Atmos. Chem. Phys. Discuss., 14, C12528–C12529, 2015
www.atmos-chem-phys-discuss.net/14/C12528/2015/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Long-term (2001–2012) fine particulate matter ($PM_{2.5}$) and the impact on human health in Beijing, China" *by* S. Zheng et al.

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Received and published: 9 March 2015

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In the last three decades, the atmospheric pollution has increased that directly affected air quality and weather conditions. The human health is a serious threat due to poor air quality. In Developing countries, quality of data is always an issue and getting good quality data is difficult due to various logistics and technical problems. NASA Aeronet networks provide good quality data about aerosol parameters, the Sunphotometer used at the NASA Aeronet stations around the world are well maintained and

calibrated. Air quality data monitored by US Embassy at Beijing could also be considered as a very important data set for the limited period 2010-2011. Zheng et al. used PM2.5 data to carry out correlation with aerosol optical depth (AOD) for the period 10 May 2010 to December 2011, and they have used this data set to compute PM2.5 from Aeronet AOD. Zheng et al. have further used concentration response functions based on epidemiological cohort studies and estimated the yearly mortality which is related to air quality parameter mainly to daily concentrations of PM2.5 which are the cause of health problems. The approach of Zheng et al. is interesting but it has uncertainties in estimating PM2.5 and yearly premature mortality. The sources of uncertainties must be discussed by the authors. The paper is interesting and important to bring out the attention of people about the poor air quality and its direct impact on human health and increasing mortality rate so that the sources of air pollution is reduced. Various sources of pollution in Beijing city may be added in the paper. The authors may consider to show a high resolution map of Beijing with Aeronet and US Embassy locations where air quality data was monitored. Air quality data (PM2.5) considered in the recent study may be shown and its daily variations may also be discussed. In Figure 2, authors may consider to show AOD variations. The authors may discuss the importance of BLH and RH which are important parameters in the dynamics of atmospheric pollutants and also in weather conditions. It will be interesting if the authors can show different age group of people who suffer with the increasing PM2.5. I recommend publication of this paper in ACP once the authors take care of above points.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 28657, 2014.