

Interactive comment on “A three-dimensional variational data assimilation system for multiple aerosol species with WRF/Chem and an application to PM_{2.5} prediction” by Z. Liet al.

a. anonymous

mzp3769@gmail.com

Received and published: 5 June 2012

Assuming that errors are uncorrelated within several bins of a single species is also controversial. Since aerosol species from different bins are likely to come from the same emission sources their errors will be correlated. Also,

C3288

correlation scales for a single species from different bins will be different. As an illustration consider PM_{1.0} and PM_{2.5}. These two "bins" have different paths to formation which affects scales. Also, because of different physical properties these two "bins" e.g. have different deposition rates which will affect both vertical and horizontal scales.

I believe these issues should be discussed in the manuscript.

On p. 13538 I. 8 authors claim that 3D-VAR using total PM_{2.5} as a state variable degraded the results. If the experiment showed that it is so it would be worthwhile to document how much benefit is achieved using the assimilation method with aerosol species as state variables in 3D-VAR.