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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Single-particle investigation of summertime and wintertime Antarctic sea spray aerosols using low-Z particle EPMA, Raman microspectrometry, and ATR-FTIR imaging techniques" *by* Hyo-Jin Eom et al.

Anonymous Referee #2

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This is an interesting paper that focuses on the integration of several single particle techniques to investigate sea spray aerosol samples collected at King Sejong Korean scientific research station in the austral summer and in the austral winter. Through use of these single particle techniques several conclusions are drawn related to the identification of organic compounds and inorganic salts. Some of the observations reported in the paper have been seen before and confirm earlier studies (e.g. chloride depletion in particles).

Some questions include:

1. In many particles, there is nitrate observed in the particles - where does the nitrate come from in these particles?

2. Why is alanine such a dominant factor in the SSA? Are there other compounds that can have similar spectral features? It seems too simple to have one compound and one complex Mg-alanine in sea spray particles. The case for fatty acids seems more convincing given several studies that have identified palmitate and stearate in sea spray aerosol.

3. Some of the figure captions in the supplemental do not match or explain well the figure making it difficult to understand what is being shown. (See for example Figure S3 – what are the three sets of spectra shown?)

Overall an interesting paper, but I am concerned in some cases of over interpreting the data (e.g. point 2 above).

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