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Separating the role of direct radiative heating and photolysis in modulating the atmospheric response to the amplitude of the 11-year solar cycle forcing

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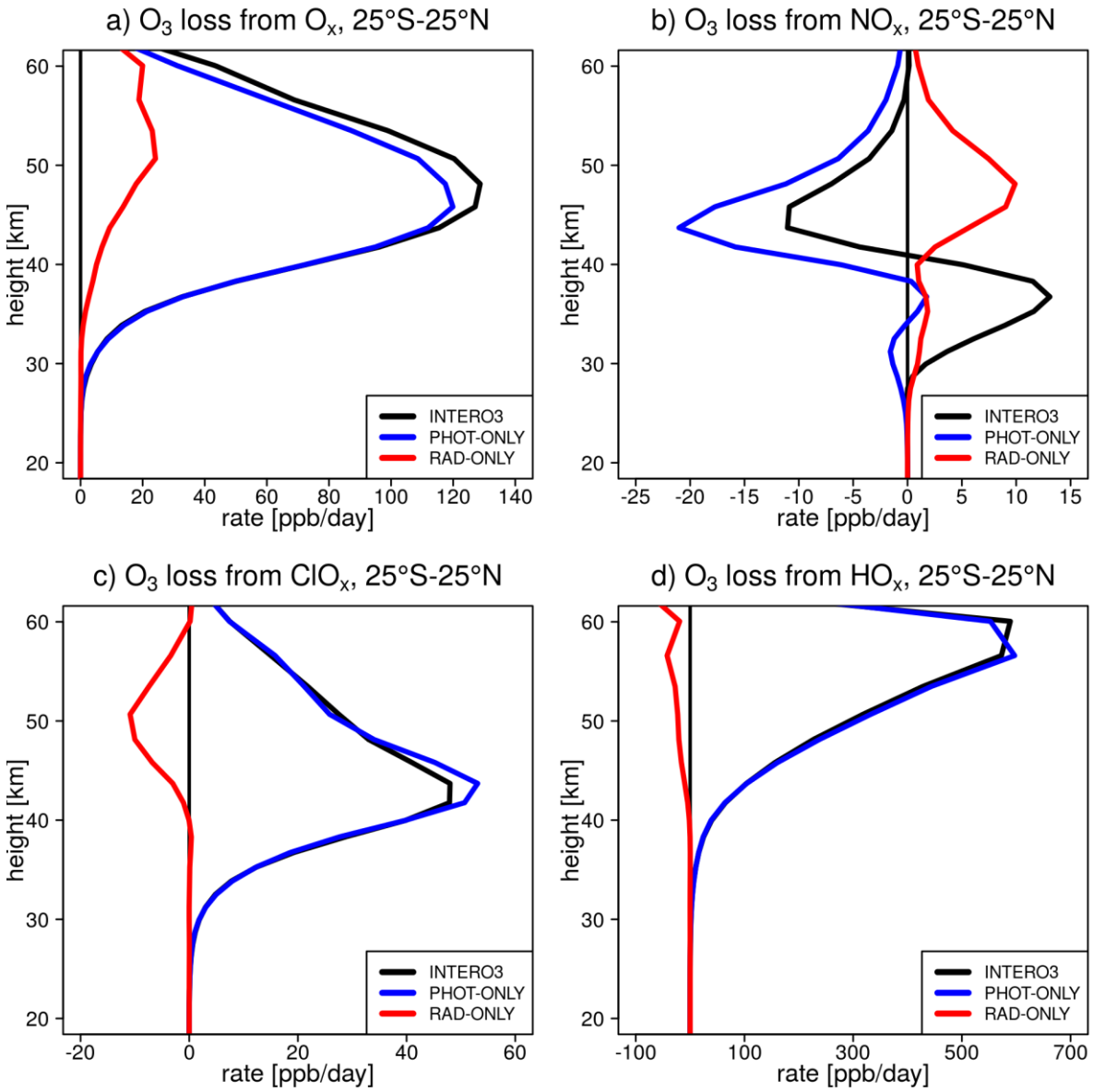

Figure S1. The yearly mean 25ºS-25ºN SMAX-SMIN difference in the rate of ozone loss [ppb/day] through the O_x (a), NO_x (b), ClO_x (c) and HO_x (d) cycles in the three pairs of integrations. The rates of ozone loss were calculated using the diagnostics framework described in Lee et al. (2002).

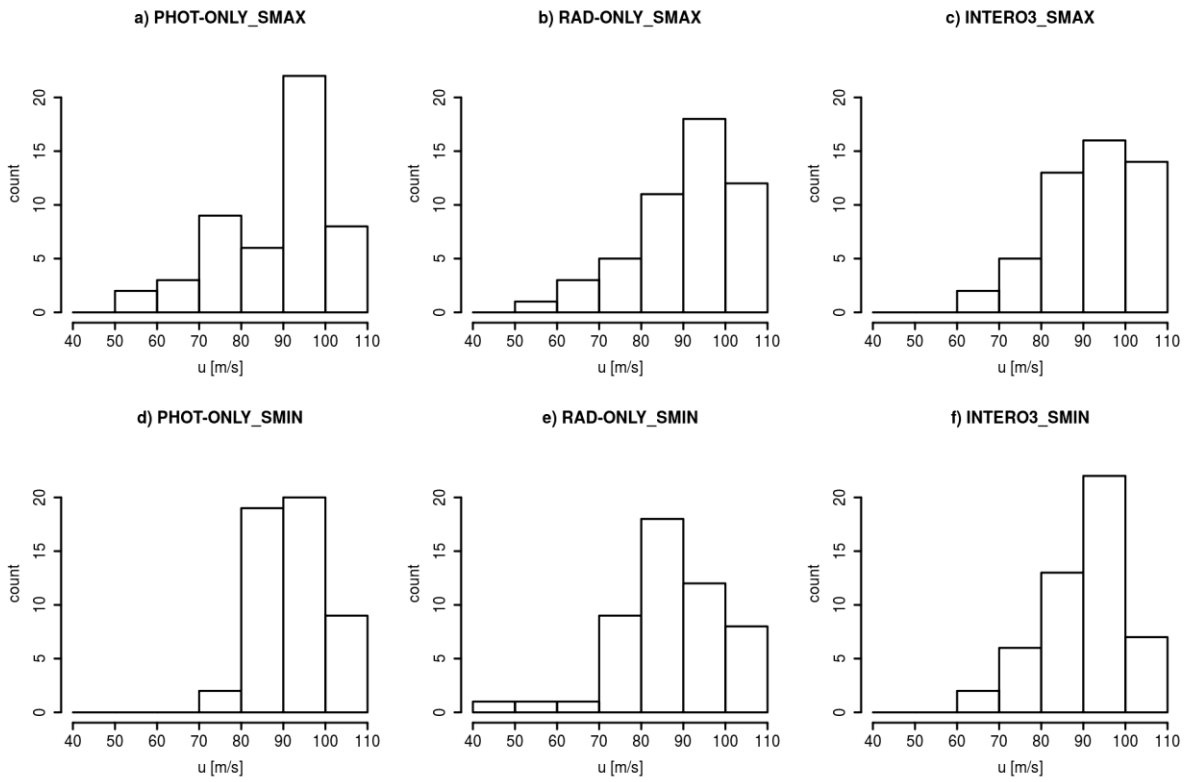

Figure S2. Histogram of August monthly zonal mean zonal wind [m/s] at 49°S and 1 hPa simulated in each run. Panels show SMAX (top) and SMIN (bottom) runs in PHOT-ONLY (left), RAD-ONLY (middle) and INTERO3 (right).

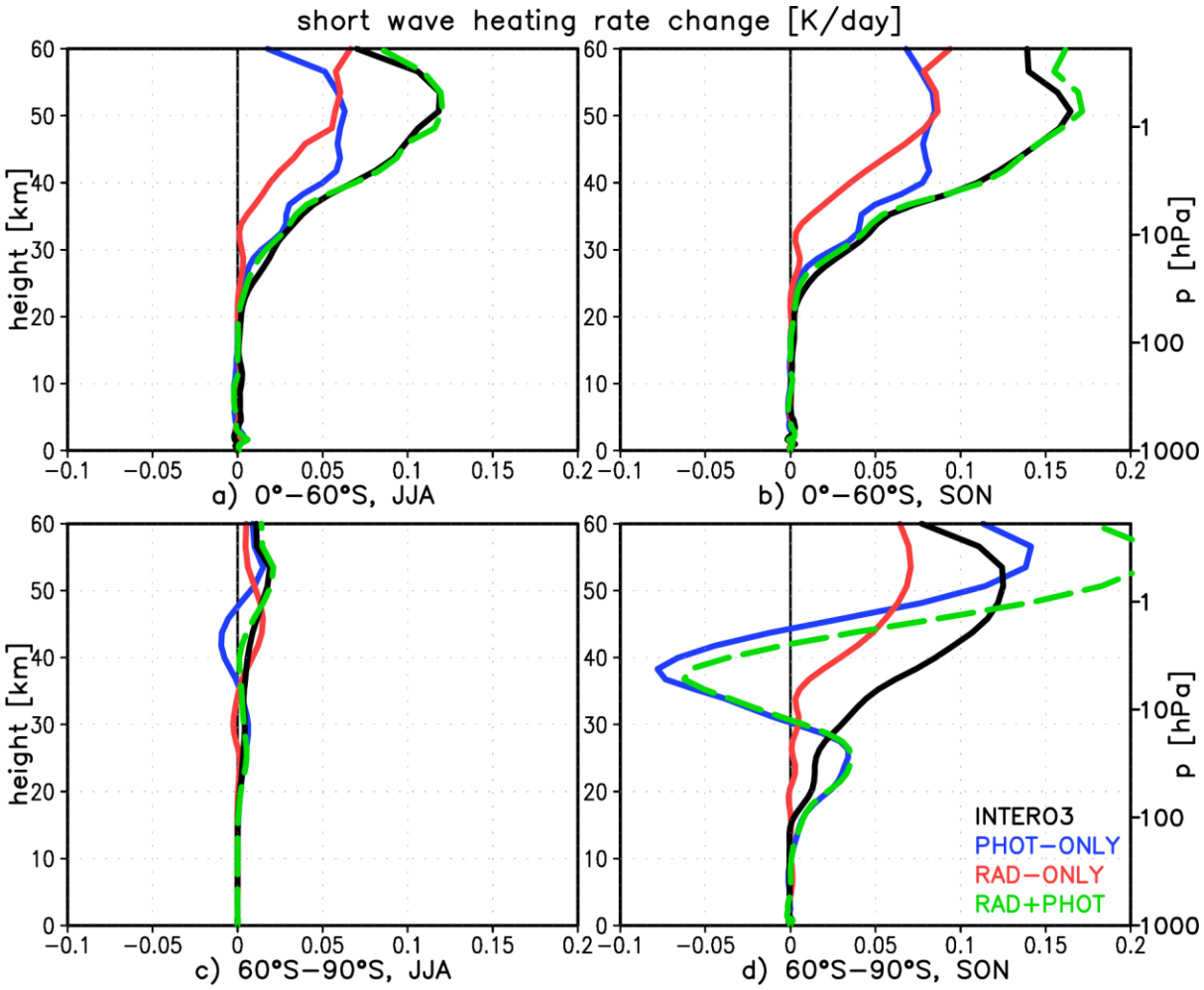

Figure S3. Seasonal mean (left: JJA and right: SON) zonal mean SWHR change [K day^{-1}] between SMAX and SMIN for INTERO3 (black), PHOT-ONLY (blue), RAD-ONLY (red), and PHOT-ONLY + RAD-ONLY (green). (a-b) are for the 0-60°S mean, and (c-d) are for the 60°S-90°S mean.

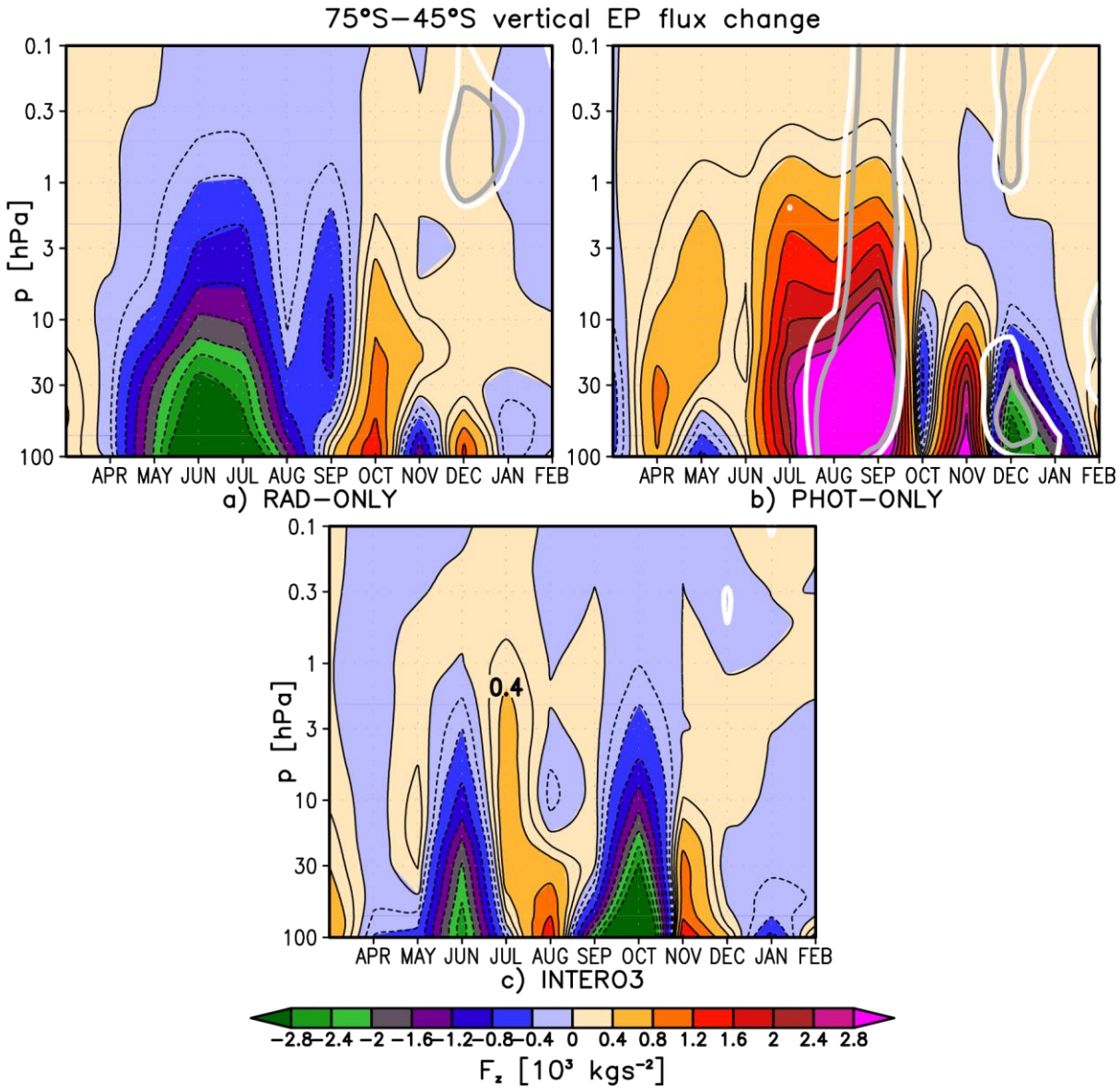

Figure S4. Monthly mean 45°S-75°S change in the vertical component of the Eliassen Palm flux (Andrews et al., 1987) [10^3 kgs^{-2}] between SMAX and SMIN for (a) RAD-ONLY, (b) PHOT-ONLY, and (c) INTERO3. Thick white and grey lines indicate statistical significance on the 90% and 95% level, respectively. Note the extra contours at $\pm 0.2 \times 10^3$ kgs^{-2}.

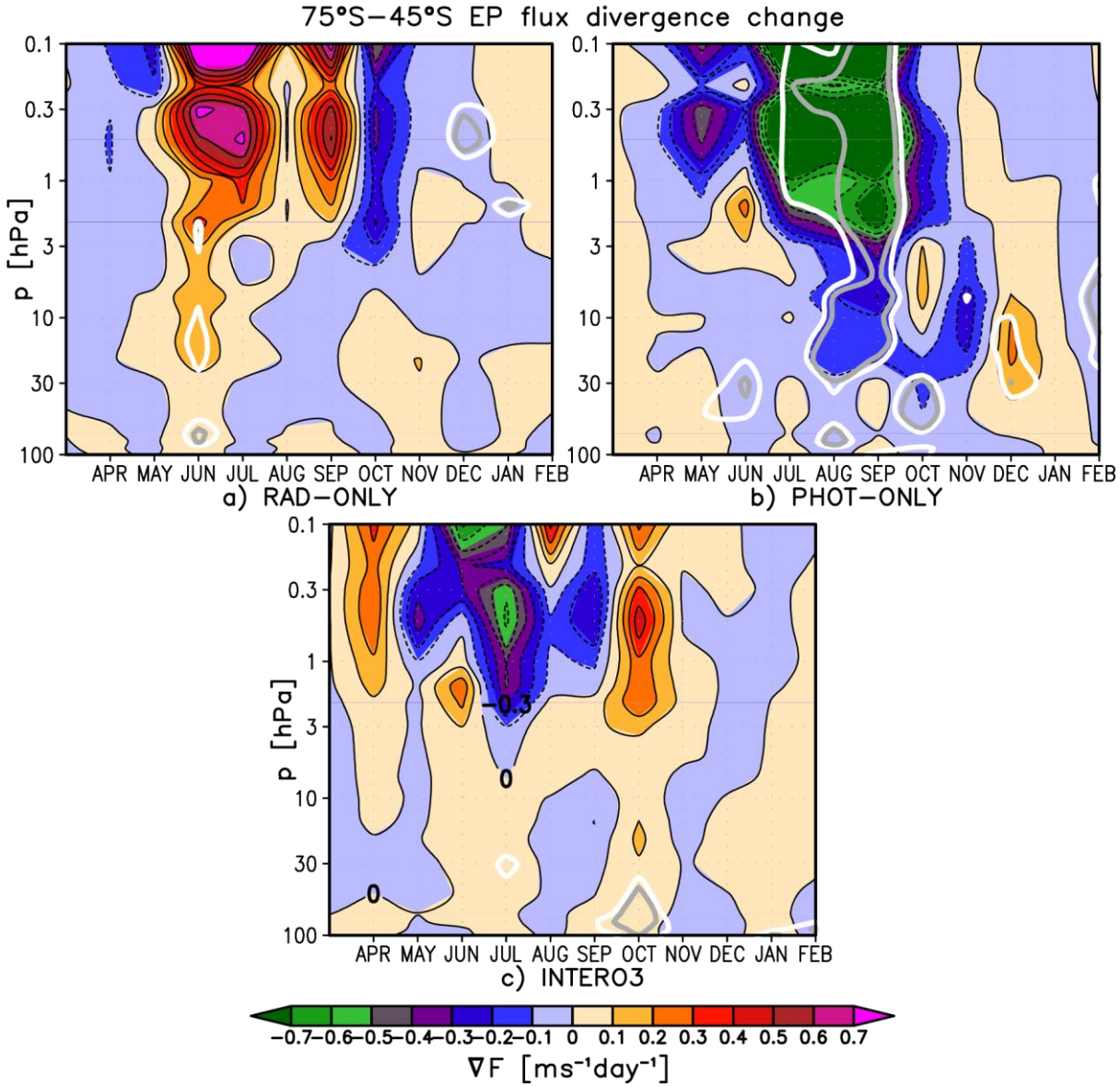

Figure S5. As in Fig. S4 but for the scaled Eliassen Palm flux divergence change (Andrews et al., 1987) [$ms^{-1}day^{-1}$].