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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Lightning-produced NO_x during the Northern Australian monsoon; results from the ACTIVE campaign" *by* L. Labrador et al.

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Interactive comment on "Lightning-produced NOx during the Northern Australian monsoon; results from the ACIVE campaign". Response to referee #1

We are very grateful for the referee's useful comments.

One major comment: in the abstract it is said that the high out-cloud values as measured in the monsoon period contrast with the pre-monsoon period, where the high NOx values occur mainly in the vicinity of storms. However, in the main text I cannot find the basis for this conclusion. So either the main text should be extended on this point (or did I miss it?), or this point should be omitted in the abstract.

R: The referee is right; much higher NOx mixing ratios were measured during the pre-

monsoon regime flights sampling Hector storms (peak values of the order of 4000 ppt), the average out-of-cloud values a full one order of magnitude lower than those peak values. In contrast, during the monsoon flight, while the in-cloud peak NOx mixing were significantly lower (maximum of 2000 ppt), the difference between average in-cloud and out-of-cloud mixing ratios was of the order of 27%, indicating a much more mixed troposphere, consistent with the more organized and widespread convection present during the monsoon regime along with the results of a closed circulation pattern as evidenced by the back-trajectories. A figure showing the average vertical NOx profiles of the two pre-monsoon NOx flights and the vertical profile of the flight discussed in the manuscript, along with a discussion, has been added to the "Discussion" section.

-Minor point: abstract, line 6: '723 and 984' should be '984 and 723'

Done

Please also note the Supplement to this comment.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 10647, 2009.