

## ***Interactive comment on “Aerosols and nucleation in Eastern China: first insights from the new SORPES-Station” by E. Herrmann et al.***

**Anonymous Referee #3**

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This paper presents aerosols and ion measurements at a site east to the Yangtze River and northwest to the urban cities of Shanghai, Su Zhou and Wuxi. The analysis between size-segregated particle number, particle concentration, total ion concentration, new particle formation events and meteorological parameters were carried out. General comments: The work appears to have been carefully conducted but there are a few points need to be addressed over the methodology and interpretation of data (as discussed below in detail). Although the duration of the sampling (4.5 months with about 30% of the data excluded) is not much longer than other sampling campaigns in China (thereby not very representative), this study included measurements of total ion which is rare. I hope the authors can provide more insights and strengthen this part of the analysis. Also, rather than reporting a series of observations, the authors

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need to state clearly the scientific goals and new findings of this study. Specific comments: 1. In section 2.2, poor quality data was excluded in further analysis. Please explain how “poor quality” was defined, and how some bad data was excluded (i.e. all day exclusion or just hourly exclusion if bad data is found). 2. The authors stated the presence of intense construction activities close to the sampling site. While I agree that coarse particles dominate the PM emissions in these activities, the contribution of sub-micron particle should not be neglected, especially at this background site. The authors should do a sensitivity analysis. 3. P.22345, line 6. The comparison between Fig. 3a and d is not fair given the dominance of easterly wind and the absence of standard deviations in the graphs. To suggest a “difference” or anti-correlation, numbers (correlation coefficients, p values, etc.) need to be provided. 4. Figure 5a suggests no new particle formation was observed with the pollution laden air from the cities from 100-130 degree. In Figure 5b, nucleation probability was high in the south and south-westerly direction. The story appears to be contradictory. 5. Throughout the paper, no standard deviation or uncertainties are provided. This is especially important given the dominance of easterly wind, and the comparisons of averages/medians in the figures. Therefore, I would recommend a minor revision of this publication.

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