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Interactive comment on “Diurnal aerosol variations do affect daily averaged radiative forcing under heavy aerosol loading observed in Hefei, China” by Z. Wang et al.

Anonymous Referee #1

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This is not yet a full review, but rather a "quick report", which is often requested (but not this time for some reason). There are clearly few things to be clarified before the paper can be fully evaluated.

If we look at the Figure 8 (or panel b of Figure 7), it seems that ΔF (= Fave-Forg) was essentially always positive (only five cases of very small negative value). I have some difficulties to believe this. So no single day, out of 196, had an AOD variability that resulted in negative ΔF ; always smaller cooling at the surface, if one uses the daily averaged AOD? How about Figure 5, it seems that something is not correct and for instance in that case, ΔF should be negative actually. For some reason, the

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colors are now opposite to the similar Figure 2, black is Forg and red is Fave, if the bars are with the right color, then the values should have resulted in negative $\Delta F = -15.6$.

Block 2127, line 24: it is not clear how you fill up the missing period by using the measurements. The use of measurements only for these periods could introduce a systematic difference, not due to the AOD variability. I think much more consistent way would be simply to assume no difference in ADRF due to AOD when there are no AOD measurements available. Please repeat the analysis this way to see the possible impact by the current choice you have made.

Block 2129, the line 9 and the following paragraph (last paragraph of the section 3) was entirely unclear. In the first point, for instance, you mention that SSA and ASY has a smaller impact. How one can see it from the Figure 8 (I assume you meant Figure 8, although you refer there to the Figure 6)? The influence by SSA and ASY was not discussed nor shown in any part of the analysis in this manuscript. How about the second point, what do you mean by "partly related"?

Figure 7: the unit of the lowest panel is not correct. Why your small fraction of negative ΔF in the middle panel does not translate to negative fraction also in the lowest panel?

Interactive comment on *Atmos. Meas. Tech. Discuss.*, 8, 2123, 2015.

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