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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Model calculated global, regional and megacity premature mortality due to air pollution" *by* J. Lelieveld et al.

Anonymous Referee #2

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I believe this work is making a contribution as it is employing a different global model at higher resolution than has been used in previous similar research that evaluates the health impacts of surface air pollution. However, it has neglected to provide an adequate overview of previous related research. In addition to this work and to the Global Burden of Disease assessment of premature mortality due to air pollution, another research publication has recently evaluated global air pollution and associated human mortality. In addition to examining the impact by region, Fang et al., ACP, 2013, examines the relative importance of air pollutant emissions, climate change and methane concentration increases from the preindustrial period to the present. This manuscript uses an approach very similar to Fang et al. Fang et al. use the GFDL global coupled AM3 chemistry-climate model along with the RR factors from the ACS cohort studies

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as applied to PM2.5 and O3. Fang et al. also evaluates both premature mortality and YLL by region. A comparison of the results presented here with Fang et al is warranted.

Yuanyuan Fang, Vaishali Naik, Larry W. Horowitz, Denise L. Mauzerall, Air pollution and associated human mortality: The role of air pollutant emissions, climate change and methane concentration increases from the preindustrial period to the present, Atmospheric Chemistry Physics, 2013. [full text] [supplementary information]

In addition, West et al. (2006) and Anenberg et al. (2010) are not the only atmospheric model driven evaluations of the health impacts of air pollution that have been previously conducted. It would be worth mentioning other global model based analyses that have examined health impacts of present-day levels of air pollution and utilized identical approaches including the equation (1) used in this manuscript (sometimes shown in linearized form which is appropriate for small changes in concentration). In addition to Fang et al, 2013, these include:

Liu, J, DL Mauzerall, LW Horowitz. Evaluating Inter-continental transport of fine aerosols: (2) Global Health Impacts, Atmospheric Environment, doi:10.1016/j.atmosenv.2009.05.032, 2009b.

Saikawa, E., V. Naik, L.W. Horowitz, J. Liu, D.L. Mauzerall, Present and potential future contributions of sulfate, black and organic carbon aerosols from China to global air quality, premature mortality and radiative forcing, Atmospheric Environment, 43 (2009) 2814–2822, 2009.

Wang, X. and Mauzerall, D. L., “Evaluating Impacts of Air Pollution in China on Public Health: Implications for Future Air Pollution and Energy Policies,” Atmospheric Environment, Volume 40, Issue 9, Pages 1706-1721, March 2006.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 7737, 2013.