

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**

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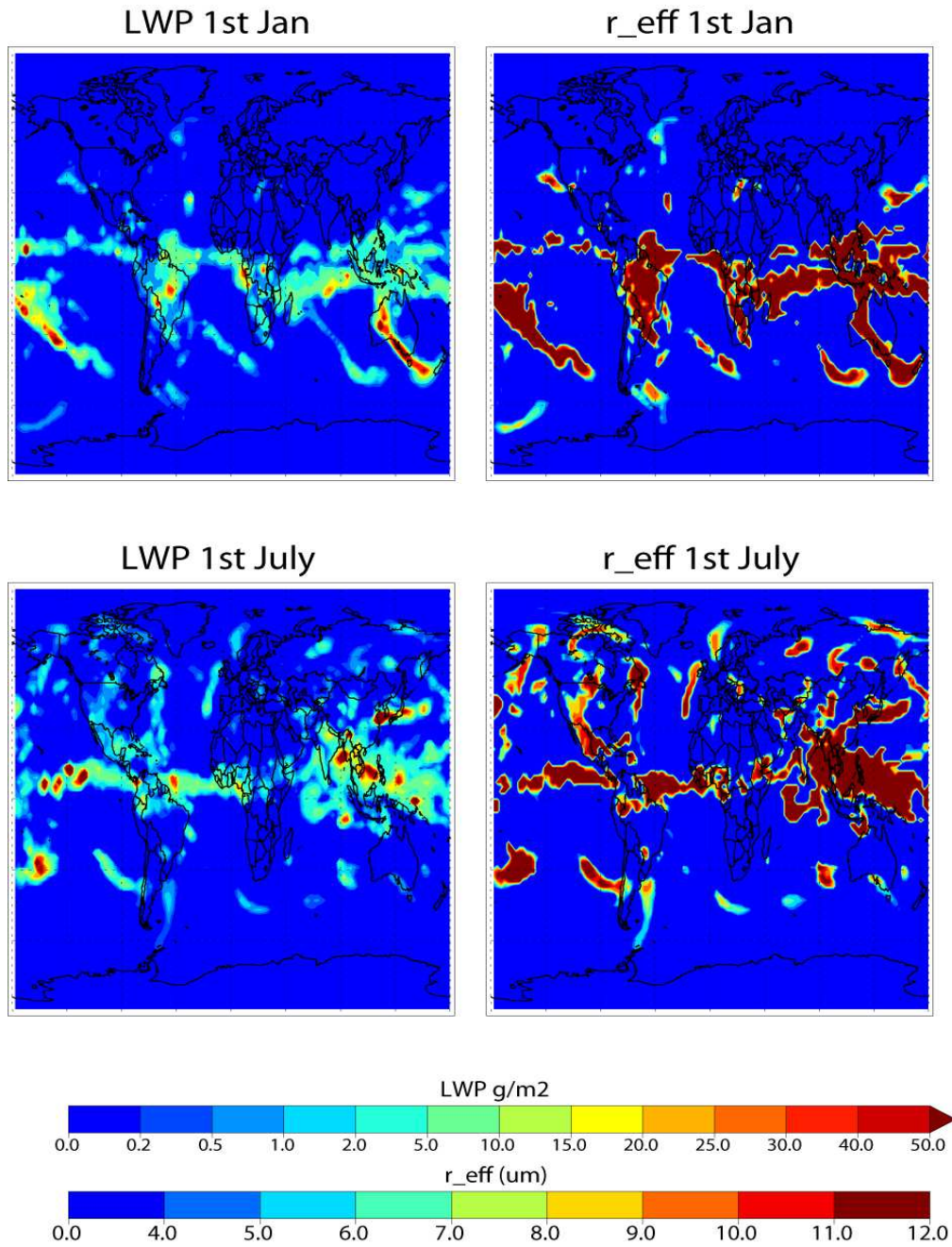


Figure S1a: The horizontal distribution of the partial Liquid Water Path and the effective cloud droplet radius for 1st January (top) and 1st July (bottom) at 945hPa as calculated using ERA-Interim meteorological data. The r_{eff} is calculated using the parameterization of McFarlane et al. (1992). The dark blue areas denote regions with insignificant cloud coverage.

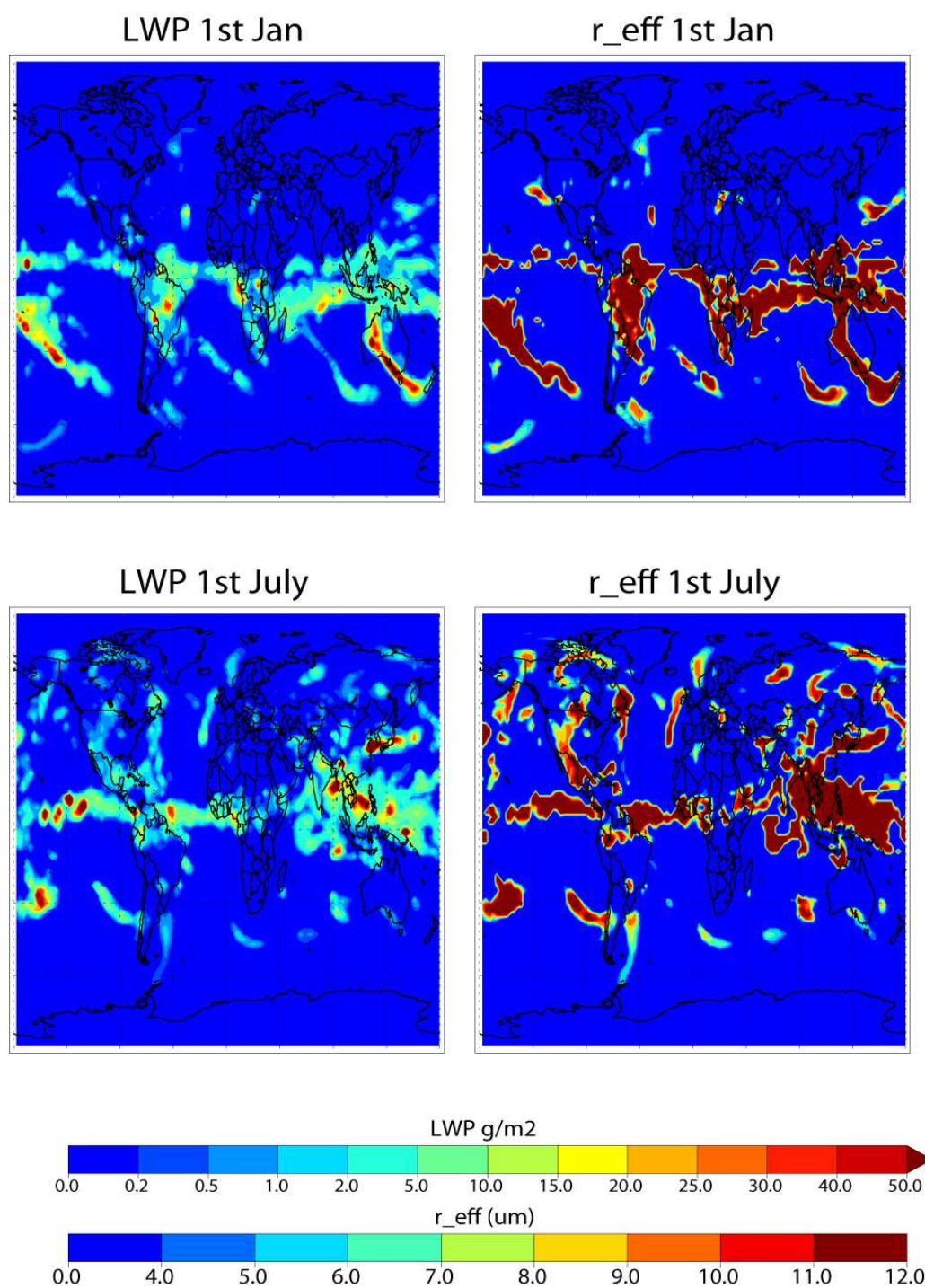


Figure S1b: As for Figure S1a except at 500hPa.

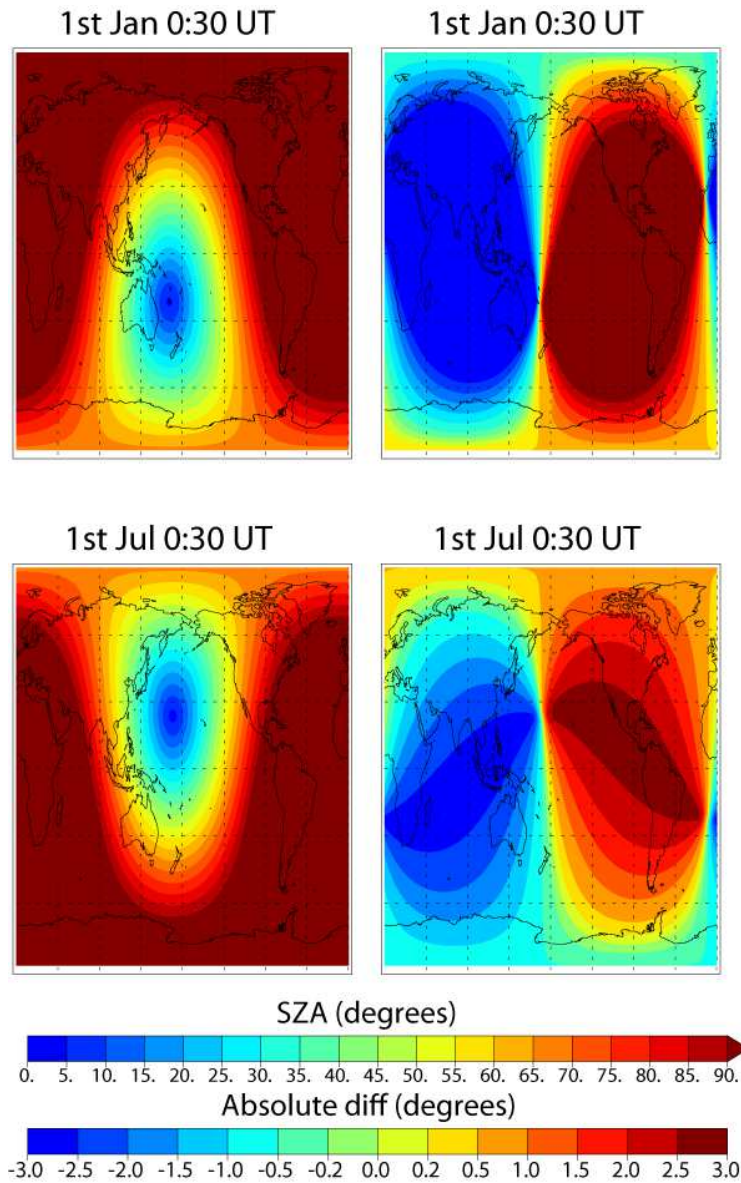


Figure S2: Instantaneous SZA calculated in the MBA at 24:00 UTC for (top left) January 1st and (bottom left) July 1st. The corresponding absolute differences are shown on the right as calculated from the MBA-BA.

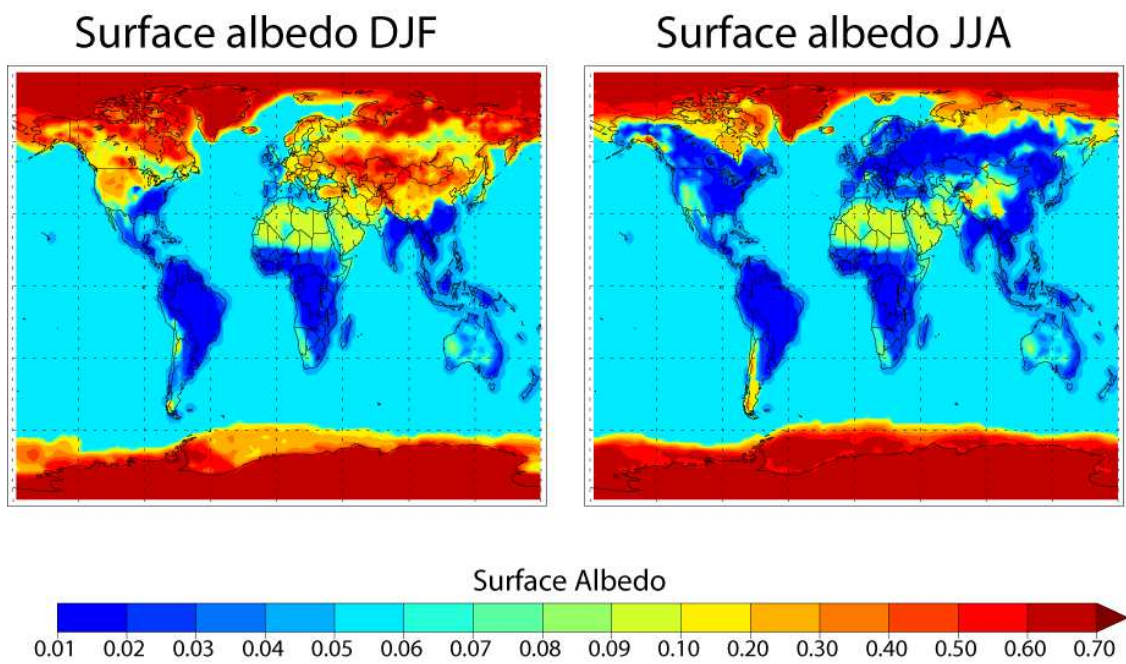


Figure S3: The seasonal distribution of surface albedo values calculated in TM5.

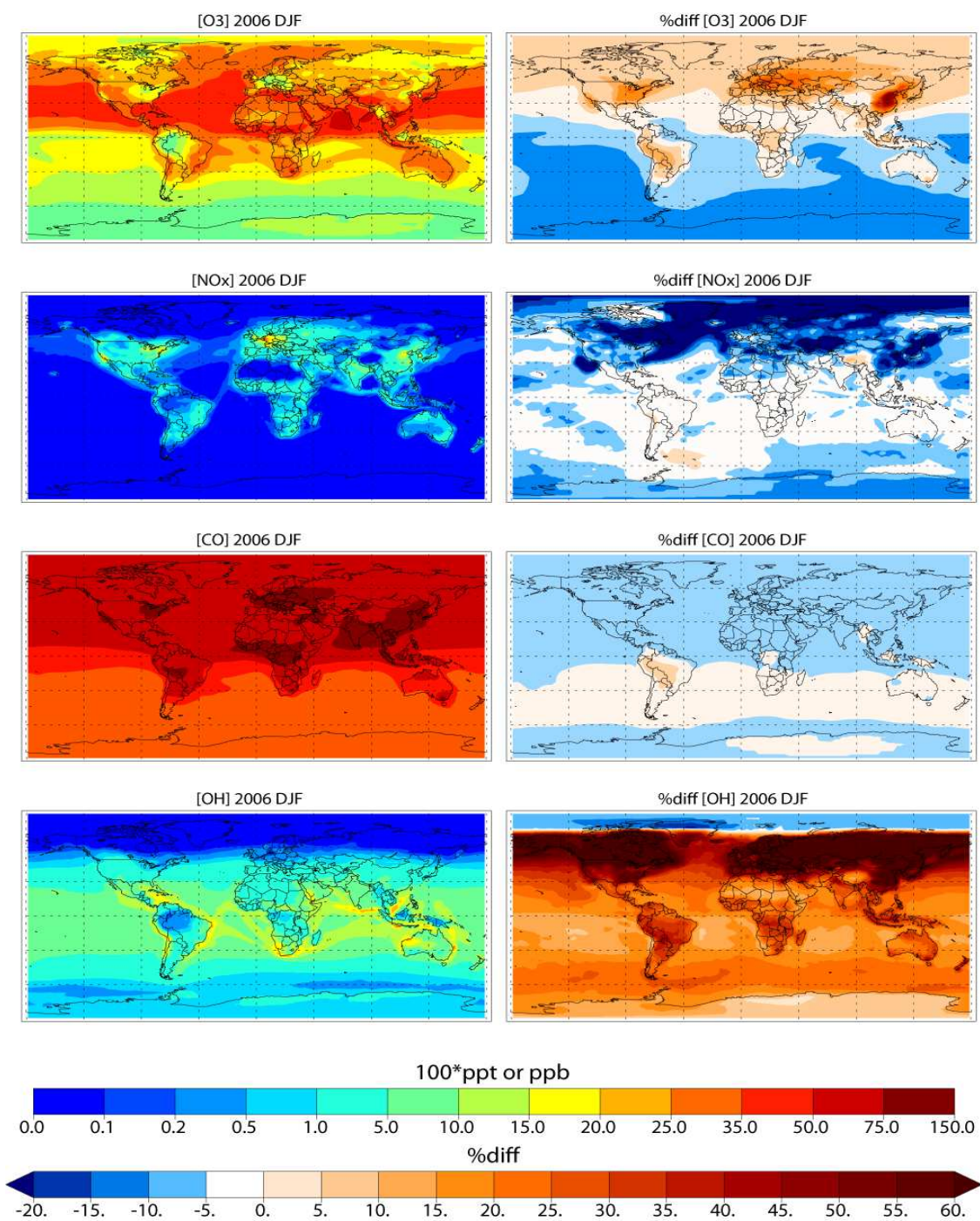


Figure S4a: Seasonal surface mixing ratios of O₃, NO_x, CO and OH for season DJF during 2006 as calculated by the MBA. The right panels show the corresponding percentage differences versus the BA, where the difference is calculated as $2(MBA - BA) / (MBA - BA) * 100$.

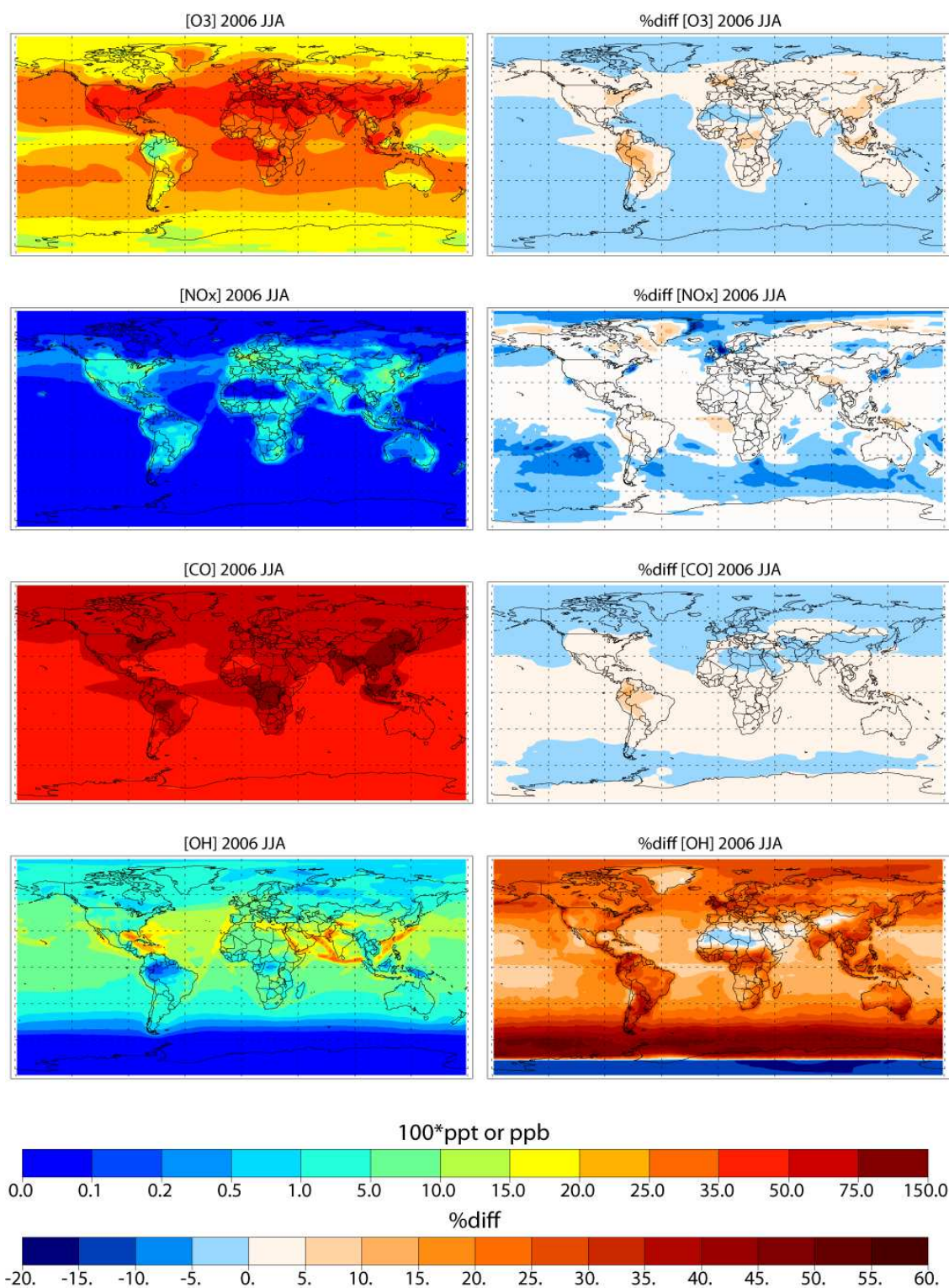


Figure S4b: As for Figure S4a except for season JJA.

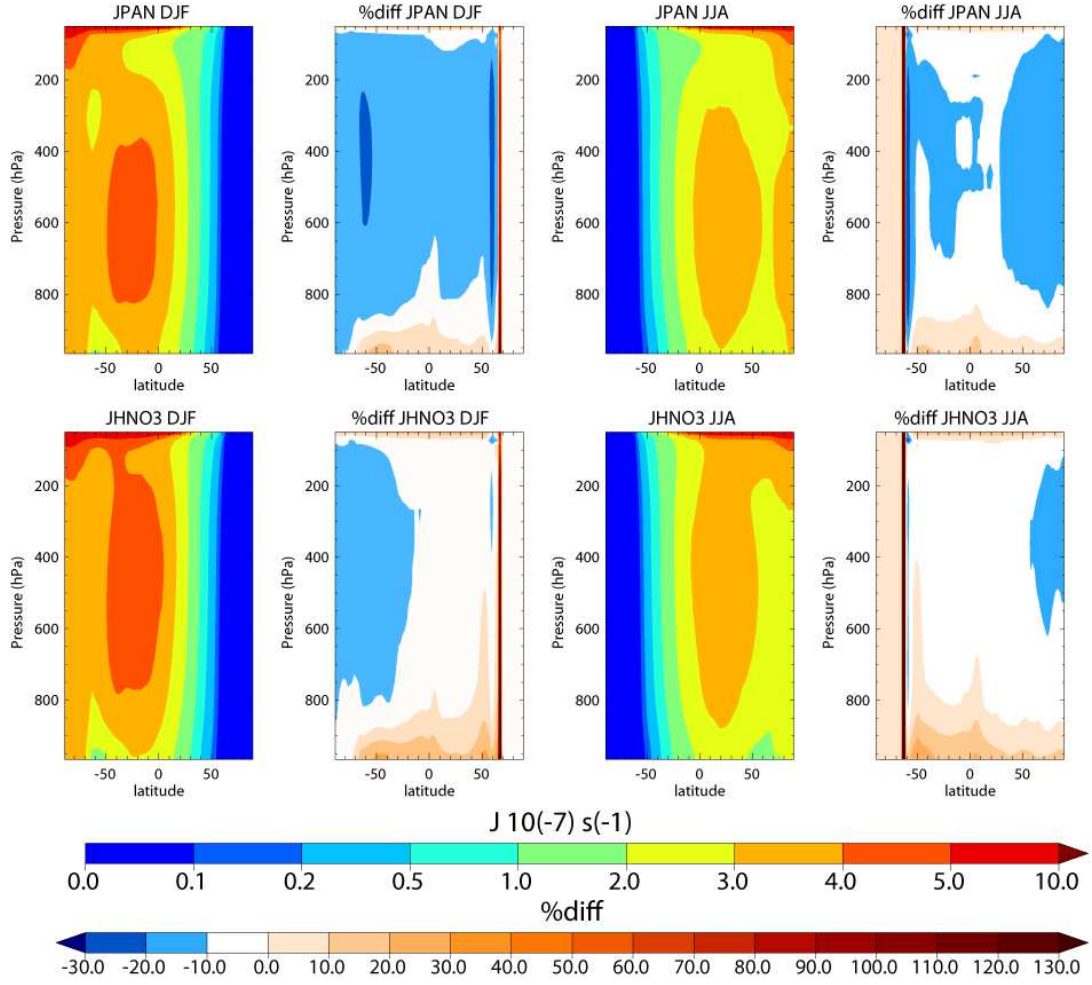


Figure S5: Seasonal zonal averages for J_{HNO_3} and J_{PAN} for seasons DJF (left) and JJA (right) as calculated online by the MBA. The corresponding percentage differences versus the BA, where the difference is calculated as $(\text{MBA}-\text{BA})/(\text{BA}) \times 100$ are also shown.

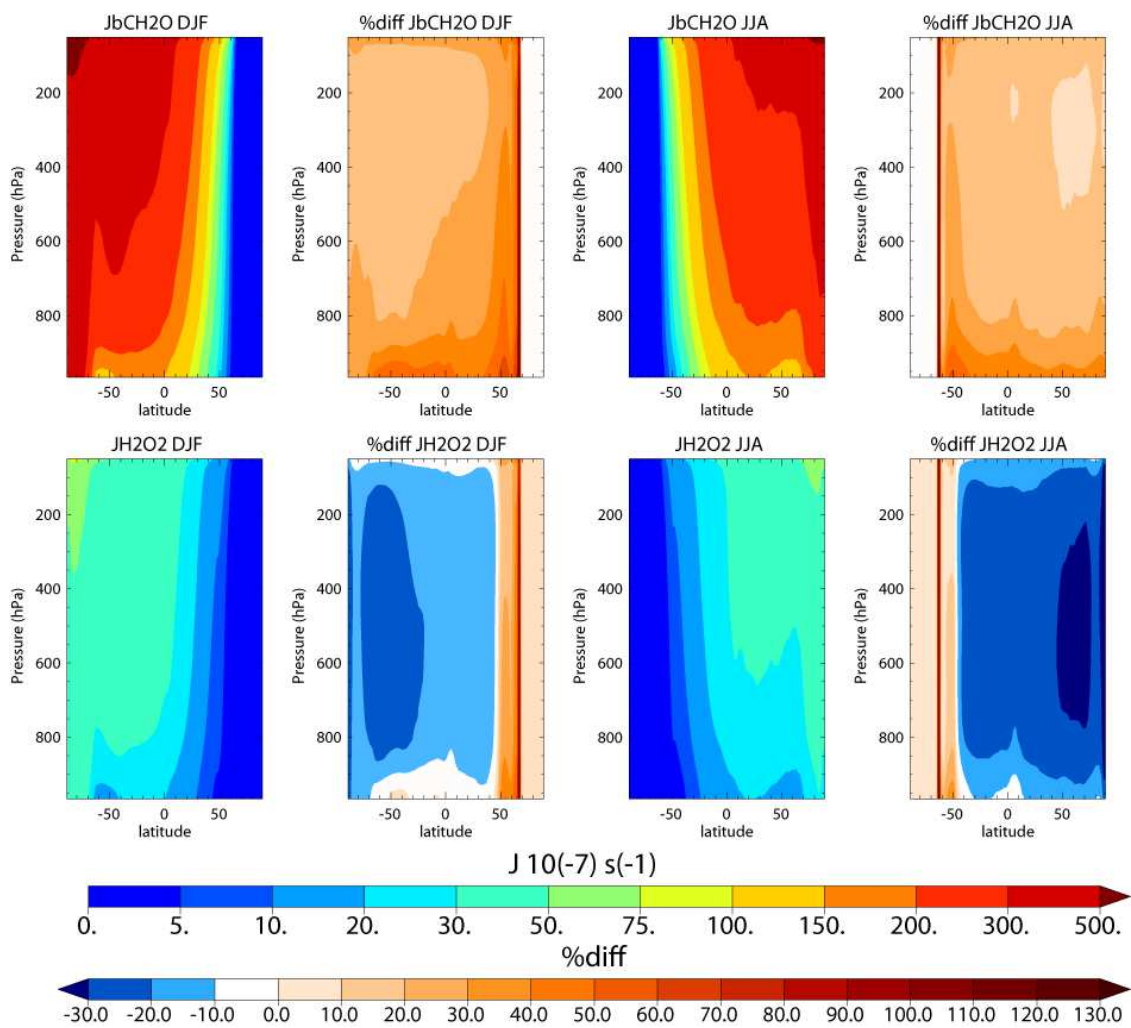


Figure S6: As for Figure S5 except for J_{bCH_2O} and $J_{H_2O_2}$

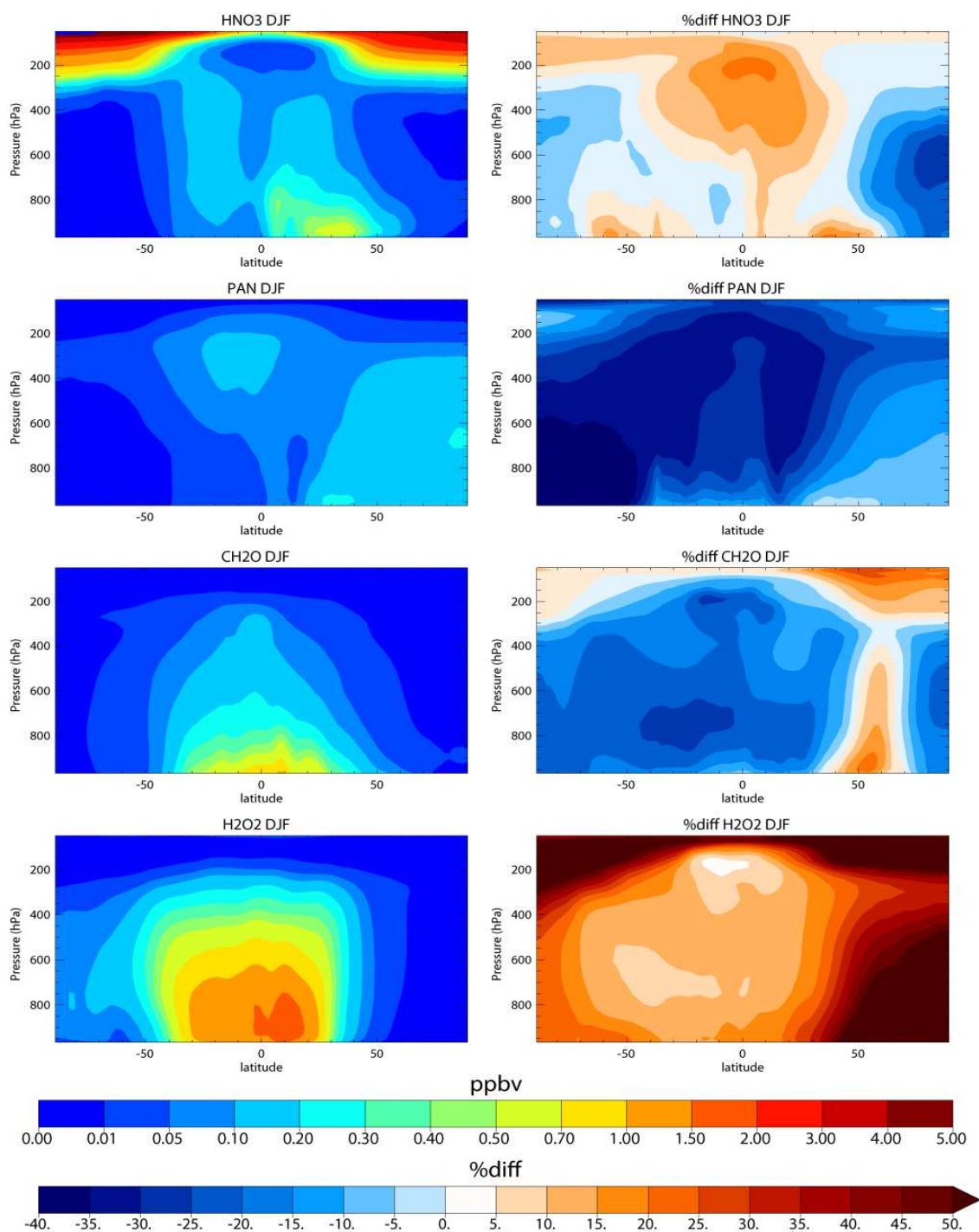


Figure S7a: The zonally averaged distribution of HNO₃, PAN, CH₂O and H₂O₂ for season DJF during 2006 as calculated by the MBA. The right panels show the corresponding percentage differences against the BA, where the differences is calculated as $2(\text{MBA}-\text{BA})/(\text{BA}+\text{MBA}) \times 100$.

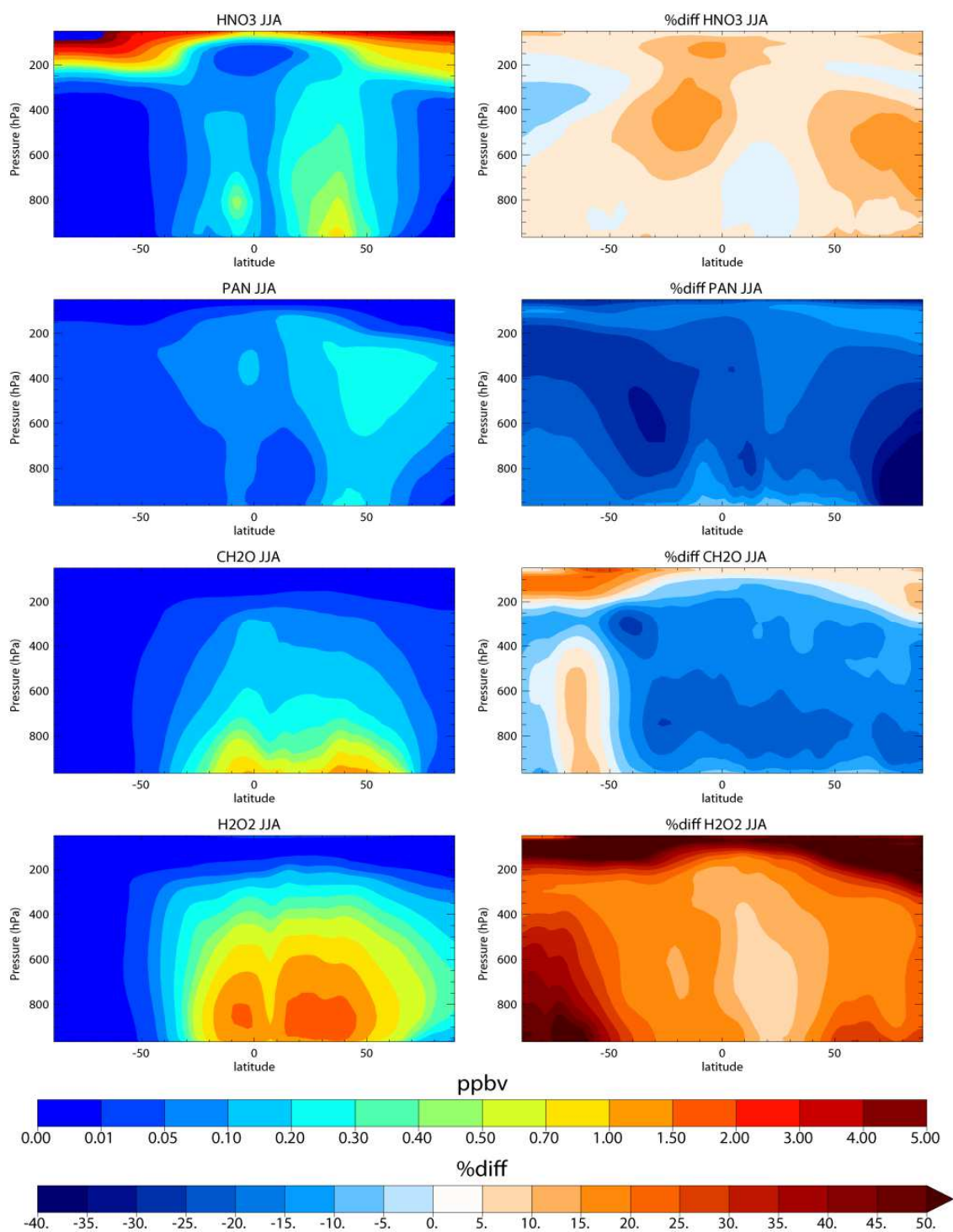


Figure S7b: As for Figure S7a except for season JJA.