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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Long-term chemical characterization of tropical and marine aerosols at the CVAO: field studies (2007 to 2011)" *by* K. W. Fomba et al.

Anonymous Referee #1

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This paper reported the first long term chemical characterization at the Cape Verde Atmospheric Observatory from 2007 to 2011, and presented a detailed analysis on the air mass origin, seasonal trends, bromide and chloride depletion and source apportionment. This kind of nearly continues long term observation at a background ocean region provided useful and unique information on the aerosol chemistry, and will be highly helpful for the modeling study on atmosphere ocean interaction and the global climate. This manuscript is overall well written and documented. The topic fits perfectly in the scope of ACP. I therefore recommend this manuscript can be published with only a few comments. In addition maybe the figures could be made more explicit.

1.For the observed seasonal variations of aerosol chemical components, the authors mostly attributed to the air masses and chemical processes. I wonder if the meteorological conditions played any roles, e.g. the rainfall and developing of the boundary layers.

2.Page 3930, Line 8-9. In this study, significant differences of sea salt concentrations were observed between the two sampling heights (4 m and 32 m). The authors attribute this to that the 4 m sampling height was in the marine boundary layer. However, the 32 m sampling height was generally also in the marine boundary layer. So I guess maybe the sea salts at CVAO are not homogeneous mixing. There may be an evident vertical profile for the concentrations of sea salts in the marine boundary layer. I wonder if the authors had ever designed some experiment to verify this issue, e.g. simultaneous sampling at the heights of 4 m, 15 m, 32 m and maybe 60 m. This kind of result should be quite useful for the further modeling work on the global environment and climate change.

3.In section 3.4. Why the correlations were only presented in summer and winter? How about in spring and autumn?

4.Page 3918, line 20. Change "where" to "when".

5.In the figure caption of Fig. 1, I believe it was out of order for Fig. 1C and 1D. Please check it.

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 3917, 2014.