References

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Randel, W. J., Wu, F., Russell, J. M. III, Roche, A., and Waters, J. W.: Seasonal cycles and QBO variations in stratospheric CH4 and H2O observed in UARS HALOE data J. Atmos. Sci., 55, 163–185, 1998.

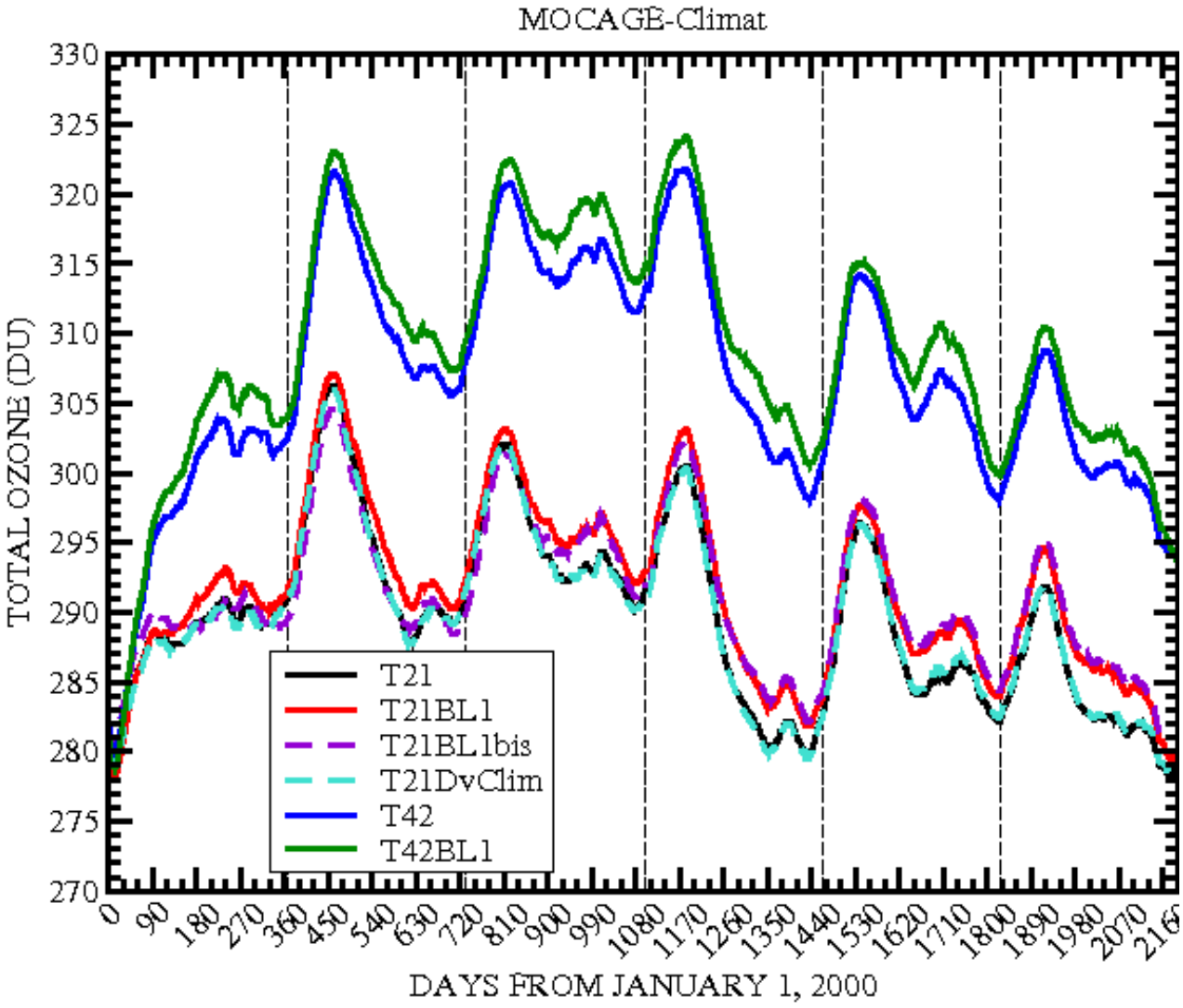

Figure 1: Evolution of the daily global total ozone column for various experiments completed with MOCAGE-Climat (see text).

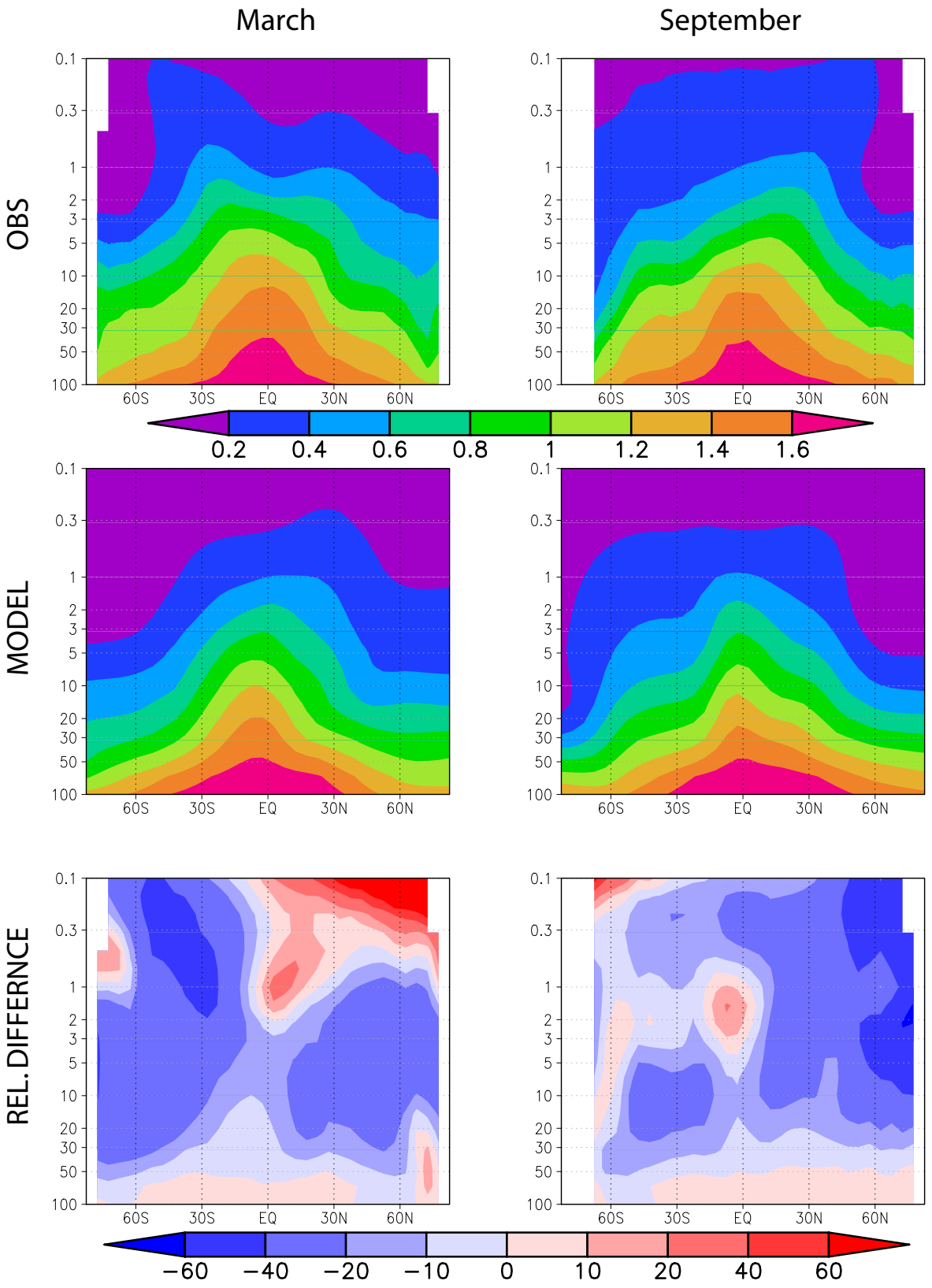

Figure 2: MOCAGE-Climat zonal monthly mixing ratios of CH_4 (ppmv) against the Grooss and Russel (2005) climatology, and relative differences ($100 \times ((Model - Obs)/Obs)$), between 100 and 0.1 hPa, in March (left panels) and September (right panels). MOCAGE-Climat has been driven by the outputs of the ARPEGE-Climat GCM.

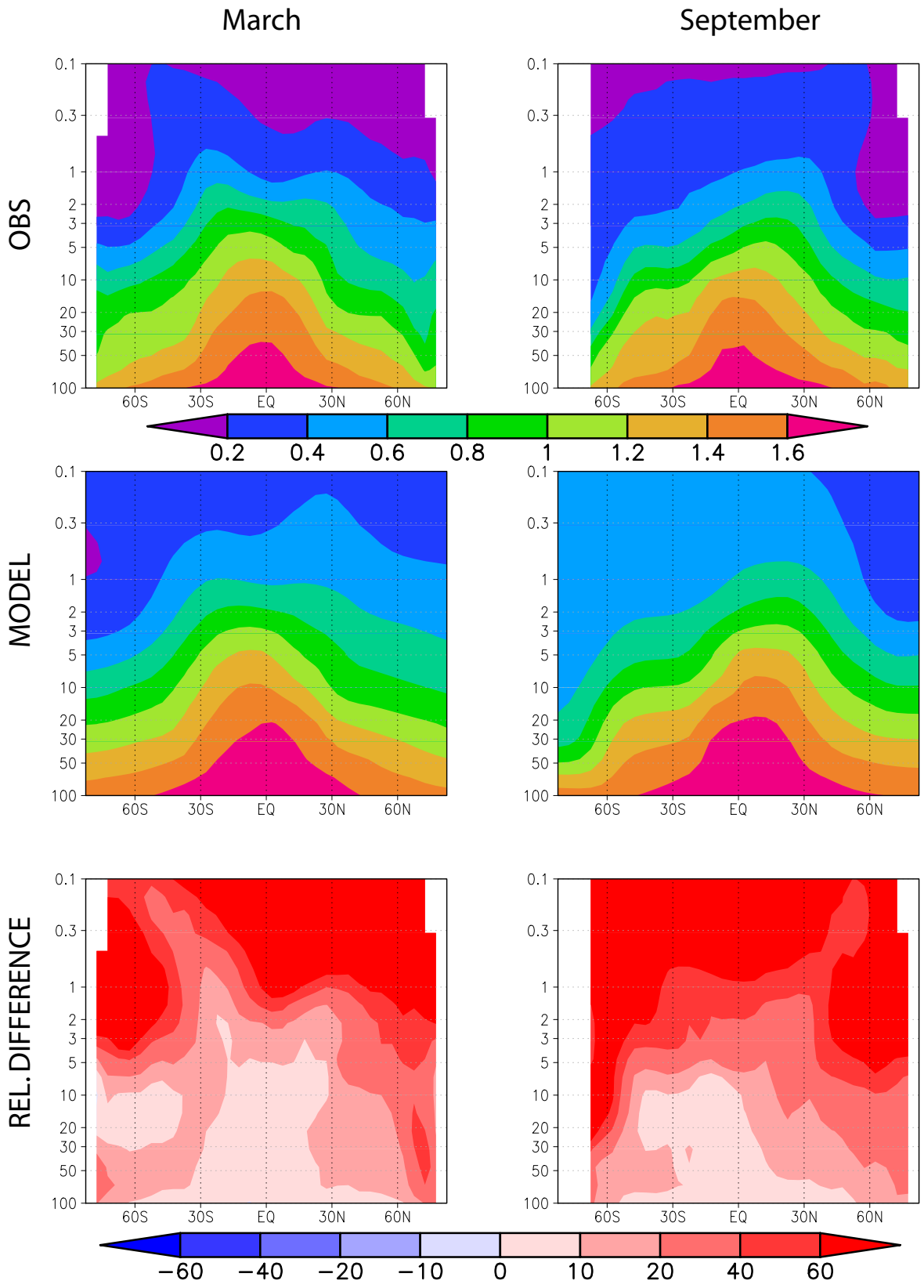

Figure 3: MOCAGE-Climat T42 zonal monthly mixing ratios of CH_4 (ppmv) against the Grooss and Russel (2005) climatology, and relative differences ($100 \times ((Model - Obs)/Obs)$), between 100 and 0.1 hPa, in March (left panels) and September (right panels).

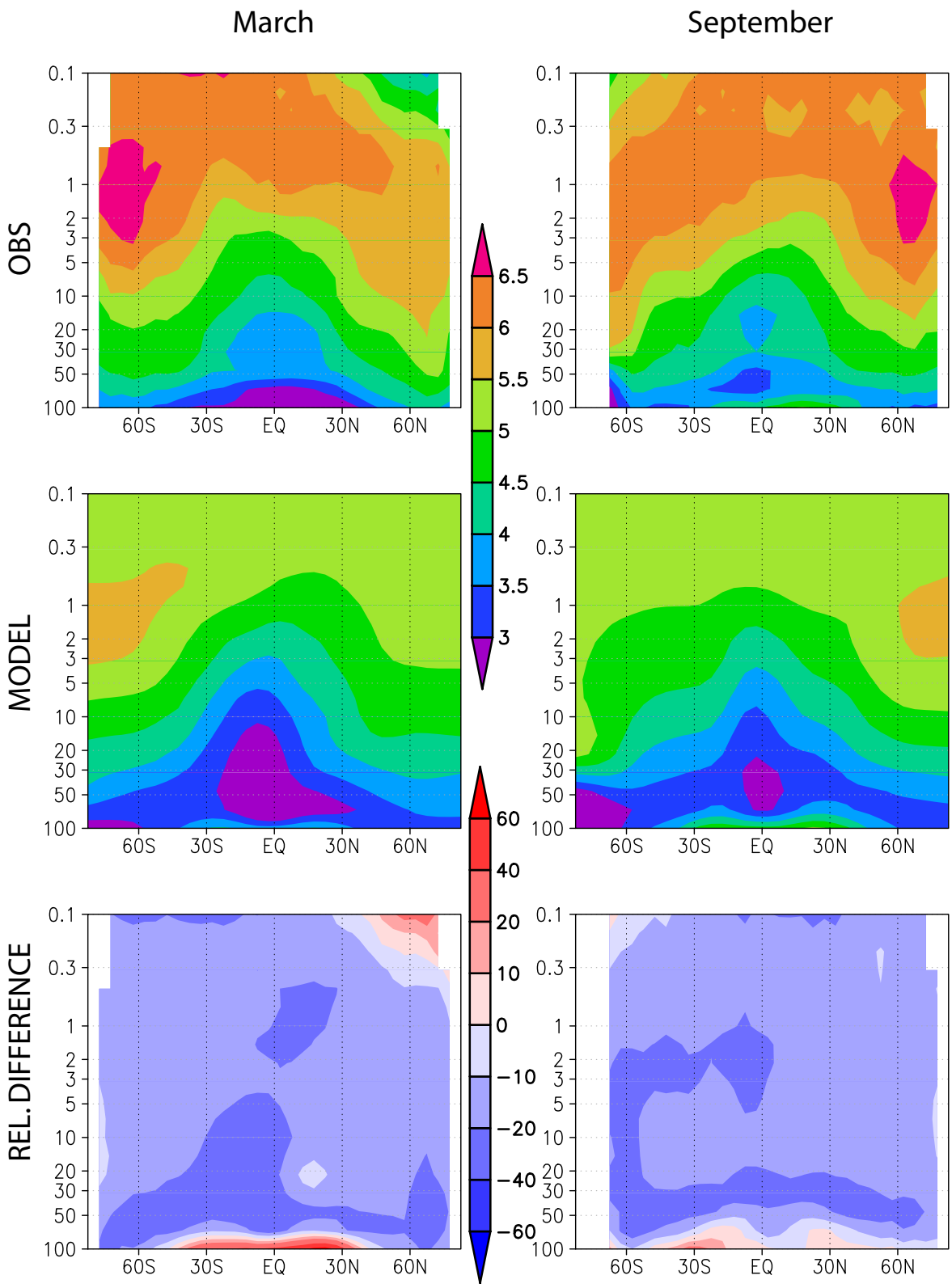

Figure 4: MOCAGE-Climat zonal monthly mixing ratios of H_2O (ppmv) against the Grooss and Russel (2005) climatology, and relative differences ($100 \times ((Model - Obs)/Obs)$), between 100 and 0.1 hPa, in March (left panels) and September (right panels). MOCAGE-Climat has been driven by the outputs of the ARPEGE-Climat GCM.

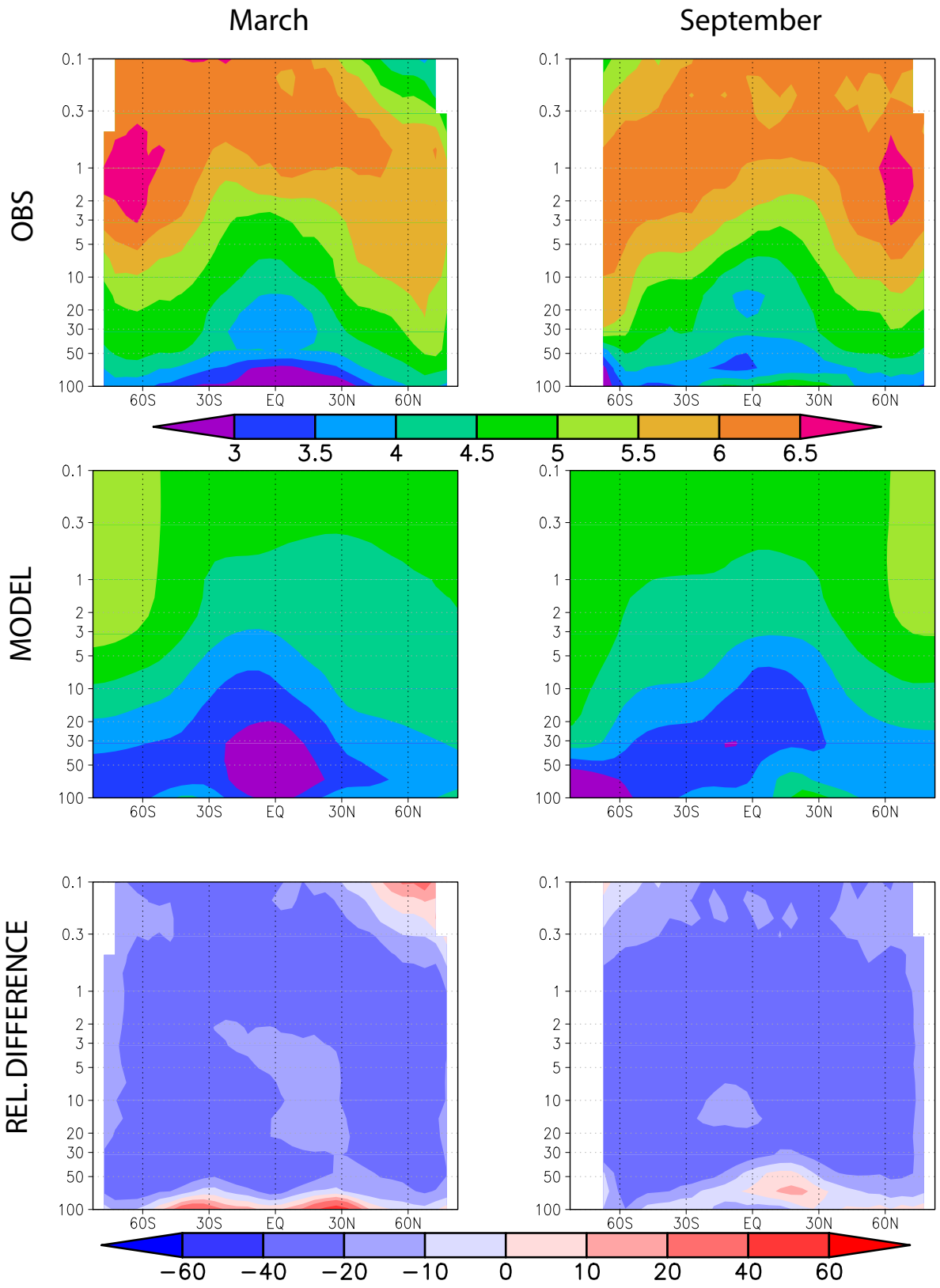

Figure 5: MOCAGE-Climat T42 zonal monthly mixing ratios of H_2O (ppmv) against the Grooss and Russel (2005) climatology, and relative differences ($100 \times ((Model - Obs)/Obs)$), between 100 and 0.1 hPa, in March (left panels) and September (right panels).

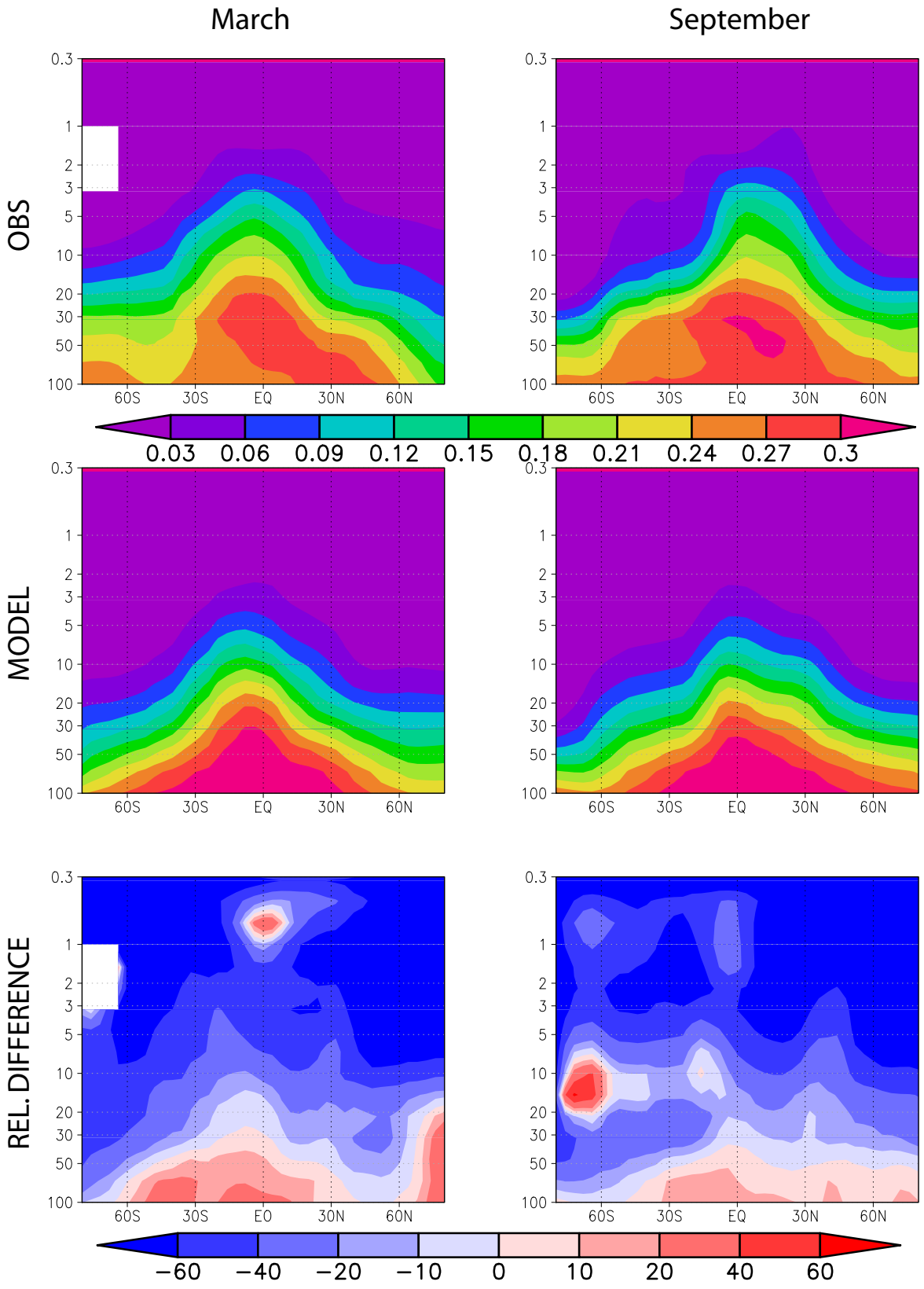

Figure 6: MOCAGE-Climat zonal monthly mixing ratios of N_2O (ppmv) against the Randel et al. (1998) climatology, and relative differences ($100 \times ((Model - Obs)/Obs)$), between 100 and 0.1 hPa, in March (left panels) and September (right panels). MOCAGE-Climat has been driven by the outputs of the ARPEGE-Climat GCM.

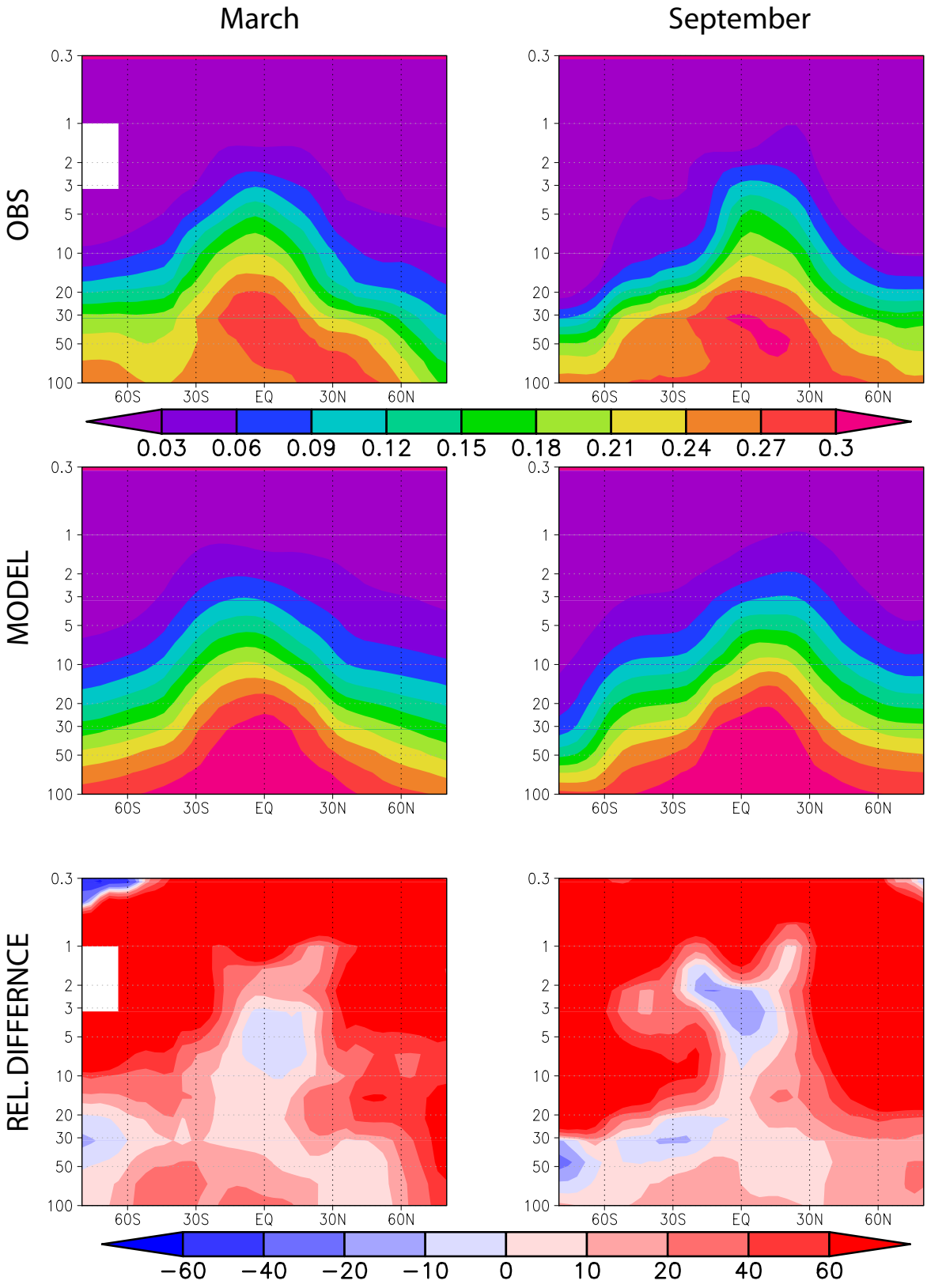

Figure 7: MOCAGE-Climat T42 zonal monthly mixing ratios of N_2O (ppmv) against the Randel et al. (1998) climatology, and relative differences ($100 \times ((Model - Obs)/Obs)$), between 100 and 0.1 hPa, in March (left panels) and September (right panels).

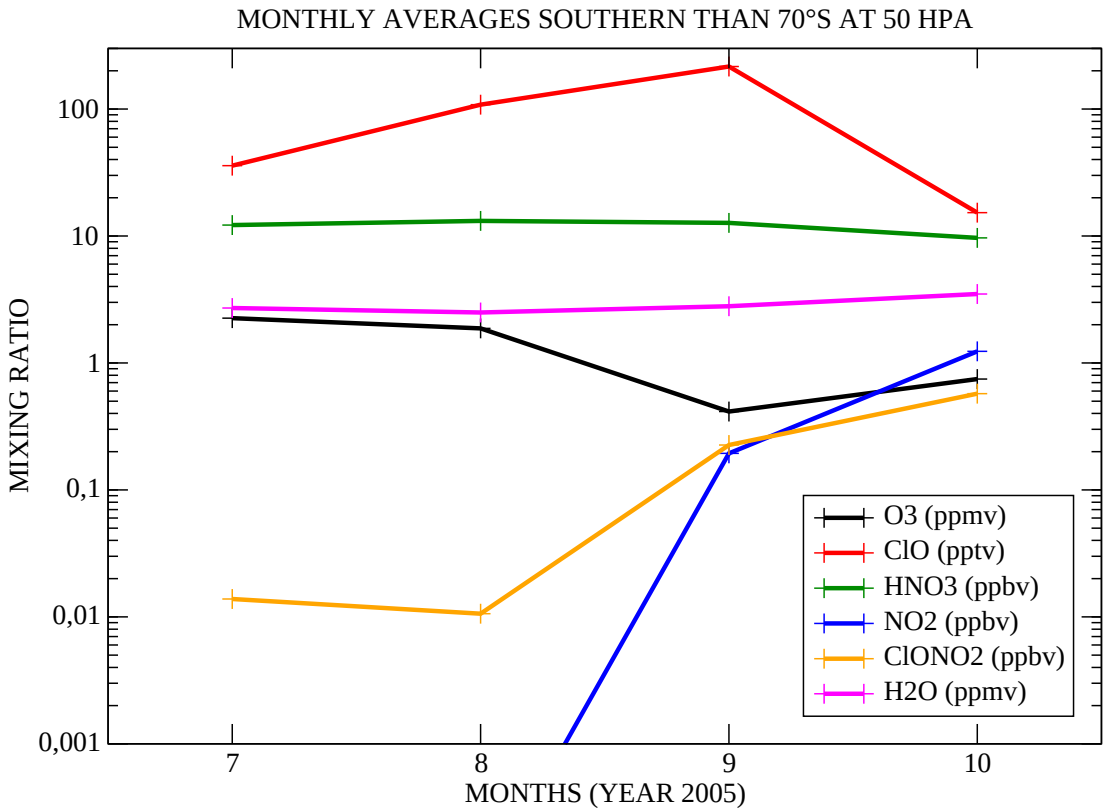

Figure 8: MOCAGE-Climat monthly mean mixing ratios of O_3 (ppmv), ClO (pptv), HNO_3 (ppbv), NO_2 (ppbv), $ClONO_2$ (ppbv) and H_2O (ppmv) at 50 hPa from July to October 2005. Data are averages from the South Pole to 70 S. Note that the vertical axis is logarithmic.

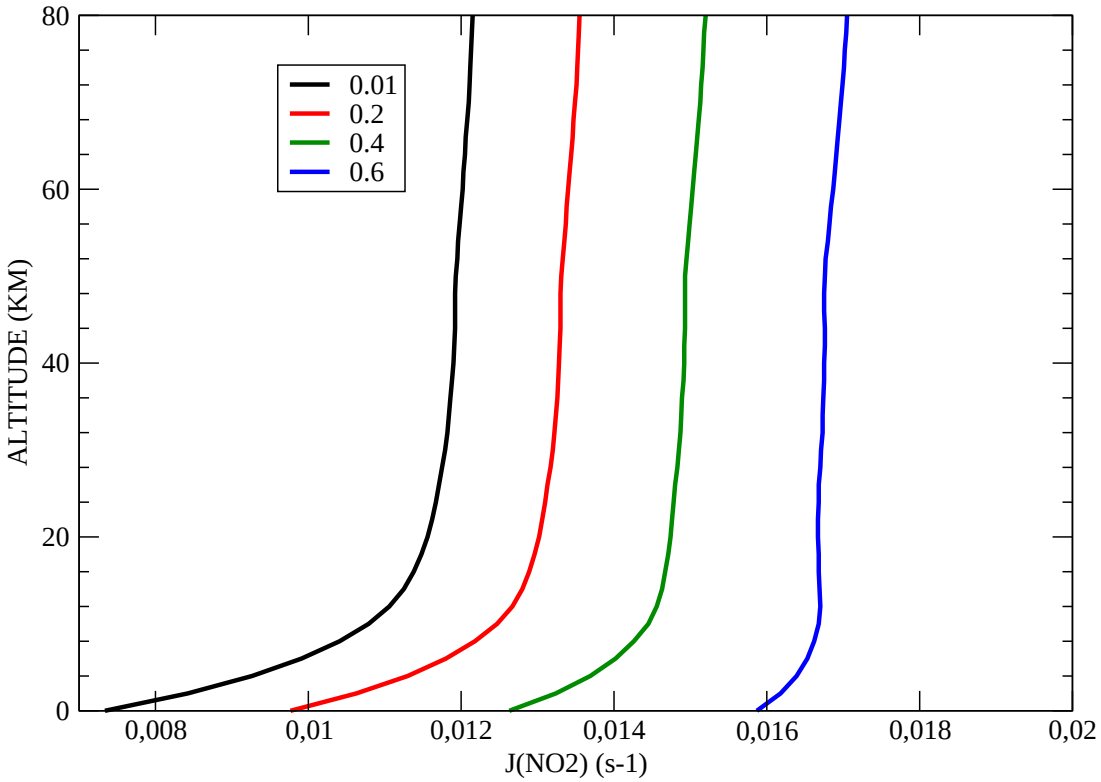

Figure 9: Vertical profiles of NO_2 photolysis according to four values of the surface albedo for January with a zenithal angle of 40 degrees, and a total ozone column of 300 DU.