

Interactive comment on “Observations of high rates of NO₂ – HONO conversion in the nocturnal atmospheric boundary layer in Kathmandu, Nepal” by Y. Yu et al.

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Dear authors

I have the following suggestions for the (interesting!) paper:

1. You stress that the strength of the nocturnal boundary layer is important to understand the chemistry of [HONO] and [NO₂]. However, your paper is lacking an overview of these variables during the experiment. I think it could strengthen the paper to make a rough estimate of the stable boundary layer depth for each observation, e.g. by some of the equations in the references below. In this way it becomes more clear that meteorology and chemistry are highly coupled. It also might help to bring more structure in

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the observations presented in Fig. 4.

Steeneveld, G.J., B.J.H. van de Wiel and A.A.M. Holtslag, 2007: Diagnostic Equations for the Stable Boundary Layer Height: Evaluation and Dimensional Analysis, J. Appl. Meteor. Clim., 46, 212-225.

Zilitinkevich, S.S. and A. Baklanov, 2002: Calculation of the height of the stable boundary layer in practical applications, Boundary-Layer Meteor., 105, 389-409.

2. In Fig 3, in the night of 4 Feb (very interesting night concerning the chemistry), wind speed is extremely low, and wind direction is constant. However, it is also known that measurements of these variables are complex and difficult. So do you trust these wind observations? Secondly, how do you define the nocturnal boundary layer depth under these weak wind conditions.

3. Fig. 5: Can you suggest or pinpoint where these plume events originate from? In my opinion these events (we call them intermittent turbulence) are understood, but very important for atmospheric chemistry, air quality etcetera. So can you suggest some mechanisms, and do you share that further research to these events is required to further understand atmos. chemistry?

Kind regards

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 183, 2009.

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