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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Interannual variability in soil nitric oxide emissions over the United States as viewed from space" *by* R. C. Hudman et al.

Anonymous Referee #2

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The authors present interesting results on satellite observations of NOx emissions from the soil in the agricultural area of the US. They show that the OMI instrument on EOS-AURA is capable of monitoring the monthly variability of soil NOx and its relationship with meteorological conditions. One thing I am missing in this paper is the effects of anthropogenic sources in the US on the presented results. I suggest that more discussion on this uncertainty is added to the discussion of the results. More specifically:

Page 13037 line 6-8 : The same storms that cause extra lightning NOx, can also contribute to a more than typical transport of anthropogenic NO2 to the region of interest. Especially if the wind direction is atypical in the month of interest, this can lead to an extra anthropogenic signal due to transport. The blue spots in Figure 4 at isolated sources of NOx seems to point to this (more NO2 blown out of the city)

Page 13037 lines 13-20 : As pointed out before by several authors on NO2 monitoring, the fact that June 2006 was warmer than usual can also lead to more use of air conditionings and therefore higher energy usage and more NOx emissions.

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 13029, 2010.