

Supplementary material to:

The application of the Modified Band Approach for the calculation of on-line photodissociation rate constants in TM5: implications for oxidative capacity

J. E. Williams¹, A. Strunk¹, V. Huijnen¹ and M. van Weele¹

[1] {KNMI, Chemistry and Climate division, De Bilt, The Netherlands}

Correspondence to: J. E. Williams (williams@knmi.nl)

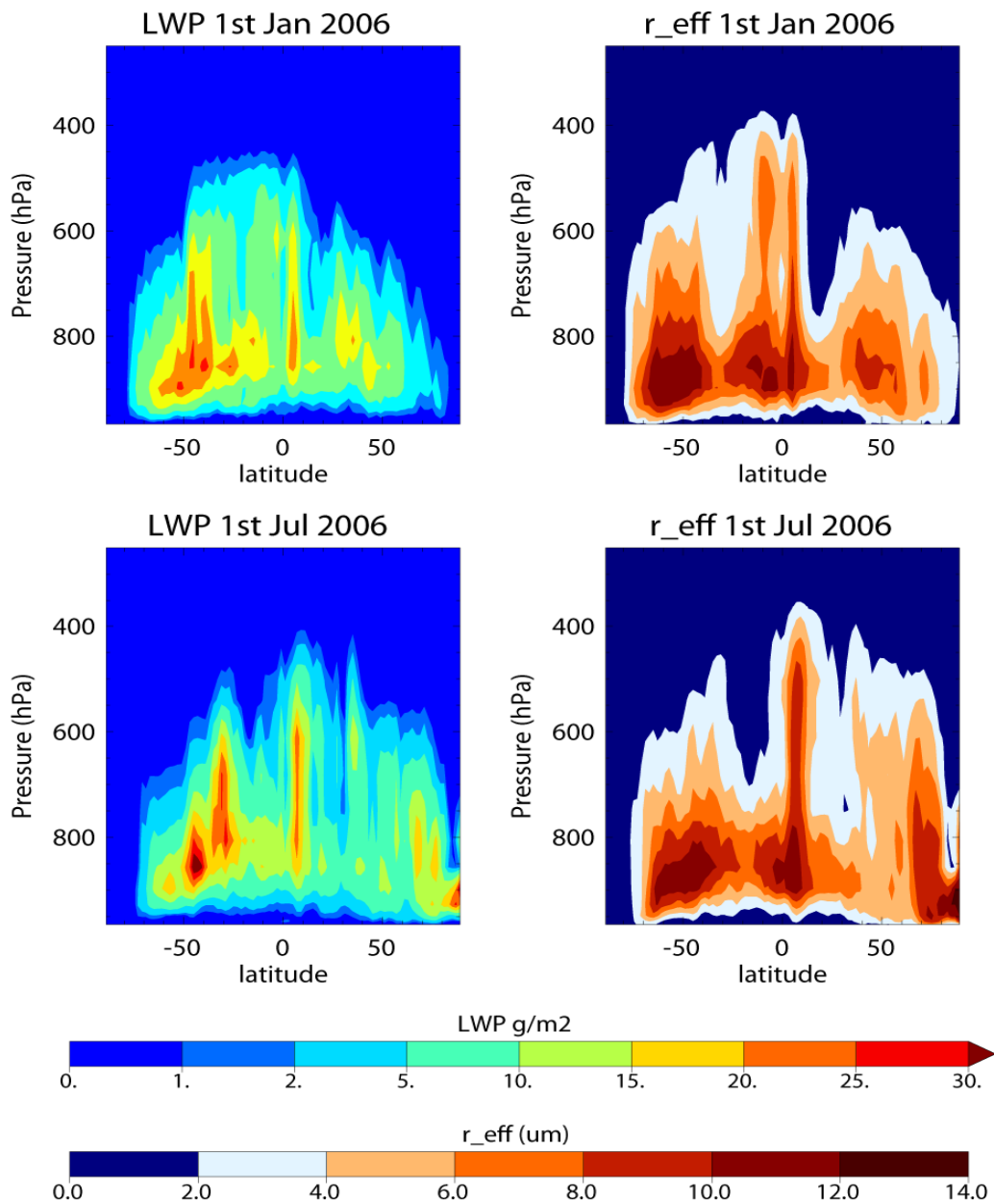


Figure S1: The zonal distribution of the Liquid Water Path and the effective cloud droplet radius for 1st January (top) and 1st July (bottom) as from the ERA-Interim meteorological dataset, with the r_{eff} being calculated using the parameterization of McFarlane et al. (1992).

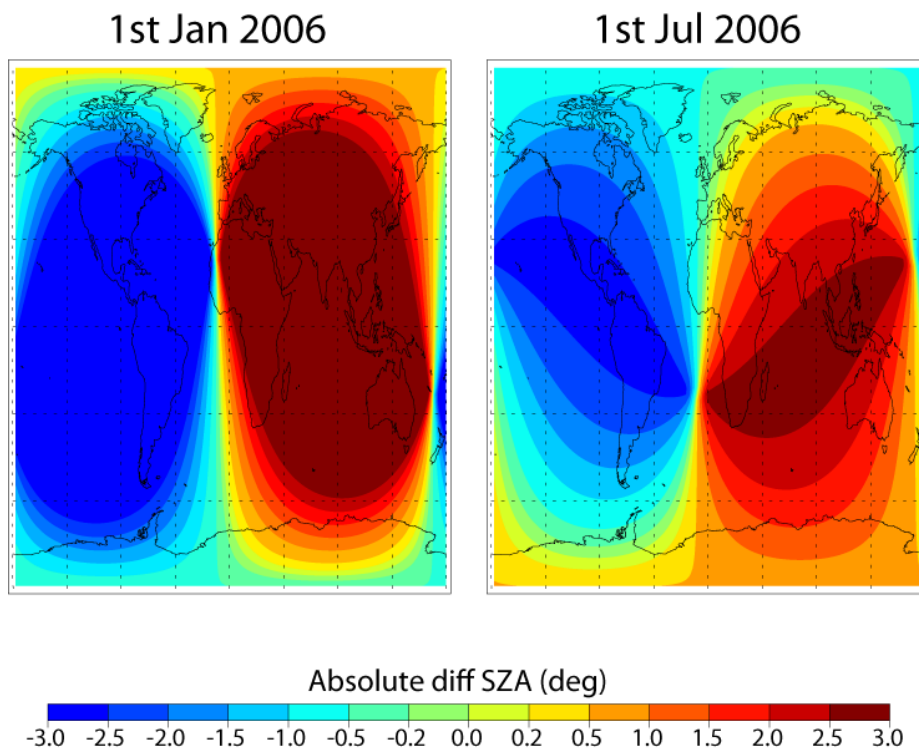


Figure S2: Instantaneous variability of the SZA at 24:00 UTC for (top) January 1st and (bottom) July 1st as calculated in the MBA. The absolute difference in degrees is shown as calculated by MBA-BA.

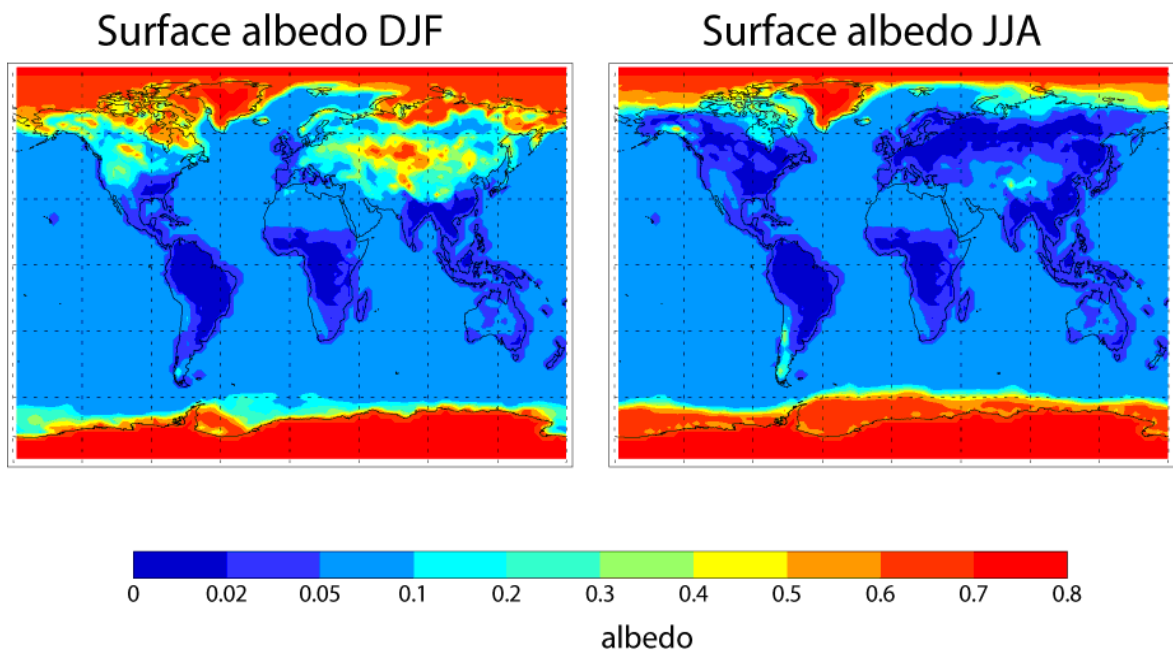


Figure S3: The seasonal distribution of surface albedo values calculated in TM5.

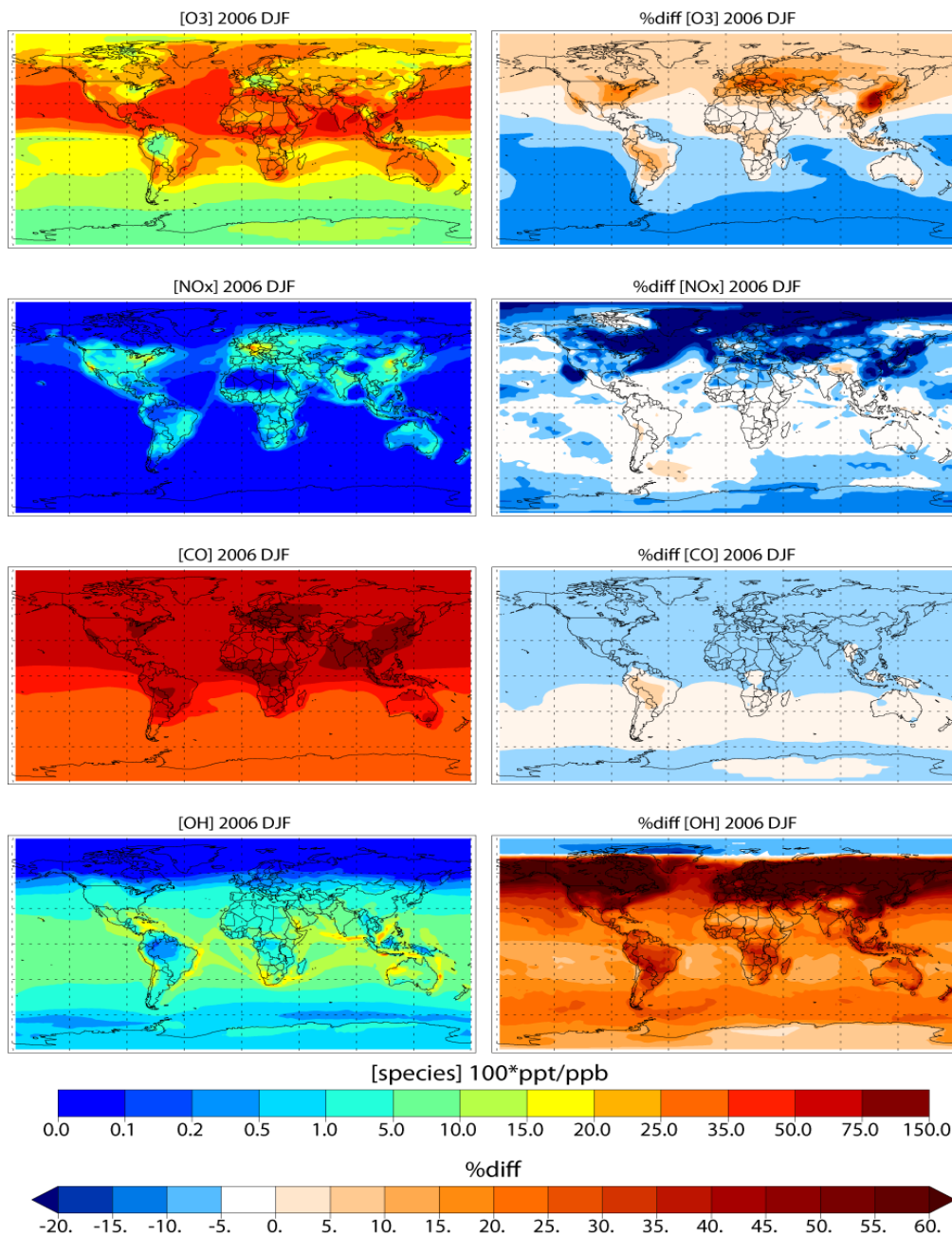


Figure S4a: Seasonal surface mixing ratios of O₃, NO_x, CO and OH for season DJF during 2006 as calculated by the MBA. The right panels show the corresponding percentage differences versus the BA, where the difference is calculated as $(\text{MBA} - \text{BA}) / \text{BA} * 100$.

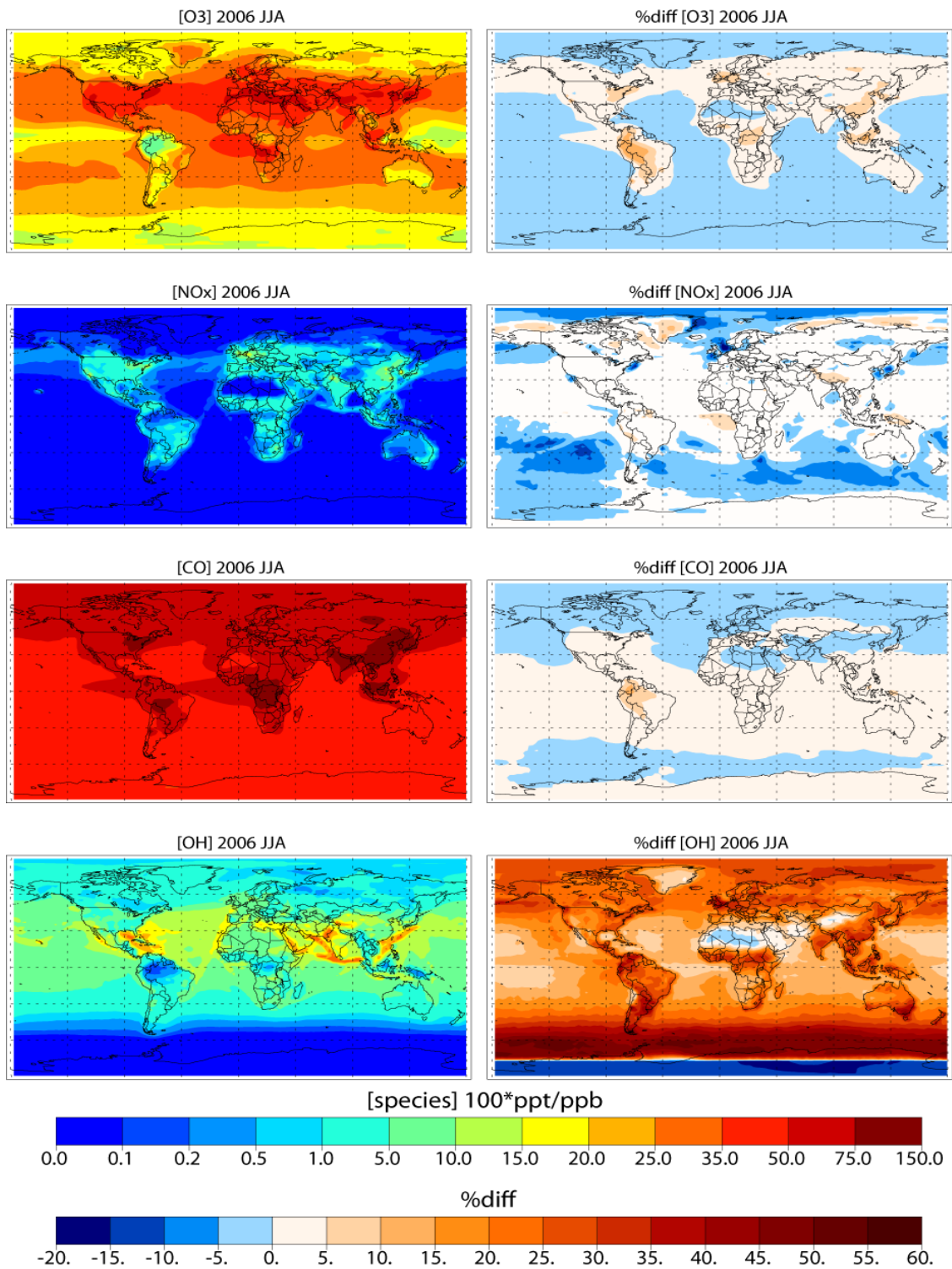


Figure S4b: As for Fig. S4a except for season JJA.

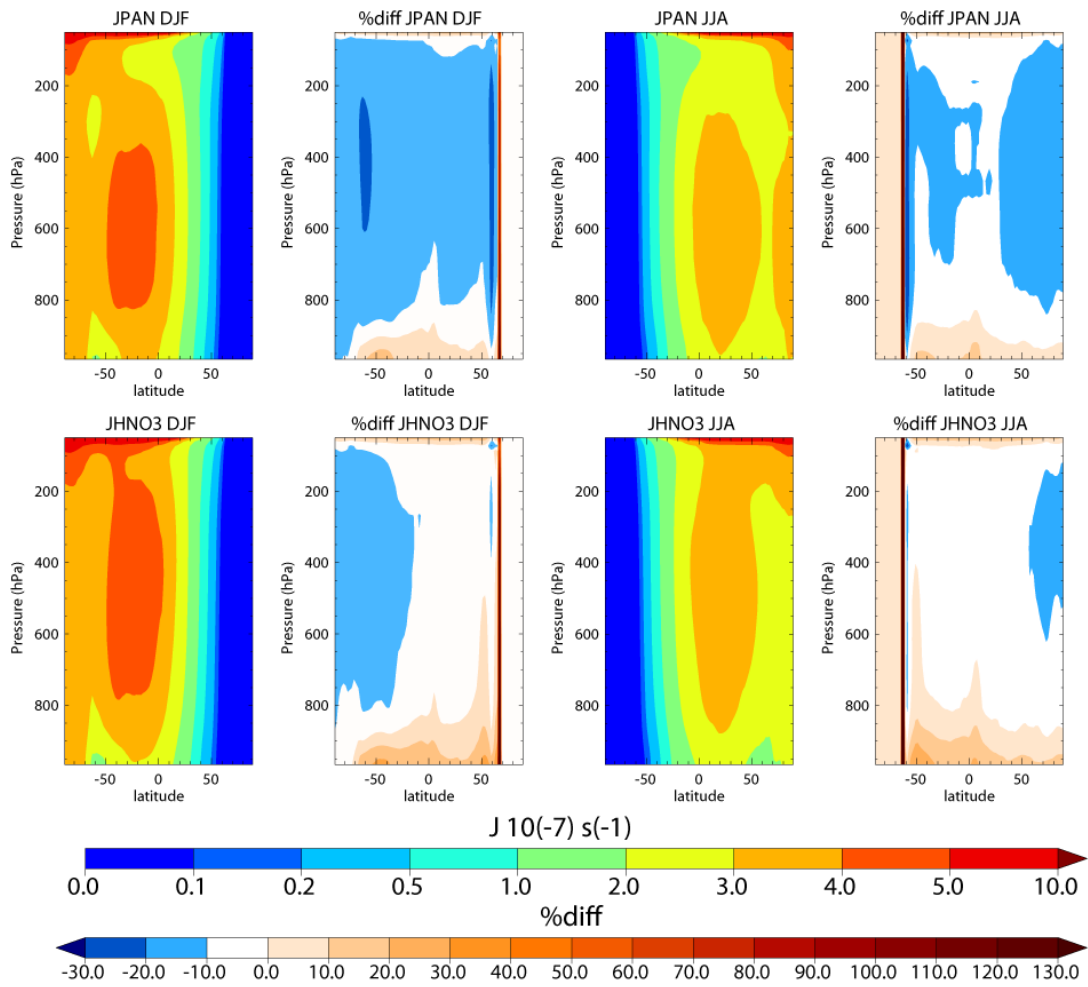


Figure S5: Seasonal zonal averages for J_{HNO_3} and J_{PAN} for seasons DJF (left) and JJA (right) as calculated online by the MBA. The corresponding percentage differences versus the BA, where the difference is calculated as $(\text{ONLINE}-\text{OFFLINE})/(\text{OFFLINE})$ are also shown.

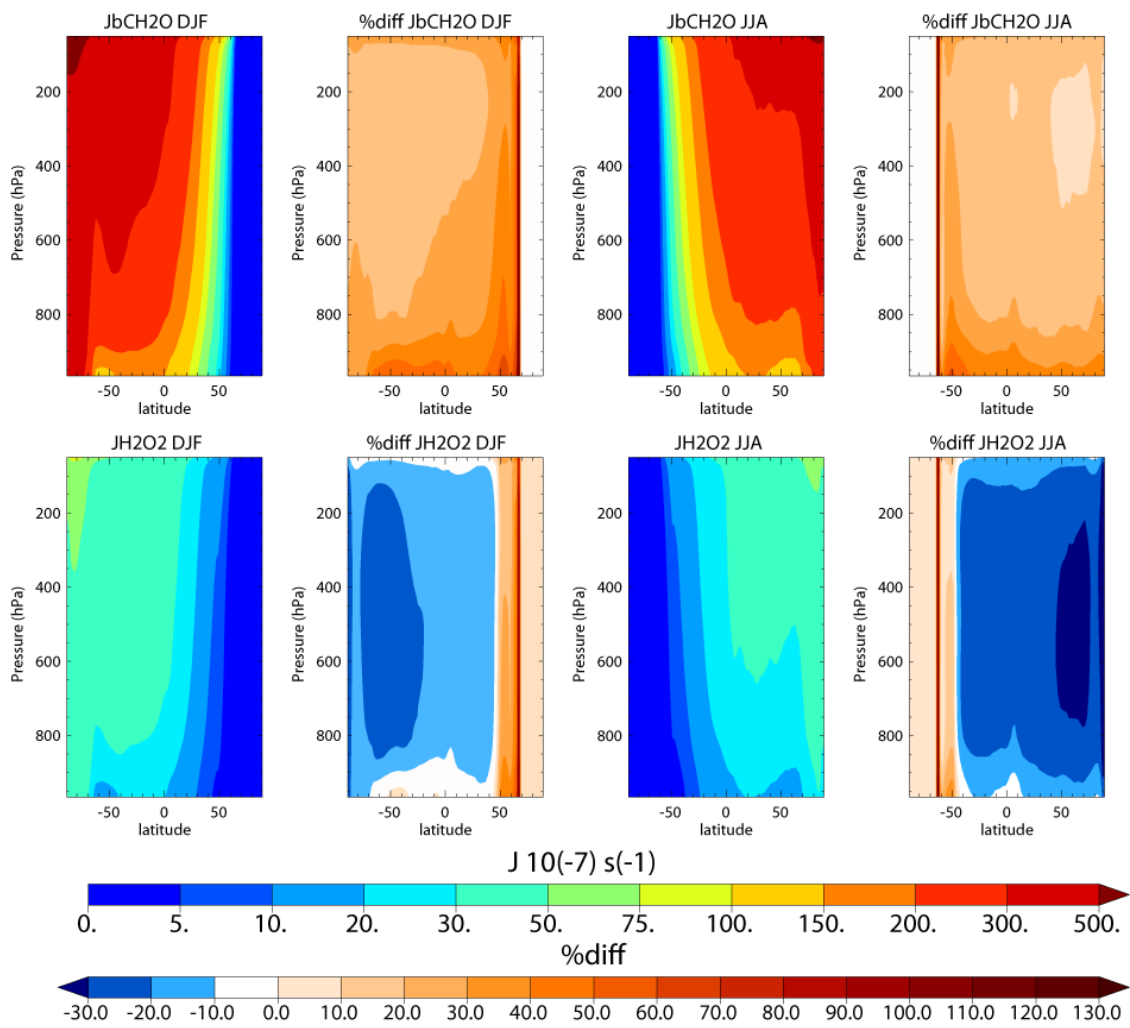


Figure S6: As for FigS5 except for J_{bCH_2O} and $J_{H_2O_2}$

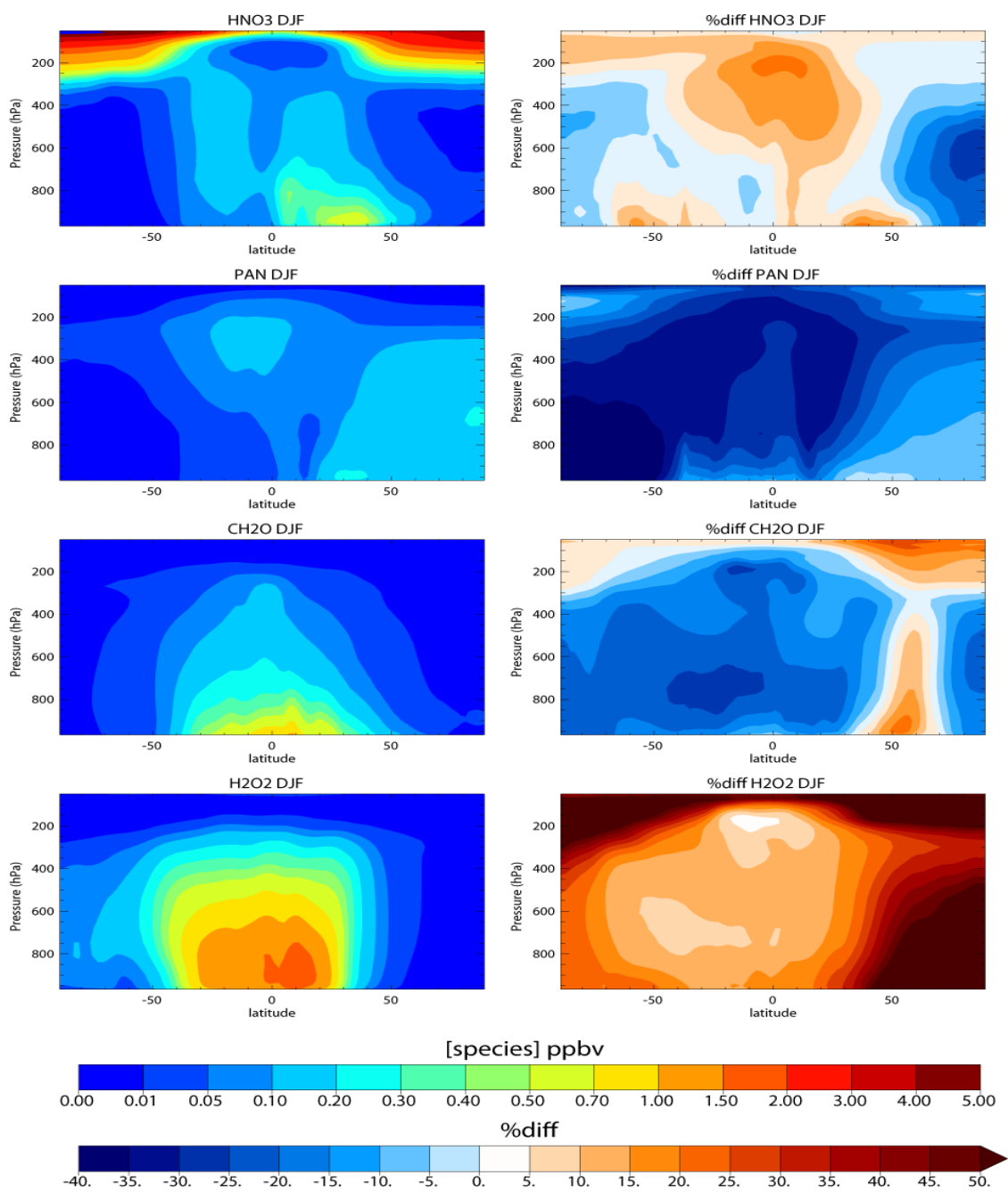


Figure S7a: The zonally averaged distribution of HNO₃, PAN, CH₂O and H₂O₂ for season DJF during 2006 as calculated by the MBA. The right panels show the corresponding percentage differences against the BA, where the differences is calculated as $(2 \cdot (MBA - BA)) / (BA + MBA) \cdot 100$.

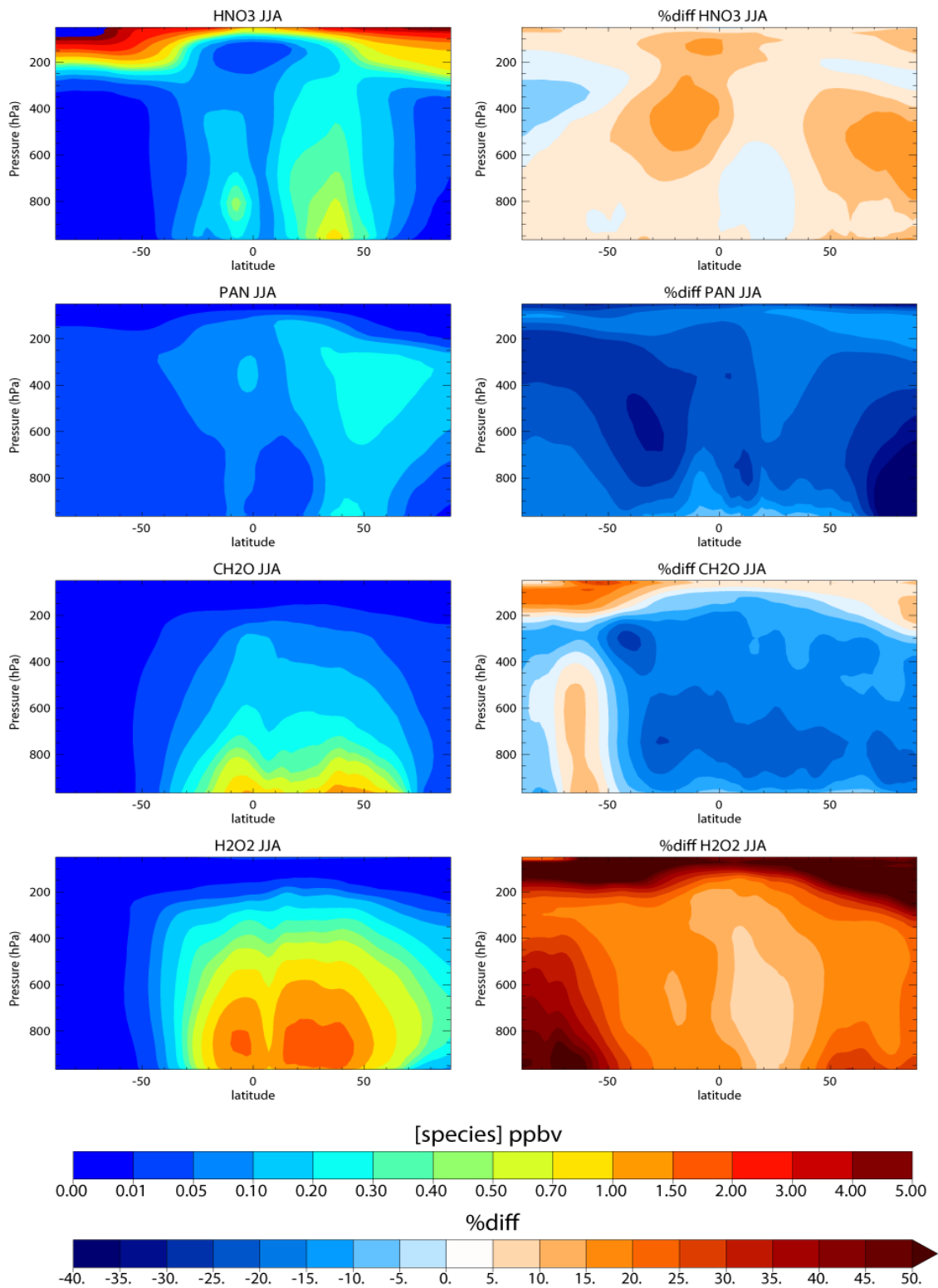


Figure S7b: As for Fig. S7a except for season JJA.