Supplement of

Decomposing the response of the stratospheric Brewer-Dobson circulation to an abrupt quadrupling in CO_2

Chrysanthou et al.

CMIP5 Models				
1. ACCESS1-0	2. ACCESS1-3	3. CCSM4	4. CNRM-CM5	5. CSIRO-Mk3-6-0
6. CanESM2	7. EC-EARTH	8. GFDL-CM3	9. GFDL-ESM2G	10. GFDL-ESM2M
11. GISS-E2-H	12. GISS-E2-R	13. HadGEM2-ES	14. IPSL-CM5A-LR	15. IPSL-CM5A-MR
16. IPSL-CM5B-LR	17. MIROC-ESM	18. MIROC5	19. MPI-ESM-LR	20. MPI-ESM-MR
21. MPI-ESM-P	22. MRI-CGCM3	23. NorESM1-M	24. BCC-CSM1-1-M	25. BCC-CSM1-1
26. INMCM4				

Table S1: The CMIP5 global coupled ocean-atmosphere general circulation models used to construct the SST and SIC boundary conditions in this study.

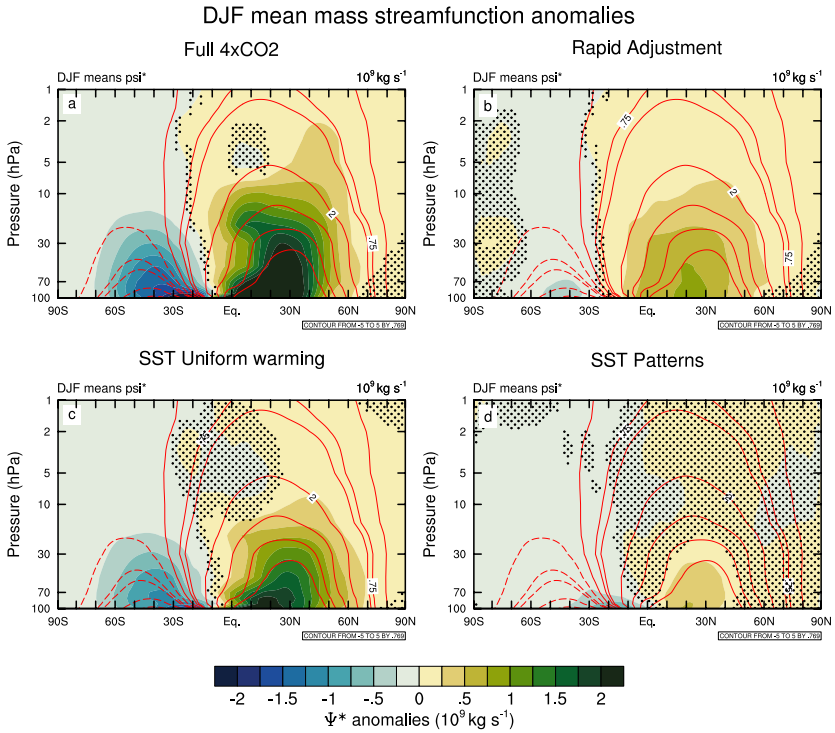

Figure S1: DJF average residual mass streamfunction anomalies [10^9 kg s^{-1}] in the four perturbation experiments. Stippling denotes where the differences are not statistically significant at the 95% confidence level. Red contours show the piControl climatology with negative values showed in dashed contours.

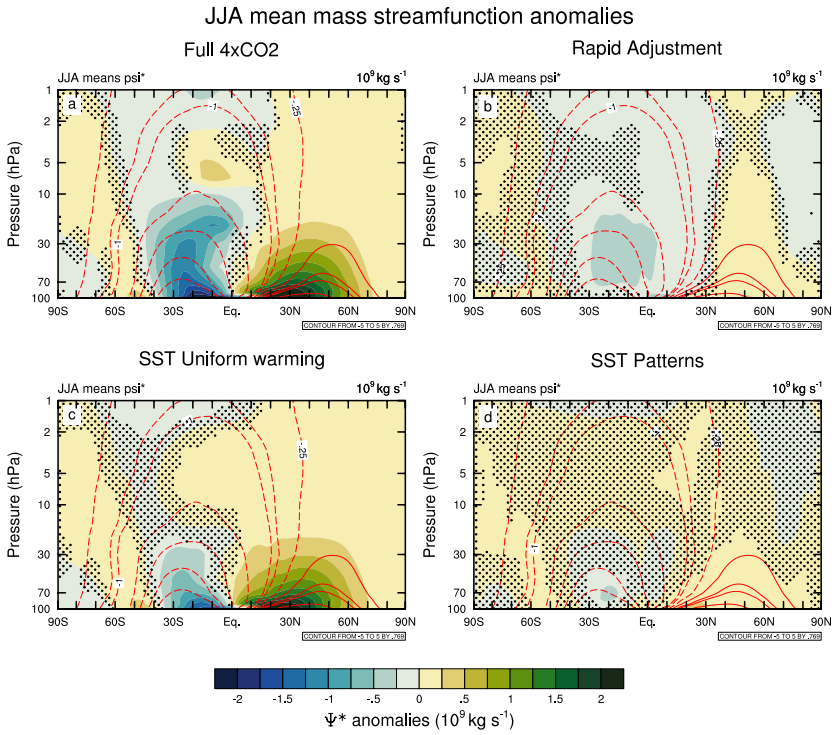

Figure S2: As in Figure S1, but for the JJA season.

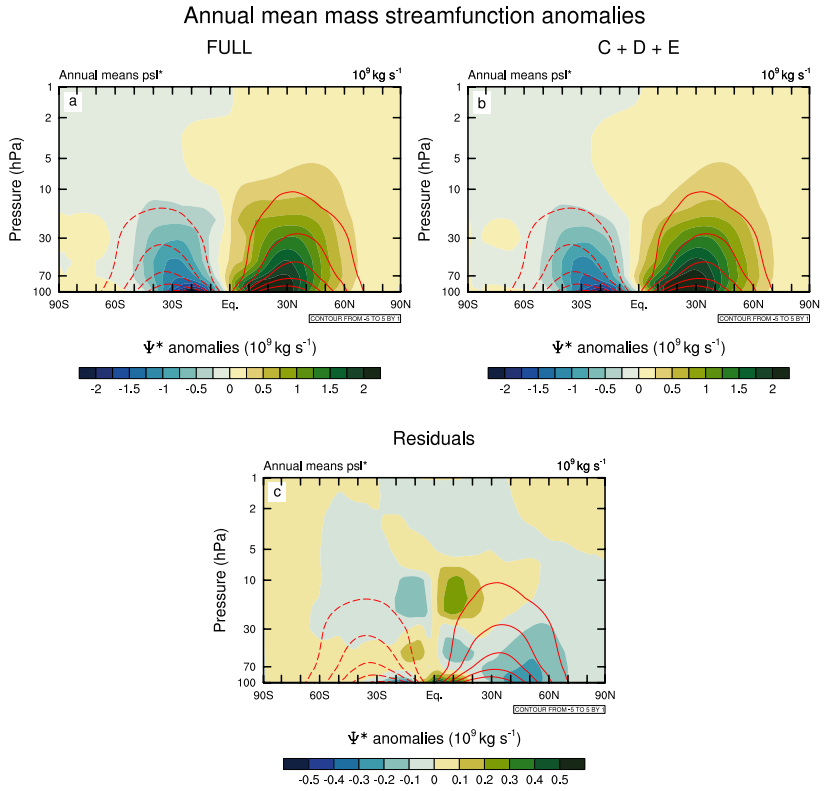

Figure S3: The residual mass streamfunction anomalies [10^9 kg s^{-1}] in (a) the full 4xCO2 experiment (as in Fig. 5a), (b) the sum of experiments C+D+E and (c) a – b differences. Note panel (c) has a different colour scale. This shows the decomposition of the streamfunction response in the full experiment into the three components analysed in the main text works to leading order.

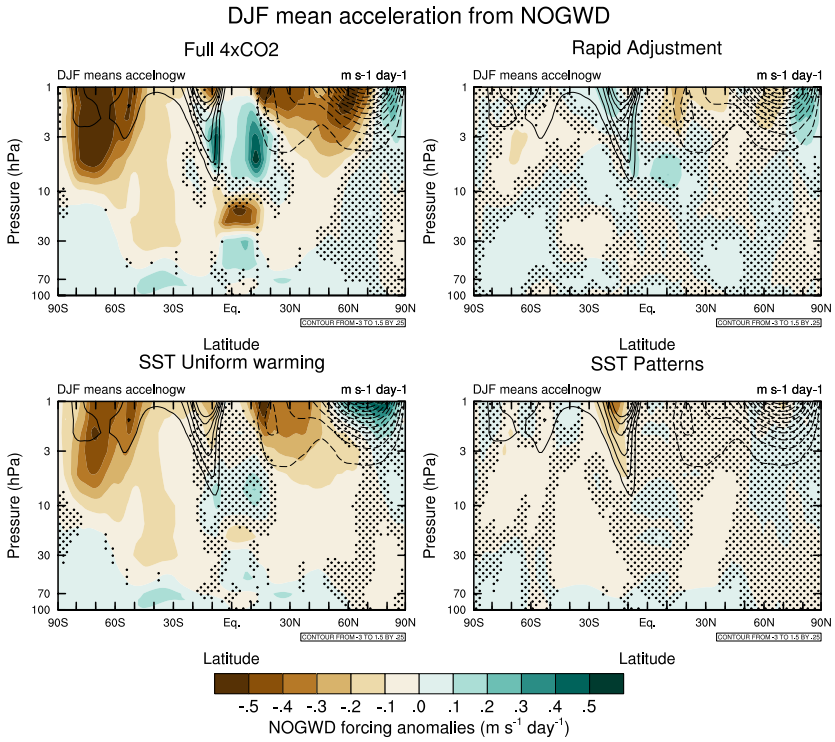

Figure S4: DJF average non-orographic GWD anomalies [m s^{-1} day^{-1}] (shading) in the four perturbation experiments. Contours show the piControl climatology with contours plotted from -3 to 1.5 in increments of 0.25 m s^{-1} day^{-1}. Hatching denotes where differences are not statistically significant at the 95% confidence level.

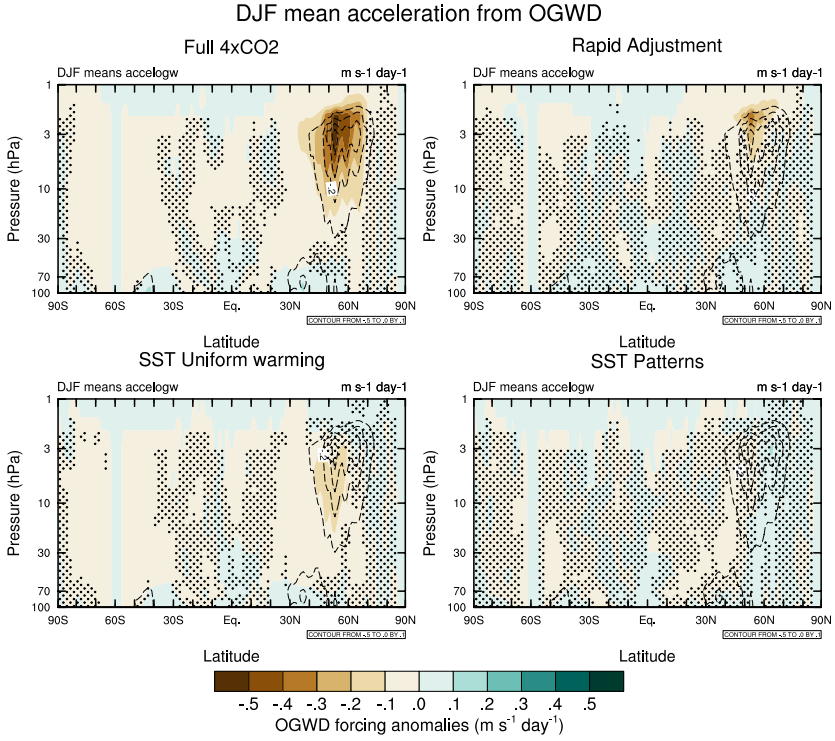

Figure S5: As in Figure S4, but for the DJF mean orographic GWD. Note the different piControl climatology contour range at the bottom right side.

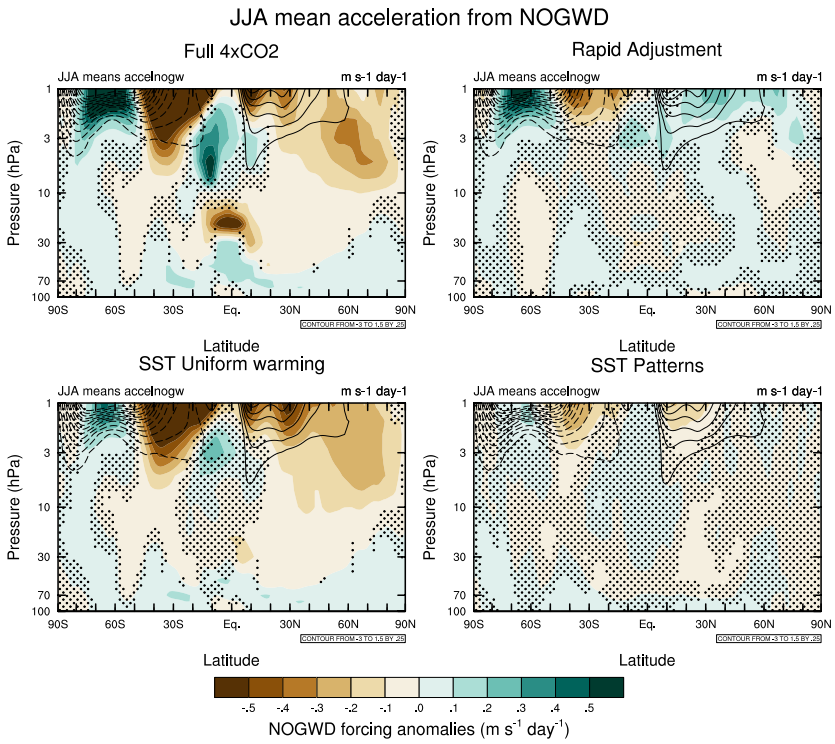

Figure S6: As in Figure S4, but for JJA.

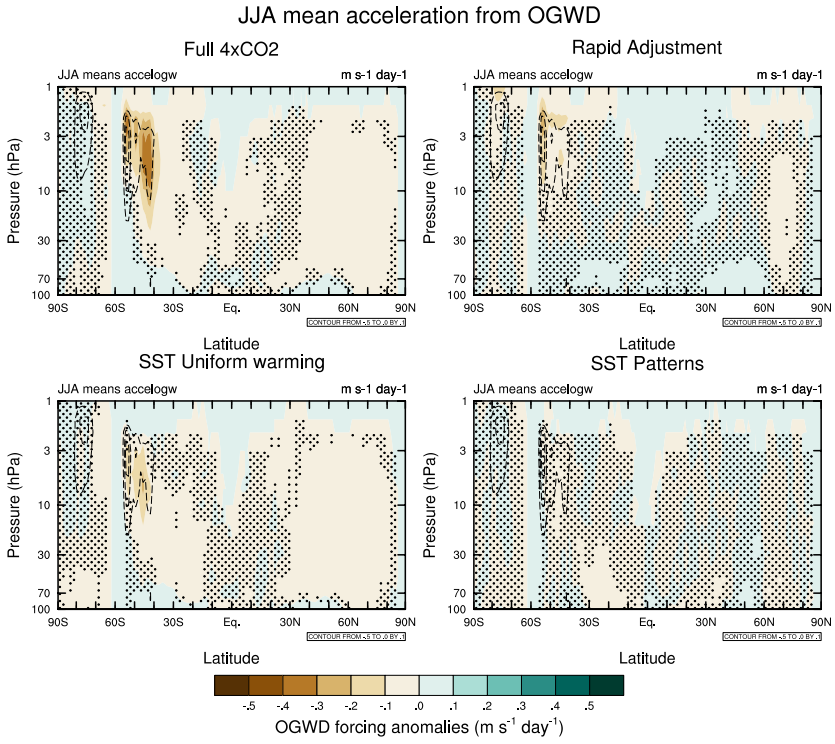

Figure S7: As in Figure S5, but for JJA.