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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Observation and modeling of the evolution of Texas power plant plumes" *by* W. Zhou et al.

Anonymous Referee #2

Received and published: 25 October 2011

This paper describes the use of the 3-D CMAQ model to simulate SO2 and NOy photooxidation chemistry in several power plant plumes (PPP) in eastern Texas for the observations obtained by NOAA WP-3 aircraft during the second Texas Air Quality Study in 2006. The major conclusions are that the model failed to reproduce the observed rapid losses of both SO2 and NOy in the PPP during a cloudy day because the clouds in the model were at a much higher altitude than observed and therefore could not interact with the modeled PPP. Adjusting the cloud altitude and metal concentrations in the cloud aqueous phase could help explain the loss of SO2, but the loss of NOy remained unexplained.

I found the manuscript to be a bit too long and rambling in many places to arrive at the main points of the study. The use of English is also a bit poor. I strongly suggest

tightening up the manuscript and proofreading it thoroughly. Specific comments are annotated in the attached manuscript, and I recommend publication after they are addressed.

Please also note the supplement to this comment:
http://www.atmos-chem-phys-discuss.net/11/C10829/2011/acpd-11-C10829-2011-supplement.pdf

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Interactive comment on Atmos. Chem. Phys. Discuss., 11, 19953, 2011.