Supplemental Material:

Additional Figures

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1 Simulation S-SPE

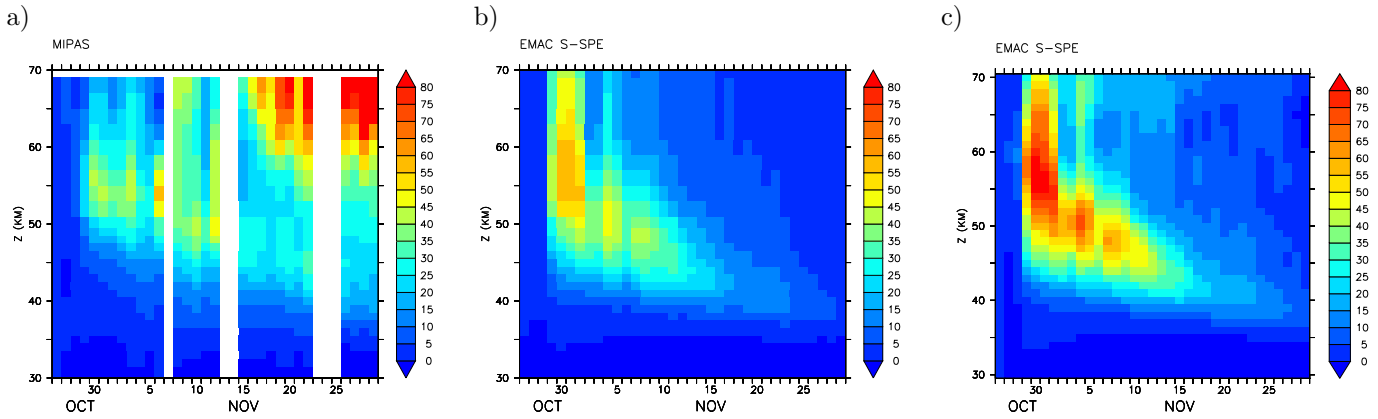

Figure 1: NO_2 change (ppbv) relative to 26 October for 70–90°N for a) MIPAS, b) EMAC simulation S-SPE with MIPAS averaging kernel (AK) applied, c) without MIPAS AK applied.

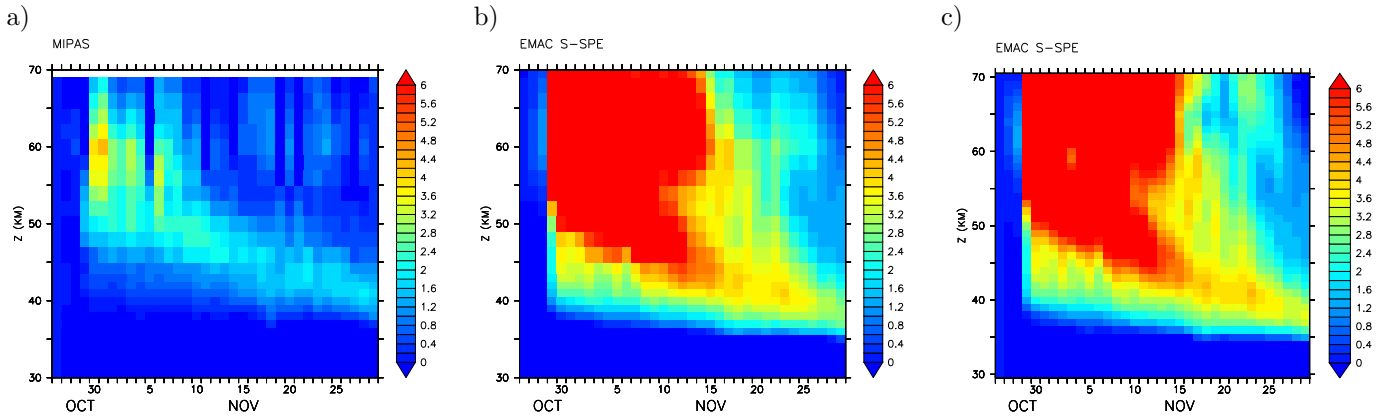

Figure 2: N_2O change (ppbv) relative to 26 October for 70–90°N for a) MIPAS, b) EMAC simulation S-SPE with MIPAS AK applied, c) without MIPAS AK applied.

2 Simulation S-SPE-FUNKE

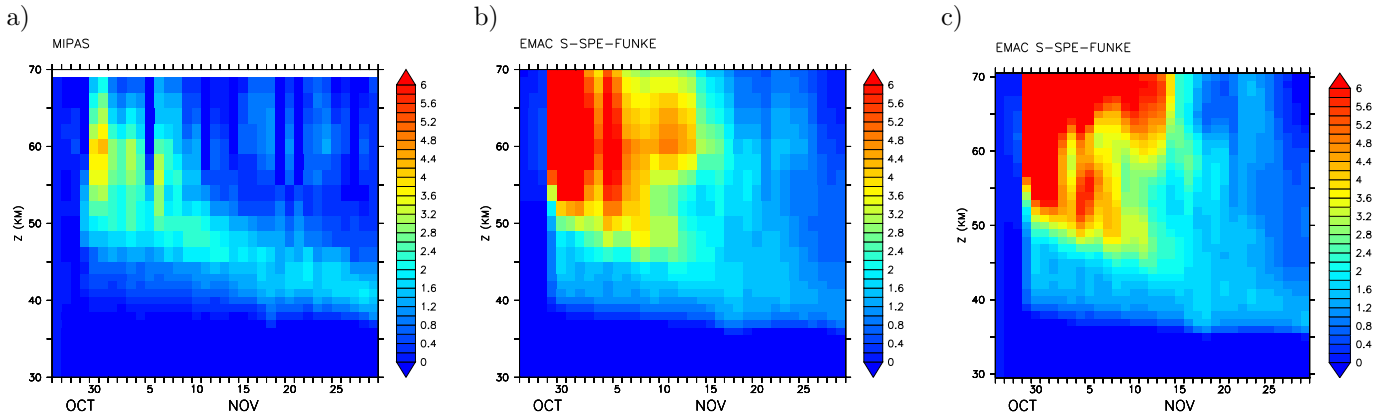

Figure 3: N_2O change (ppbv) relative to 26 October for 70–90°N for a) MIPAS, b) EMAC simulation S-SPE-FUNKE with MIPAS AK applied, c) without MIPAS AK applied.

3 Simulation S-SPE-NNOEFF

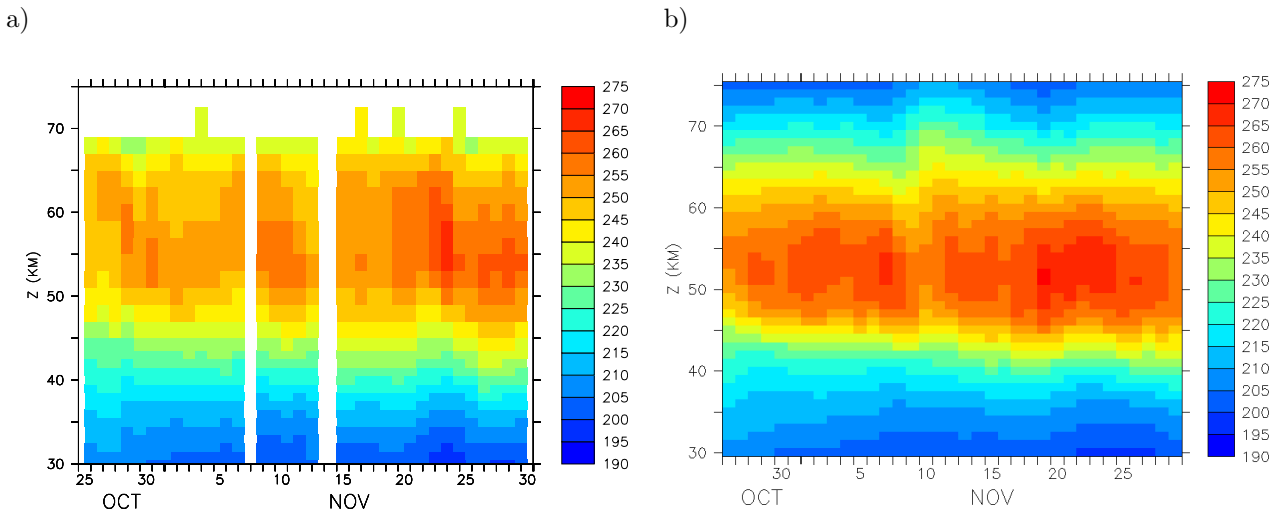

Figure 4: Temperature for 26 October to 30 November 2003 for 70–90°N for a) MIPAS, b) EMAC simulation S-SPE-NNOEFF.

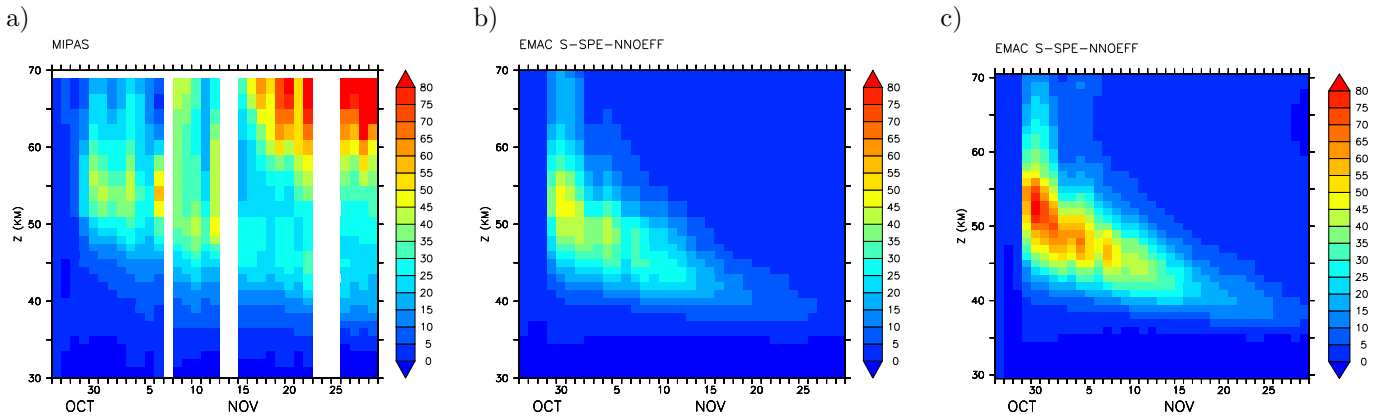

Figure 5: NO_2 change (ppbv) relative to 26 October for 70–90°N for a) MIPAS, b) EMAC simulation S-SPE-NNOEFF with MIPAS AK applied, c) without MIPAS AK applied.

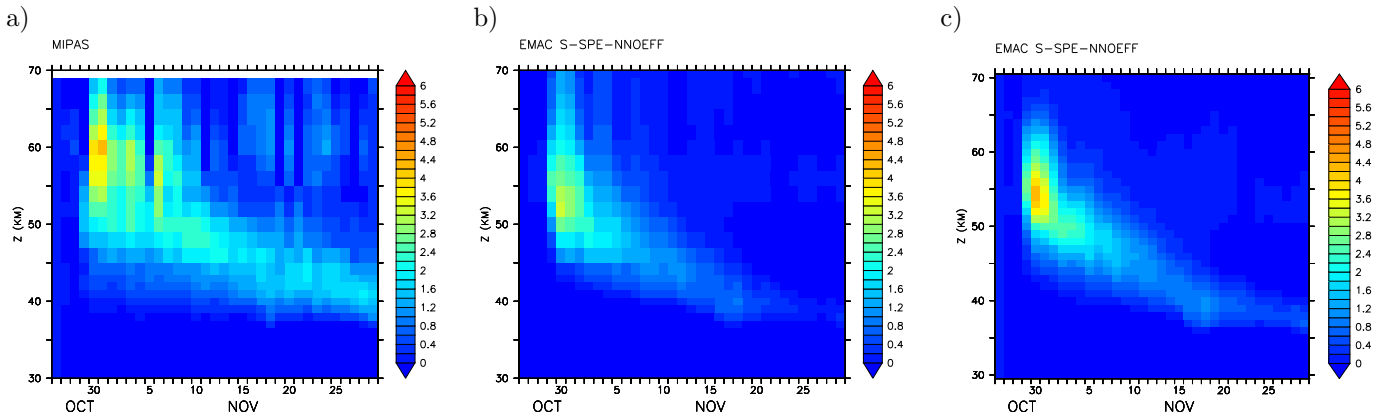

Figure 6: N_2O changes (ppbv) relative to 26 October for 70–90°N for a) MIPAS, b) EMAC simulation S-SPE-NNOEFF with MIPAS AK applied, c) without MIPAS AK applied.

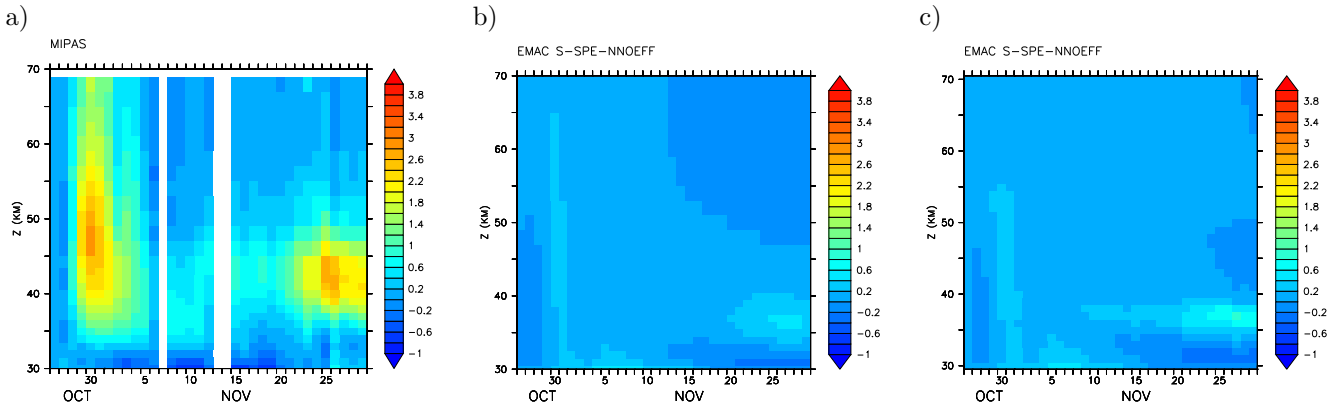

Figure 7: HNO_3 changes (ppbv) relative to 26 October for 70–90°N for a) MIPAS, b) EMAC simulation S-SPE-NNOEFF with MIPAS AK applied, c) without MIPAS AK applied.

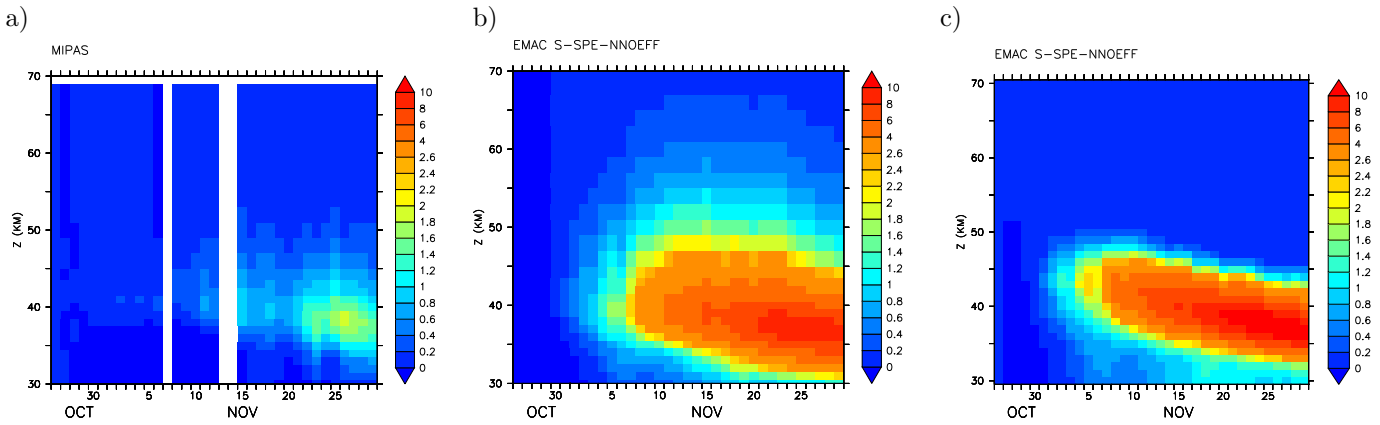

Figure 8: N_2O_5 changes (ppbv) relative to 26 October for 70–90°N for a) MIPAS, b) EMAC simulation S-SPE-NNOEFF with MIPAS AK applied, c) without MIPAS AK applied.

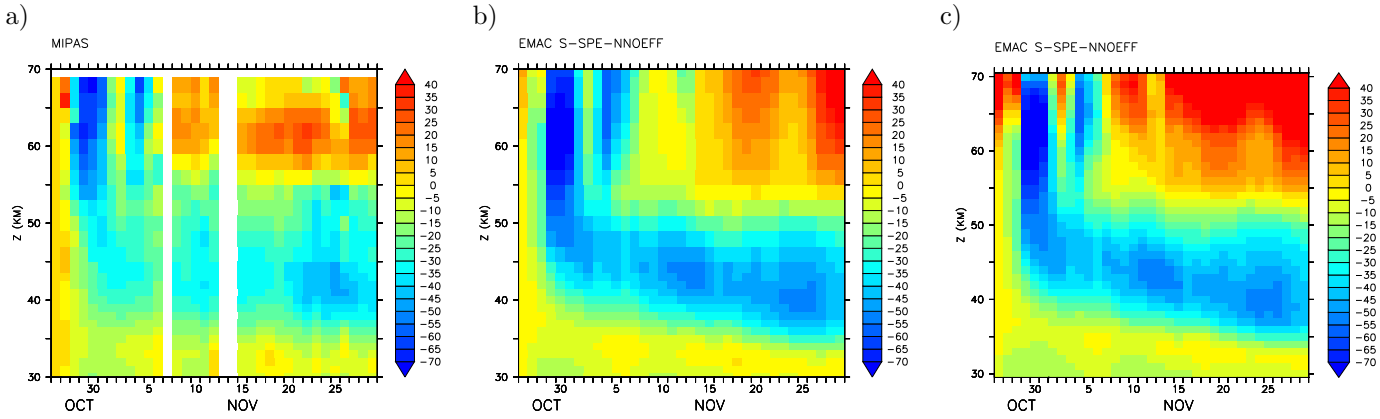

Figure 9: Ozone mixing ratio percentage change relative to 26 October for 70–90°N; a) MIPAS, b) EMAC simulation S-SPE-NNOEFF with MIPAS AK applied), c) without MIPAS AK applied.

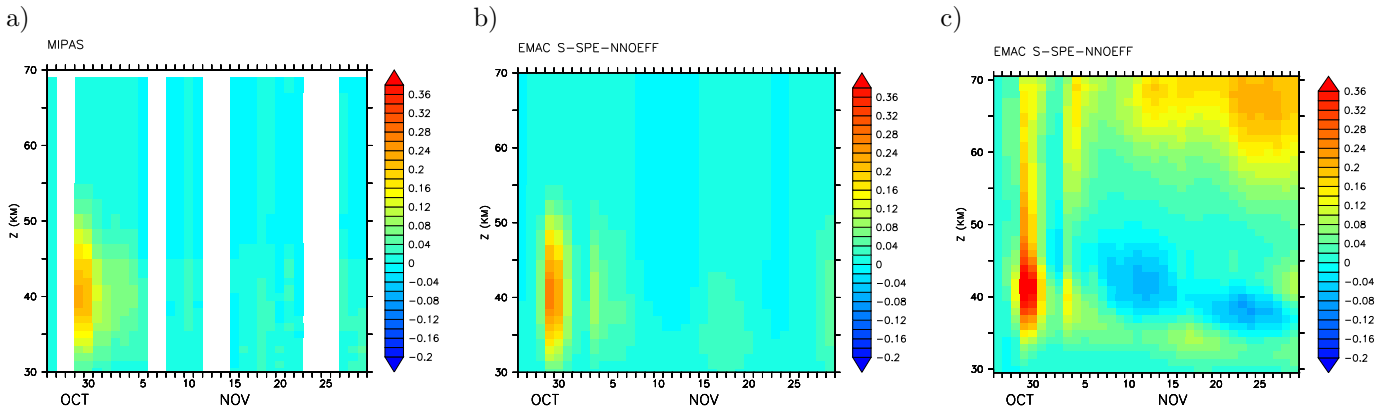

Figure 10: HOCl changes (ppbv) relative to 26 October for 70–90°N for a) MIPAS, b) EMAC simulation S-SPE-NNOEFF with MIPAS AK applied, c) without MIPAS AK applied.

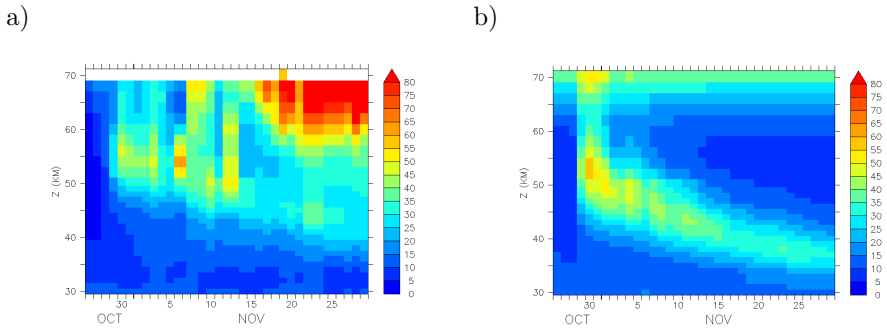

Figure 11: NO_y (here: NO_2 + 2xN_2O_5 + HNO_3 + $ClONO_2$) changes (ppbv) relative to 26 October for 70–90°N for a) MIPAS, b) EMAC simulation S-SPE-NNOEFF with MIPAS AK applied.