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Discussions

Interactive comment on "Aerosol Properties and Their Influences on Low Warm Clouds during the Two-Column Aerosol Project" *by* Jianjun Liu and Zhanqing Li

Anonymous Referee #1

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Comments to the Authors Estimating the influence of aerosol on cloud properties is an important issue, which makes the impact of aerosols on the prediction of current and future behavior of earth's climate system highly uncertain. The manuscript entitled "Aerosol Properties and Their Influences on Low Warm Clouds during the Two-Column Aerosol Project" illustrated the analysis on the aerosol physical, optical, and chemical properties, and their influence on the dependence of cloud development on thermodynamic based on Twelve months of measurements collected during the Two-Column Aerosol Project field campaign over Cape Cod, Massachusetts. The manuscript has been well organized and properly addressed, as well as interesting results are found. Therefore, the paper could be considered to be published after minor Revision. Several

concerns of the manuscript are: 1. Page 6, Line 23, "700 hPa and LTS is. . . . . ." should be "700 hPa and LTS are. . . . . .". 2. Page 7, Line 13, "Figure 2 shows. . . . . ." should be "Figure 2 shows. . . . . .". 3. What's the meaning of "P" in Figure 6? 4. Page 8, Line 4-5, "This indicates that strong surface wind speeds transported smaller aerosol particles with no optical sensitivity from the continental interior to over the site", how to get the conclusion that the smaller aerosols are transported from the continental interior? 5. Why do the periods shown in red box in Figure 5 represent the periods of new particle formation and growth? 6. Page 9, Line 15. Actually, as shown in Nakajima et al (2001) and Liu and Li (2014), aerosol index is defined as the product of AOD and AE. However, in this study, aerosol index is defined as the product of the surface-measured aerosol scattering coefficients and AE in this study? 7. The linear regression slopes need be given in Figure 7. 8. Page 10, Line 30, "Figure 8c and 8d suggests ..." should be "Figure 8c and 8d suggest ..." 9. Page 11, Line 6, "Figures 8 ..." should be "Figure 8 ..." 10. Page 11, Line 10, "... suggests that ..." should be "... suggest that ..." 11. What is the lack of samples for cluster II air-mass condition? Why cannot use the cluster II to calculate FIE? 12. Page 13, Line 6, "... can is possibly because ..." should be "... can be possibly because ..." 13. Page 14, Line 12-15, "... more inorganic compounds that when ..." should be "... more inorganic compounds than that when ..."