

Interactive comment on “Mitigation of PM_{2.5} and Ozone Pollution in Delhi: A Sensitivity Study during the Pre-monsoon period” by Ying Chen et al.

Anonymous Referee #2

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This manuscript uses Gaussian process emulation to generate a efficient surrogate for WRF-Chem to perform the sensitivity analysis of PM_{2.5} and O₃ to sources, and to provide air pollution mitigation suggestions. The combination of WRF-Chem with Gaussian process emulation is novel to reduce computational complexity for sensitivity analysis. The results, especially the joint control suggestions for PM_{2.5} and O₃, are useful in terms of air pollution control. The manuscript is well written, but some parts of it are not clear enough. I would recommend for publication after the authors address the following specific comments:

Line 45: please add references for this statement: Menon, S., Hansen, J., Nazarenko,

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Discussion paper



L. and Luo, Y., 2002. Climate effects of black carbon aerosols in China and India. *Science*, 297(5590), pp.2250-2253. Gao, M., Sherman, P., Song, S., Yu, Y., Wu, Z. and McElroy, M.B., 2019. Seasonal prediction of Indian wintertime aerosol pollution using the ocean memory effect. *Science advances*, 5(7), p.eaav4157.

Line 81: Is it possible to provide a clear definition of pollutant response surface?

Line 130-132: This statement is a bit general. Better to use measurements of precipitation and clouds to show this point.

Fig. 6: Better to provide similar plots for other important species, such as organics, SO₂, etc.

Sect 4: It would be better to compare the results with other similar studies and explain the similarities and differences.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, <https://doi.org/10.5194/acp-2019-618>, 2019.

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