

Interactive comment on “Origin of springtime ozone enhancements in the lower troposphere over Beijing: in situ measurements and model analysis” by J. Huang et al.

Anonymous Referee #2

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This is an excellent paper with data and modeling of interest to a wide ACP readership. It is well-written and analyses and figures are clear and readable.

Only one comment to be made with a request for short discussion and references. Stratospheric intrusions are active during the springtime period of the study and can also add what looks like “background” ozone. This is acknowledged in the discussion of Fig 6 in the paper where in April 2005, especially, stratospheric contributions to ozone below 6 km can be very high. However, the possibility should be mentioned in the Introduction to the paper as well. One possibility is at the end of line 22 on page 3. Can insert something like... “Note, however, that stratospheric intrusions also maximize

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at mid-latitudes in spring. For example, soundings taken in western North America between 40 and 55N in April and May 2006 showed that stratospheric influences can be comparable to impacts of Asian transport (Doughty et al., 2011; Moody et al., 2012).”
References: D. C. Doughty, A. M. Thompson, M. R. Schoeberl, I. Stajner, K. Wargan, W. C. J. Hui, An intercomparison of tropospheric ozone retrievals derived from two Aura instruments and in-situ measurements in western North America in 2006, *J. Geophys. Res.*, doi: 116, D06303, 10.1029/2010JD014703, 2011.

J. L. Moody, S. R. Felker, A. J. Wimmers, G. Osterman, K. Bowman, A. M. Thompson, D. W. Tarasick, A Multi-sensor Upper Tropospheric Ozone Product (MUTOP) based on TES ozone and GOES water vapor: validation with ozonesondes, *Atmos. Chem. Phys.*, 12, 5661-5676, 2012.

Fix spelling errors. Page 6 – line 10 – ENSCI-ECC not ENSC-ECC Page 29 Suarez in the Rienecker ref.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 14, 32583, 2014.

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