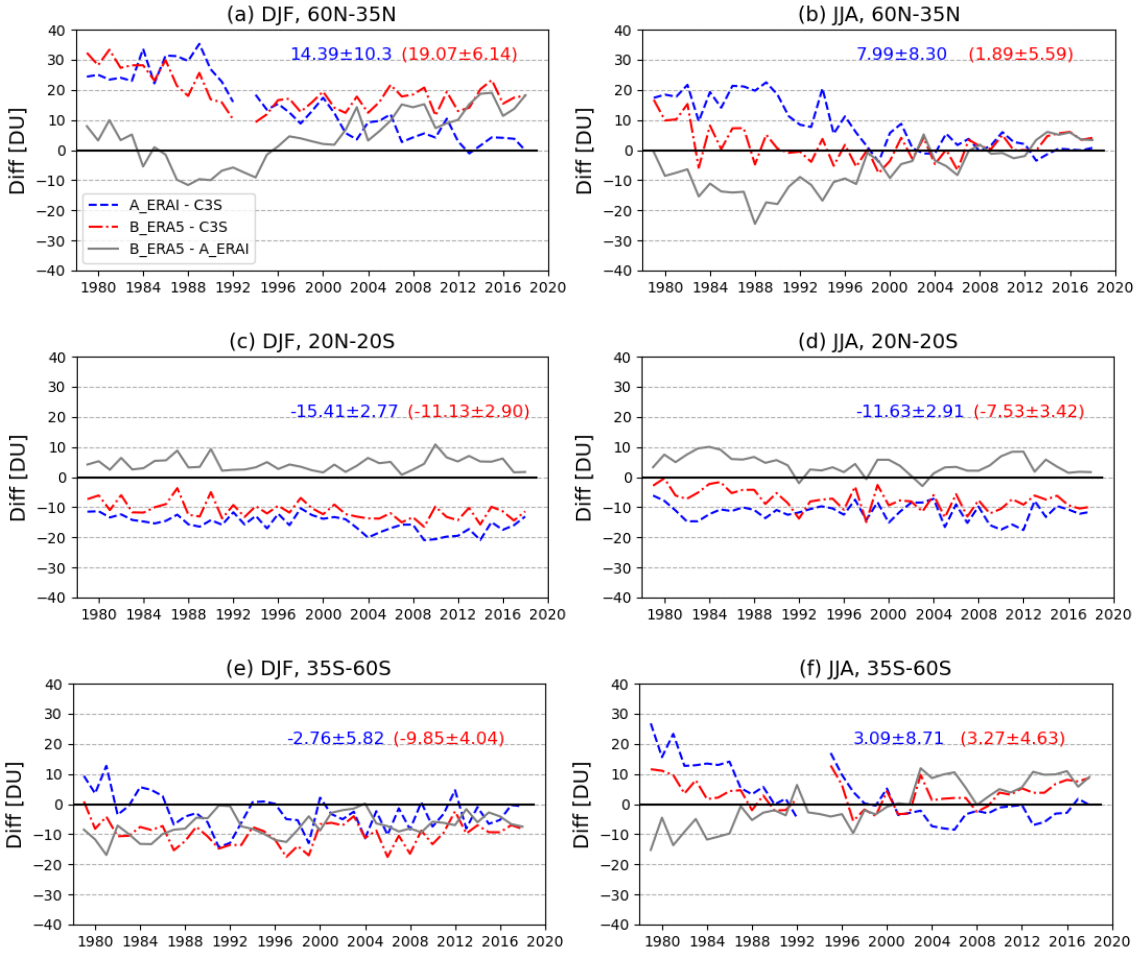

Figure S2: Differences in total column ozone (DU) between two model simulations and C3S (blue dashed line for A_ERAI - C3S and red dash-dotted line for B_ERA5 - C3S) as well as between two simulations (grey solid line for B_ERA5 - A_ERAI). Average total column differences are shown for (a, b) 60°N-35°N, (c, d) 20°N-20°S and (e, f) 35°S-60°S for December-January-February (DJF, left panel) and June-July-August (JJA, right panel) seasons. The absolute differences averaged over the whole period between simulation A_ERAI (B_ERA5) and C3S are presented with the standard deviations in blue (red) text.

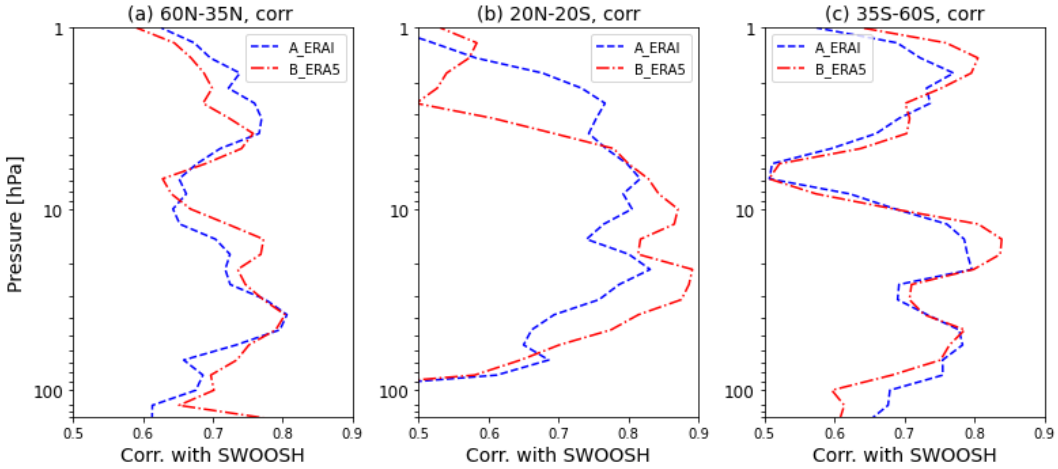

Figure S3: Correlation coefficients between the simulated and SWOOSH ozone anomalies over the latitude bands (a) 60°N-35°N, (b) 20°N-20°S and (c) 35°S-60°S.

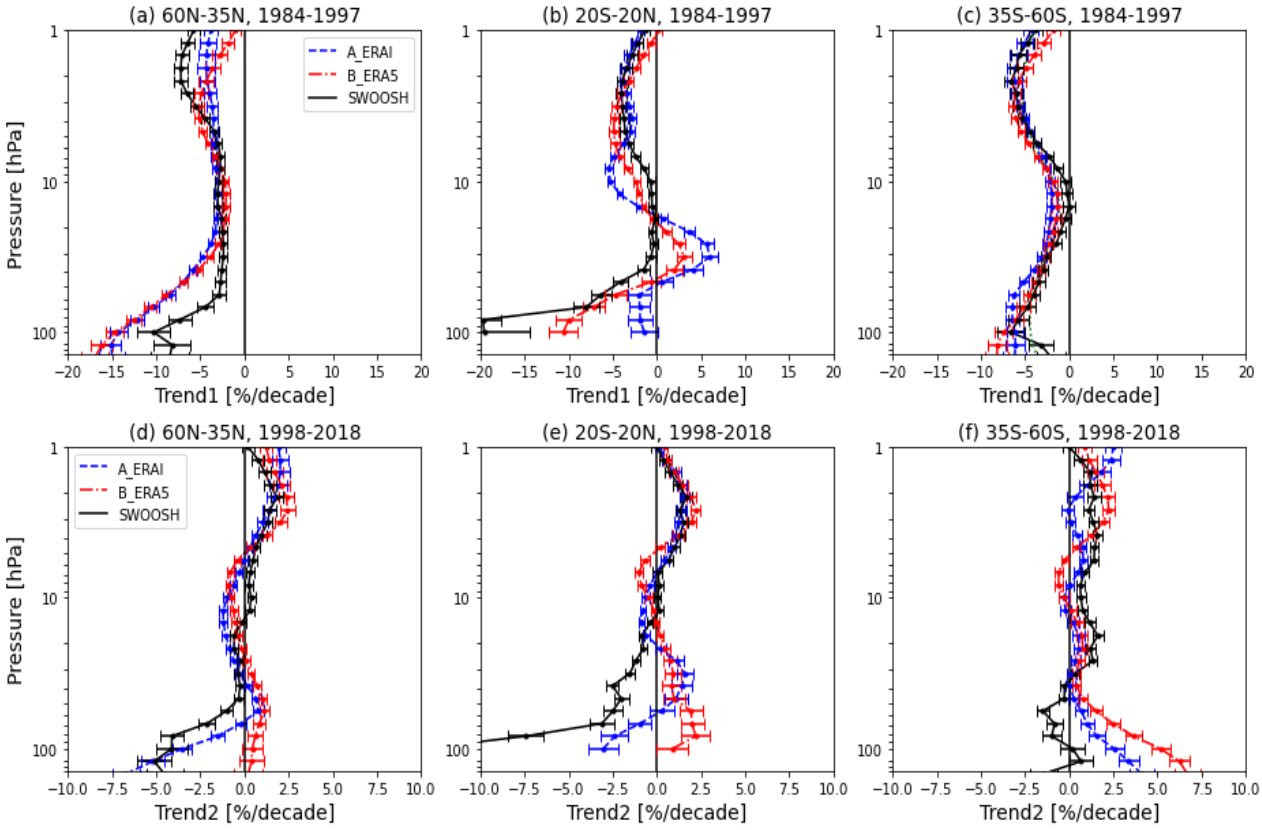

Figure S4: Vertical profile of linear trends in ozone (%/decade) from SWOOSH (black solid line), A_ERAI (blue dashed line) and B_ERA5 (red dash-dot line) over the periods (a-c) 1984-1997 and (d-f) 1998-2018. Results are for 60°N-35°N, 20°N-20°S and 35°S-60°S zonal regions. Error bars show standard deviations at 2σ.