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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Weekly periodicities of aerosol optical thickness over Central Europe – evidence of an anthropogenic direct aerosol effect" *by* D. Bäumer et al.

Anonymous Referee #1

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This is potentially a good paper. However, I very much endorse comments by referee 2. The paper would strongly benefit from more work to strengthen its case before it should be published

Specifically

1. I think the authors need to show that the weekly cycle is robust. Doing a t-test on max-min days is not sufficient. Days in an individual week should be compared directly, so days from separate weeks are never compared. Therefore if you have more Wednesdays in the early part of a timeseries, or a seasonal cycle- these won't alias - e.g see methodology in Forster and Solomon, 2003. Likewise, you should check

whether the weekly cycle is consistent in different seasons and over different part of the timeseries to rule out synoptic causes.

2. AERONET should be able to classify aerosol types into different species and/or sizes-at least to some extent - is the weekly cycle only seen in anthropogenic types of aerosol- or is it all aerosol types? How do these compare to distance from sources?

3. The conclusions makes an interesting connection between aerosol weekly cycle and temperature weekly cycles. Could you support this at all by correlating actual timeseries of aerosol an temperature - this would make the connection much stronger an be a real extension on previous work. Currently the paper never really upscales results to radiative forcing -as promised in introduction

4. Table 2 column explanations are somewhat confusing

5. A Balling reference is missing

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 11545, 2007.