

***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.***

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**let u be a certain aerosol species, x - sum of
aerosol species (say PM_{2.5})**

B_{xx} - background error covariance matrix for x

B_{ux} - correlation matrix between u and x

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Then increment of species u is given by

$$\mathbf{\delta}_u = \mathbf{B}_{ux} * (\mathbf{B}_{xx})^{(-1)} * \mathbf{\delta}_x \quad (1)$$

(Menard, 2003)

(http://www.ecmwf.int/newsevents/meetings/workshops/2003/modelling_stratosphere/menard.pdf)

To arrive from formula (1) to formula (10) in the manuscript not only assumption that species u is uncorrelated with any other aerosol species within x is needed but also assumption that all correlation scales for u and x or equivalently u and other aerosol species are the same.

The manuscript claims that these scales differ between aerosol species. Can authors elaborate on that?

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 13515, 2012.

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