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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Measurement of atmospheric nitrous acid at Blodgett Forest during BEARPEX2007" *by* X. Ren et al.

Anonymous Referee #2

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Summary:

This manuscript describes the HONO measurement using a custom made LOPAP instrument during the BEARPEX2007 campaign. HONO contributions to HOx budget and NOy cycling at this forested site are investigated. An inter-comparison between the LOPAP and a CIMS technique is also discussed.

General Comments:

Overall, the manuscript is well written and within the scope of ACP. The LOPAP method is well established and has been extensively deployed in HONO field measurements. The data quality is fairly well supported by the inter-comparison results. The HONO observation of this study is interesting and the data analysis is thorough and compre-

hensive. I believe this work is a very useful contribution to the atmospheric chemistry community. Thus, I recommend this paper for publication after addressing the following comments.

1. In section 2.1, the descriptions of the HONO inlets for both instruments are not detailed enough. Sampling inlet is a critical part of the HONO measurement. On the inlet surface, HONO can be either lost or produced through heterogeneous reaction involving NOx and solar radiation. What is the length of the inlet? Is the inlet shielded from sunlight? Is the background check at night different from daytime? An inlet test will be very helpful to validate the HONO observation.

2. Fig. 7 can serve the purpose of data validation but the CIMS signal shows significant variation. Although CIMS follows the same trend as the LOPAP, CIMS detection limit (two sigma) is barely below ambient HONO concentration. The reagent ion, CF3O-, can react with water to form water clusters (CF3O-(H2O)n) or fluoride anion water clusters (F-(H2O)n). Thus, CIMS is expected to be very sensitive to changes in ambient humidity. Has the CIMS data set been corrected for the humidity effect?

3. I also suggest the author move section 3.3 (inter-comparison) before section 3.2 (diurnal HONO trend). It seems more logical to validate the data first by inter-comparison before further discussions.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 7383, 2010.