

# **Nitrogen Compounds and Ozone in the Stratosphere: Comparison of MIPAS Satellite Data with the Chemistry Climate Model ECHAM5/MESSy1**

## **Supplement**

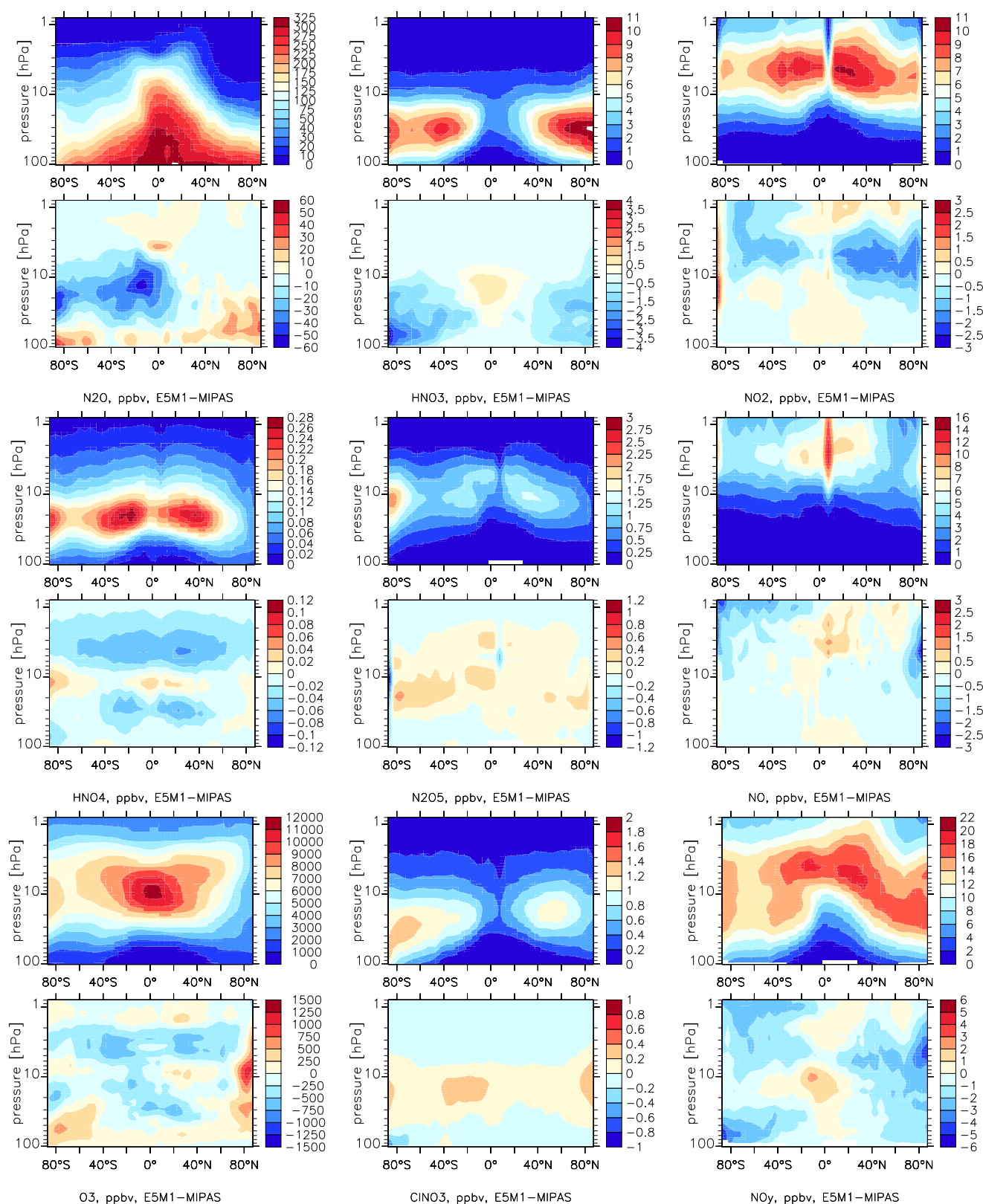
### **Abstract.**

Zonal averages of MIPAS data and absolute differences to the model simulations.

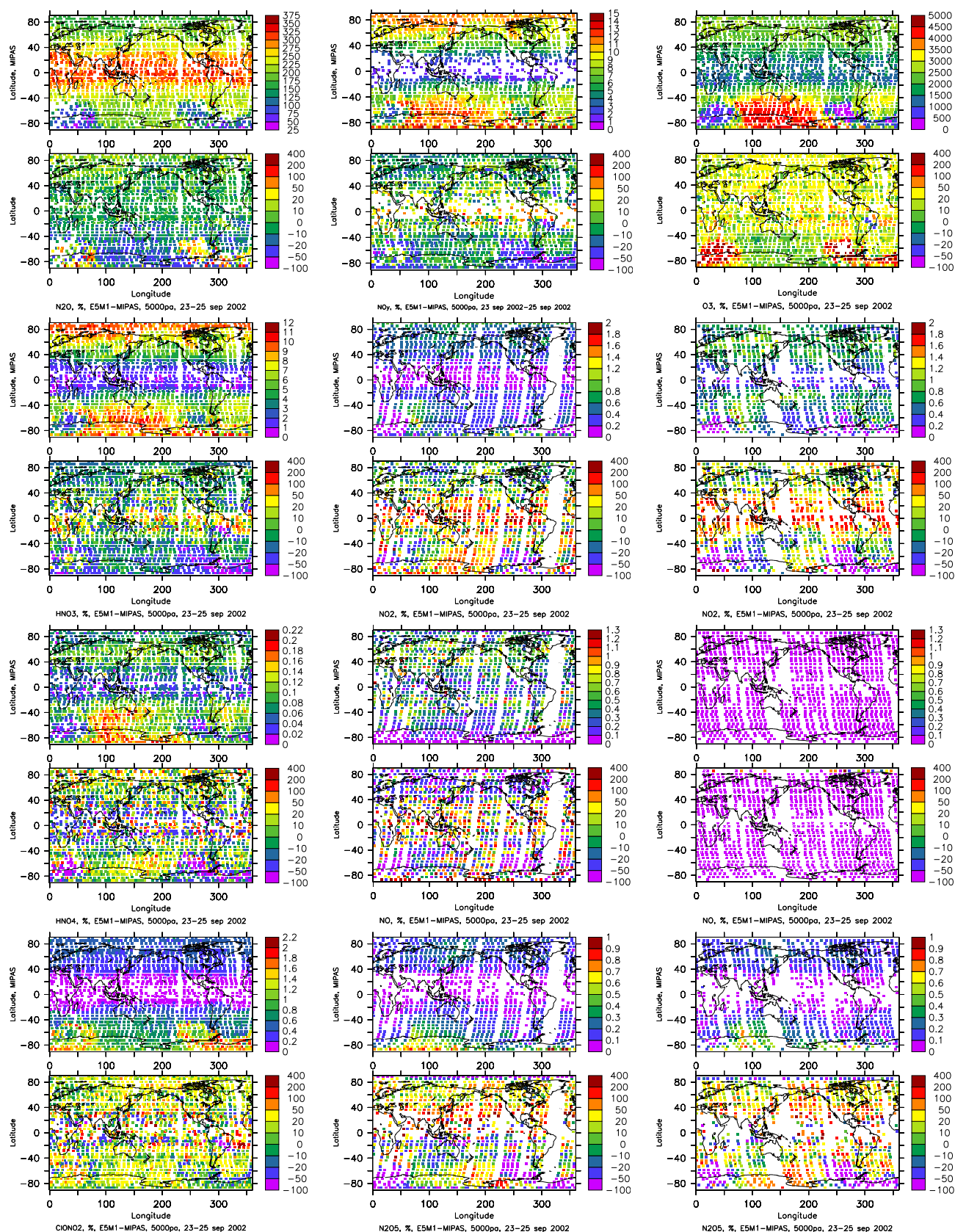
Maps of MIPAS data at 50 and 10 hPa and relative differences to the model simulations.

Partitioning of  $\text{NO}_y$  in the MIPAS observations and the ECHAM5/MESSy1 simulations at 50 and 10 hPa.

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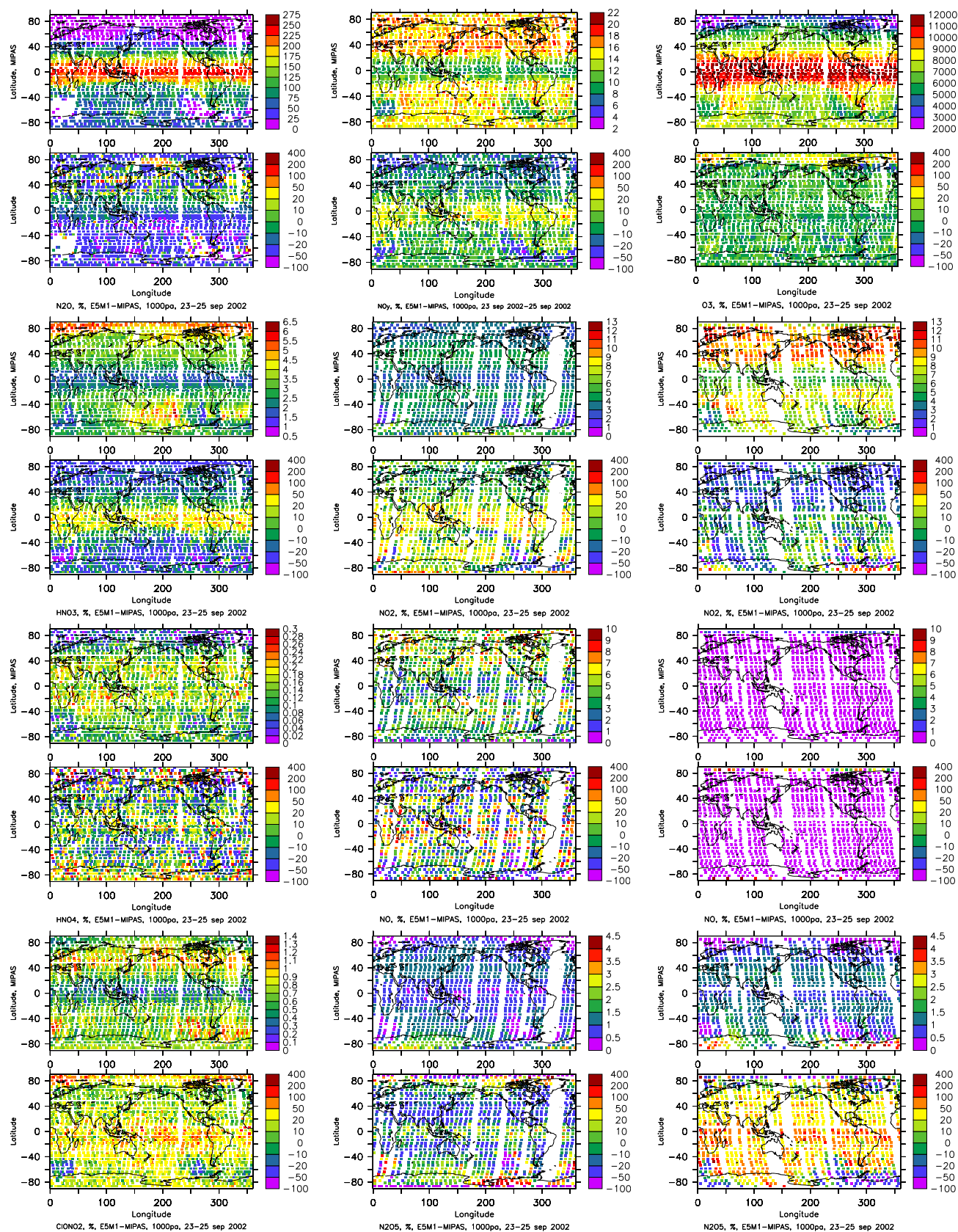
**Fig. 1.** Zonal averages of MIPAS observations (upper panel) and absolute differences of ECHAM5/MESSy1 to MIPAS (lower panel) for 23-25 Sept. 2002: upper two rows N<sub>2</sub>O, HNO<sub>3</sub>, NO<sub>2</sub>, middle two rows HNO<sub>4</sub>, N<sub>2</sub>O<sub>5</sub>, NO, lower two rows O<sub>3</sub>, ClONO<sub>2</sub> and NO<sub>y</sub>. Note that at 8°N MIPAS has only daytime data.



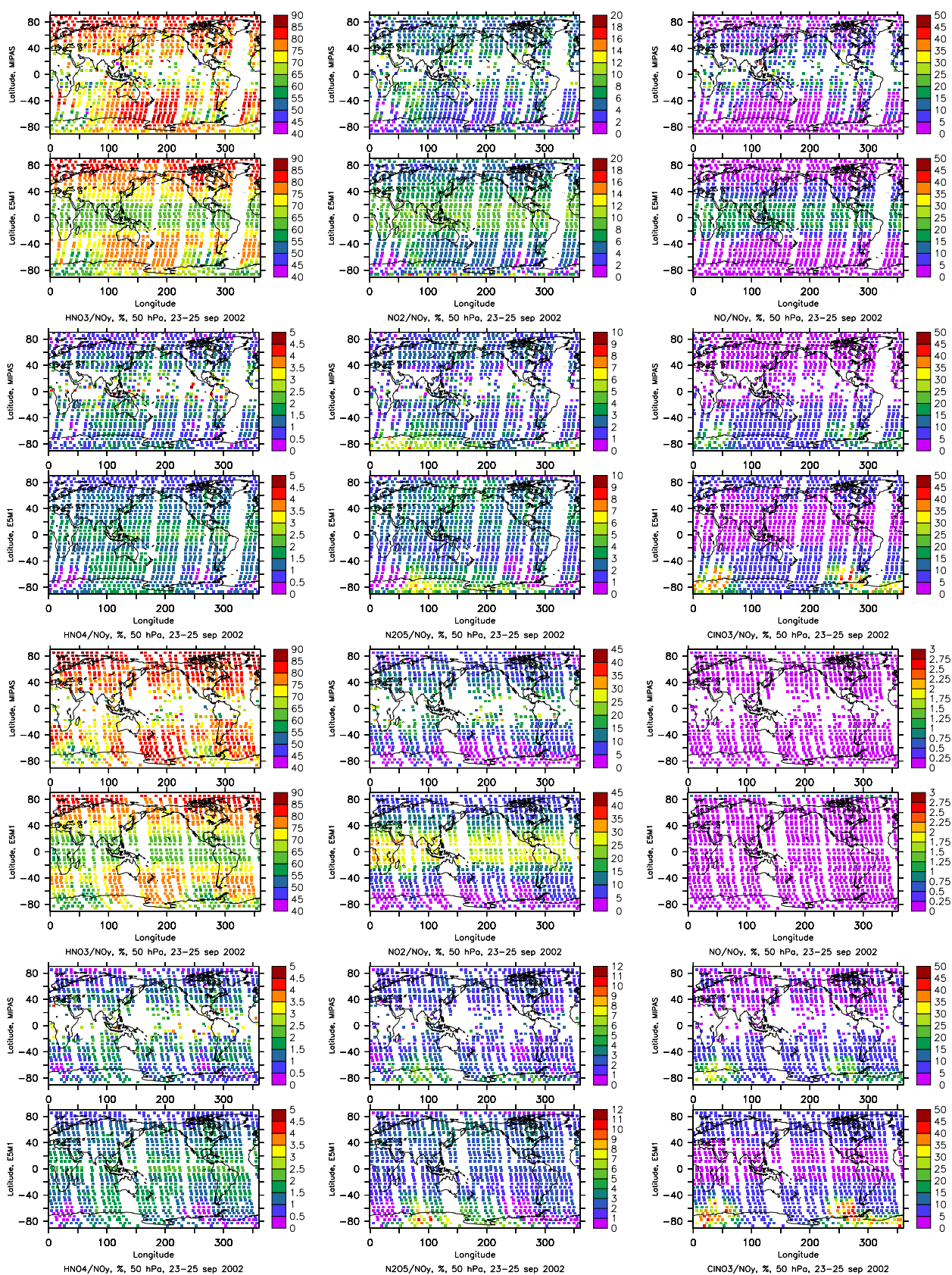
**Fig. 2.** N<sub>2</sub>O, NO<sub>y</sub>, O<sub>3</sub> (first 2 rows), HNO<sub>3</sub>, NO<sub>2</sub> day and night (second 2 rows), HNO<sub>4</sub>, NO day and night (third 2 rows), ClONO<sub>2</sub> (CINO<sub>3</sub>), N<sub>2</sub>O<sub>5</sub> day and night (fourth 2 rows) at 50hPa for 23-25 September 2002 as observed by MIPAS (in ppbv, upper panels) and relative deviations of the model to MIPAS observations (point-by-point in space and time, lower panels of each group).

[www.atmos-chem-phys.org/acp/0000/0001/](http://www.atmos-chem-phys.org/acp/0000/0001/)

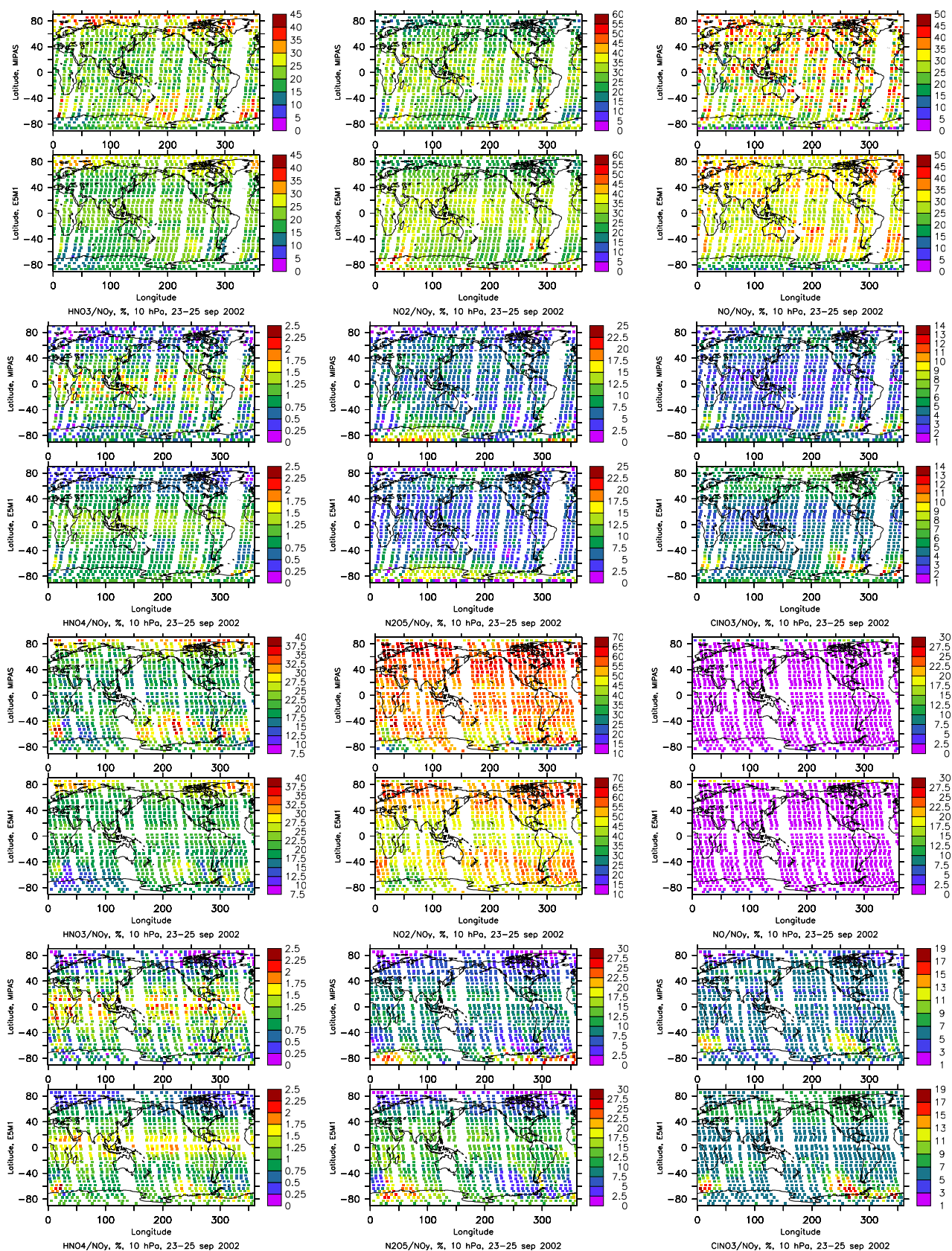
Atmos. Chem. Phys., 0000, 0001–6, 2007



**Fig. 3.** As Fig. 2 but 10hPa



**Fig. 4.** Partitioning of NO<sub>y</sub> in MIPAS observations (odd rows) and ECHAM5/MESSy1 simulations (even rows) at 50hPa. Upper half of figure daytime data, lower half nighttime data of HNO<sub>3</sub>, NO<sub>2</sub>, NO, HNO<sub>4</sub>, N<sub>2</sub>O<sub>5</sub> (weighting factor 2 not included in percentage) and ClONO<sub>2</sub>.



**Fig. 5.** As Fig. 4 but 10hPa