

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

**Anonymous Referee #1**

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The manuscript describes new measurements of HONO by LOPAP and CIMS instruments, demonstrates very good agreement between both techniques, and a photochemical interpretation of the field data. The paper adds to important issues in HOx and HONO chemistry. Daytime HONO levels of several 10 ppt have been measured with two independent and very sensitive methods. Daytime mixing ratios are lower than in other recent studies in forested areas, which the authors attribute to special meteorology and low acidity precipitation resulting in lower heterogeneous sources of HONO. The paper is well organized and written, the presented data are original and of high quality. The paper should be published after attention to some points listed below and in the comment by J. Kleffmann.

Specific Comments

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1. This paper presents excellent agreement between the two techniques LOPAP and CIMS which, however, need some more information on the following details: a) please describe sampling line and instrument set-up of the LOPAP, the inlet used by the CIMS, and the relative inlet mounting positions; b) provide details on the calibration of the CIMS, (what is “proxied”?) and the uncertainty (of e.g. 10 min averages), it should be demonstrated that the agreement between the two techniques is not accidentally; c) (page 7394, l. 20) given the 15% uncertainty of LOPAP, this is indeed an unexpected good agreement, please, comment.
2. p. 7398-7399: the surface acidity issue appears rather speculative and should be shortened. Though lower than in previous studies, HONO ratios to NO<sub>2</sub> are similar to European sites and, accordingly, production processes related to NO<sub>2</sub> should yield lower HONO in this study as NO<sub>2</sub> was lower at Blodgett Forest than in European studies.
3. p. 7401, l. 3: Please, be more specific on the “very good agreement”, the reference Thomas (2010) is missing.
4. Figure 3: Please indicate in the caption that J(HONO) was calculated
5. Figure 4 displays PAN, but the experimental section 2.2.3 only explains measurements of peroxy nitrates (PNs)
6. Figure 7: Indicate the integration time of CIMS and LOPAP measurements for the time series

Technical Corrections

1. p. 7401, l. 27: twice the word “that”
2. p. 7402: “Klaffmannn” should be “Kleffmann”

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

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