

Figure S1. The yearly mean 25°S-25°N 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).

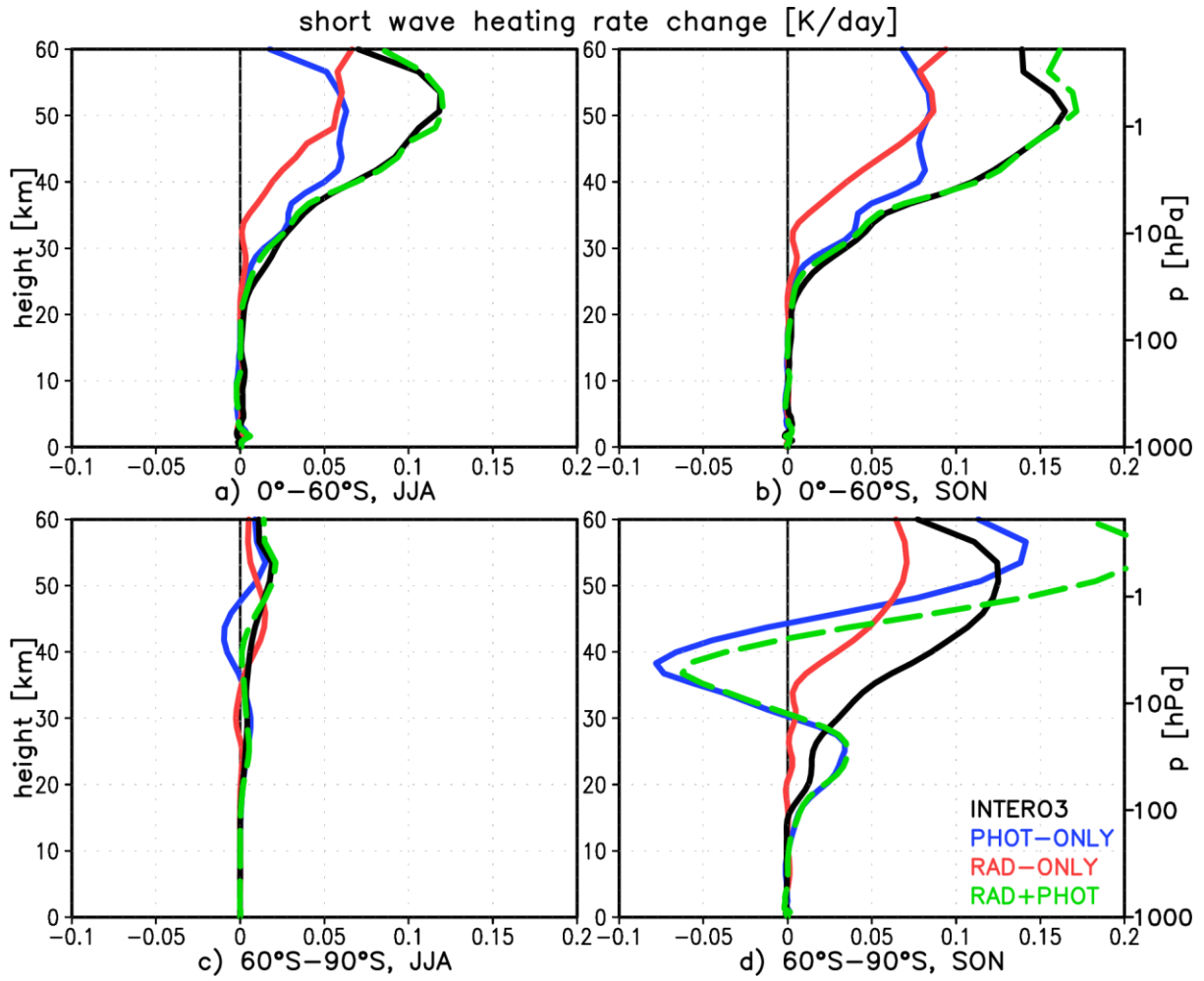


Figure S2. Seasonal mean (left: JJA and right: SON) zonal mean SWHR change [K day<sup>-1</sup>] between SMAX and SMIN for INTERO3 (black), PHOT-ONLY (blue), RAD-ONLY (red), and PHOT-ONLY + RAD-ONLY (green). (a-b) are for the 0-60°S mean, and (c-d) are for the 60°S-90°S mean.

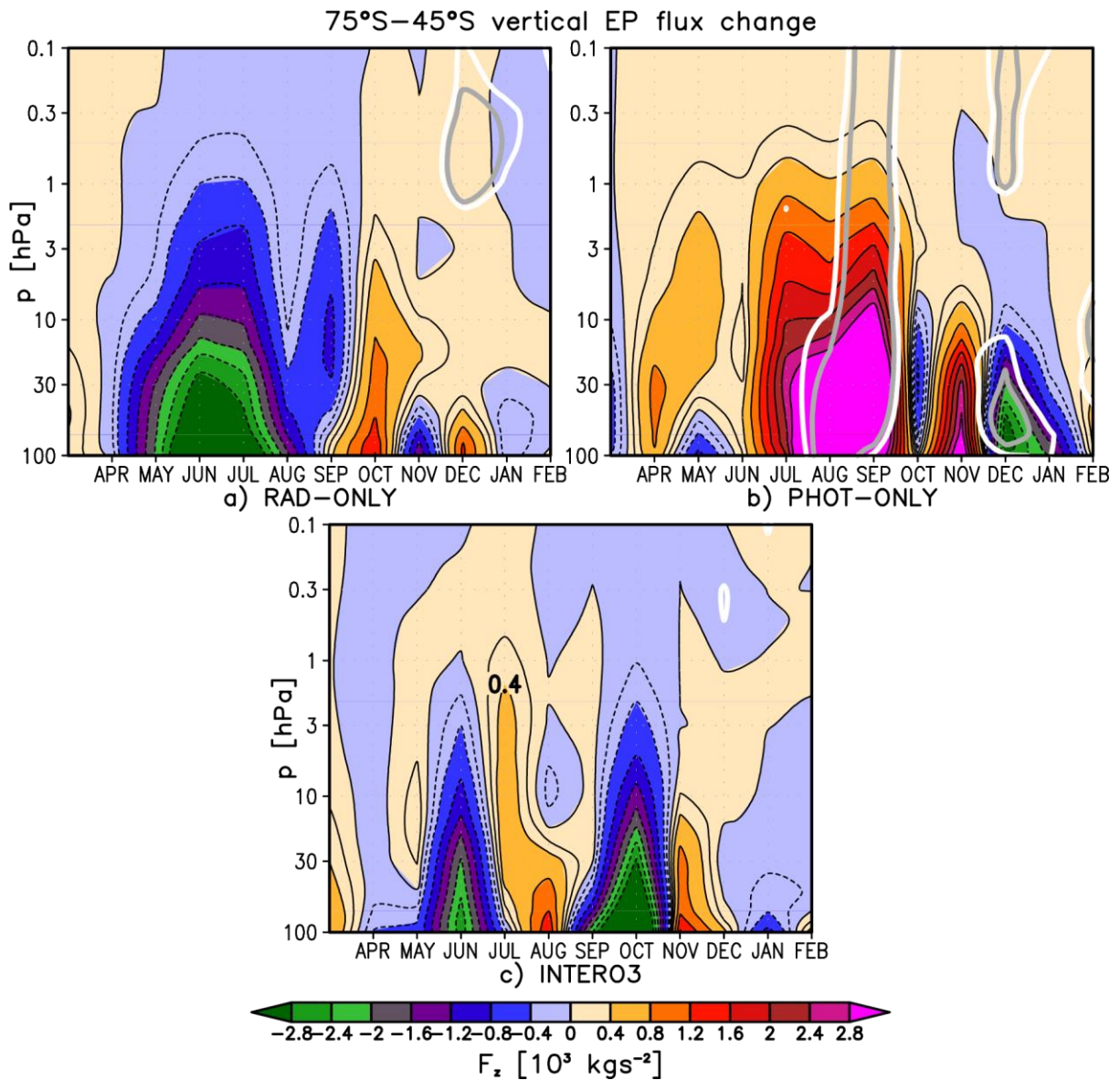


Figure S3. Monthly mean 45°S–75°S change in the vertical component of the Eliassen Palm flux (Andrews et al., 1987) [ $10^3 \text{ kgs}^{-2}$ ] between SMAX and SMIN for (a) RAD-ONLY, (b) PHOT-ONLY, and (c) INTERO3. Thick white and grey lines indicate statistical significance on the 90% and 95% level, respectively. Note the extra contours at  $\pm 0.2 \times 10^3 \text{ kgs}^{-2}$ .

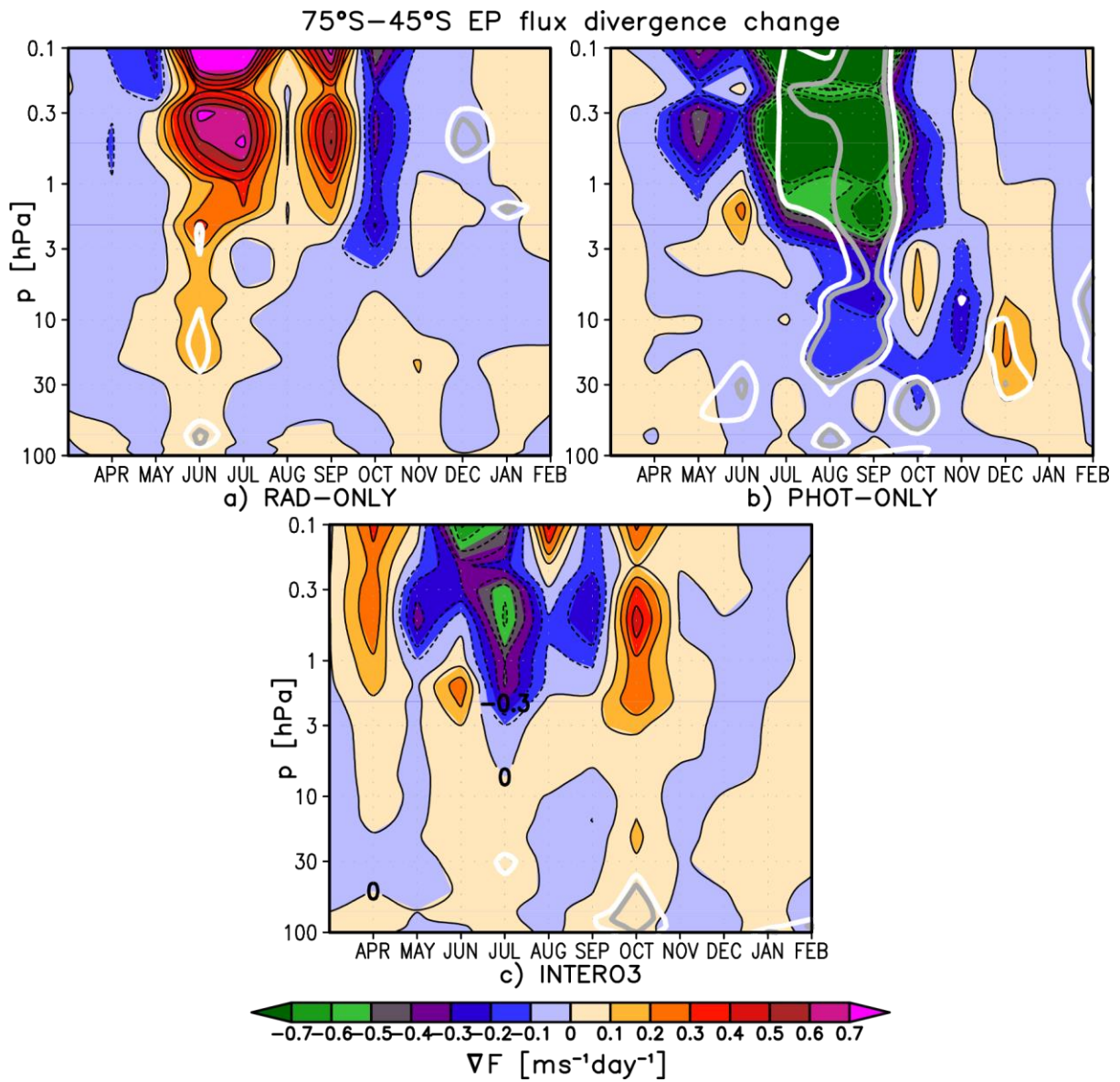


Figure S4. As in Fig. S3 but for the scaled Eliassen Palm flux divergence change (Andrews et al., 1987) [ $\text{ms}^{-1}\text{day}^{-1}$ ].