Atmos. Chem. Phys. Discuss., 10, C14553–C14554, 2011
www.atmos-chem-phys-discuss.net/10/C14553/2011/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Deposition of dinitrogen pentoxide, N_2O_5, to the snowpack at high latitudes" *by* D. M. Huff et al.

D. M. Huff et al.

wrsimpson@alaska.edu

Received and published: 16 March 2011

An Anonymous Referee provided general comments starting on page C13157. There is some confusing in the numbering of the referees with two of them using #3. In this reply, we discuss the review published on 2 Feb 2011 starting on page C13157.

Overall, the referee disagrees with the other referees who thought that the verification of the gradient method via the heat flux was beneficial to the manuscript. The referee seems to think the supplemental material is inappropriate, but doesn't clearly indicate how the material could be improved or what is incorrect about our analysis. Our analysis is based upon well known and referenced methods for general stability factor corrections of near-neutral stability measurements. We clearly show that the heat flux we derive is well correlated with the eddy covariance heat flux, indicating the

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

method is a success. We then apply the same method to deriving deposition velocity of N2O5.

The referee suggests that there is another method to derive the chemical flux, based upon a hybrid of the sonic and gradient data. We will use this method and determine the degree of agreement with the current analysis.

The referee also asks about the relationship between the u* (friction velocity) parameter calculated by the gradient and eddy covariance method. We performed this analysis and found agreement between the values. The average friction velocity using the gradient method was 0.13 +/- 0.02 m/s, while the average friction velocity by the eddy covariance method was 0.09 +/- 0.05 m/s, which agree within mutual errors.

Overall, we feel that our analysis was based upon referred literature, which is referenced in the manuscript and that we have verified that the method works for heat fluxes; therefore, we stand by our result for the deposition velocity of N2O5.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 25329, 2010.