

Interactive comment on “Morphological features and mixing states of soot-containing particles in the marine boundary layer over the Indian and Southern Oceans” by Sayako Ueda et al.

Anonymous Referee #1

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General comments:

The manuscript by Ueda et al, “Morphological features and mixing states of soot-containing particles in the marine boundary layer over the Indian and Southern Oceans” reports aerosol measurements especially soot-containing particles collected from a research cruise. They used various measurement techniques including PSAP, CN counter, OPC, Ion chromatography, and transmission electron microscopy. The data set is valuable for global aerosol researches especially for those who study aerosol in remote area. I found this study is valuable and is clearly written with enough data. The microscopic analysis is also important and useful to understand the mix-

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ing states and hygroscopicity of aerosol particles. I have some technical comments to clarify the manuscript.

Page4 Line21-26: It is not clear how the volumes and projected diameter were determined from the projected area S . Please explain the method more detail including how Pt/Pd shadowing was used in this study.

Page7 Line4 “Shapes of particles in these samples were round, dome-like, or rotundate rectangular (examples indicated by blue arrows in Fig. 9).”: Blue arrows should indicate sulfate based on the caption in Fig. 9. It is not clear which arrows we should see (and which particles).

Page7 Line13-14 “in the samples H–J collected over the Southern Ocean, as indicated by green arrows”: I can not see the satellite structures in the particles indicated by green arrows in Fig 9.

Page7 Line18 “such particles would be acidic droplet particles neutralized by the addition of ammonium after collection”: This discussion is not clear. Do you mean the particle changes its shape after collection because of neutralization over the substrate? Some additional explanation or discussion is needed here.

Page7 Line32: “externally mixing of soot” will be “external mixture of soot”

Page23 Fig.9 sample H: The red arrow indicates no particle. Please revise the figure.

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