

Interactive comment on “Aerosol concentrations variability over China: two distinct leading modes” by Juan Feng et al.

Anonymous Referee #1

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General Comments

This paper studied the month-to-month variability of aerosol concentrations (AC) over China using a GESO-Chem model. The emission level in the model is set to a constant level of the year 2005. They found that two distinct lead modes dominate the natural variability: one is monopole mode which is related to the 3-month leading ENSO, while the second one is meridional dipole mode which is related to the NAO. The underlying physical mechanism is further analyzed. The results show that dynamical stability associated with the change of low-level convergence and planetary boundary layer height and thermal condition both play important roles.

Overall, the paper is well written and easy to understand. The topic is perfectly in line with ACP journal. Therefore, I recommend publishing after a minor revision.

Specific Comments

ACPD

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comment

1. Title: Since this paper focus on the internal climatic variability, the emission level is fixed at the year 2005. Otherwise, the first leading mode might show an increasing trend due to the dominate role of anthropogenic emissions according to the previous study. Therefore, I suggest a title changed to: Aerosol concentrations natural variability over China: two distinct leading modes
2. Line 247 and other places: "emission" is not approximate here. How about using "transmission"?
3. Line 309: month-to-month variability of AC

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