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Interactive comment on "Chemical composition of boundary layer aerosol over the Atlantic Ocean and at an Antarctic site" *by* A. Virkkula et al.

Anonymous Referee #1

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The paper reports the finds from chemical filters collected by three samplers high volume air sampler (HV), a virtual impactor (VI) and a small deposit-area low pressure impactor (SDI), during a cruise from Germany to the Antarctic to supply the Aboa a Finnish Antarctic research station.

The paper is well written and analysis and interpretation of the data appears to have been done with care. There are a couple of interesting findings which warrant publication such as the use of Pb210 as a marker for biomass burning. Many of the findings from the cruise have been previous published in several other papers which are frequently referred to. This splitting research into fine segments to maximise publications limits the worth of the individual components an where they must be continually ac-

cessed for results makes the reading of a manuscript tiresome.

Inclusion of a map showing the actual route of the cruise and indicating the differing air mass regimes mentioned in the text would have been a useful additional figure.

Sampling from the ship was through an inlet. Nothing is said of possible losses through this large diameter sample line. Although only one result is shown from the Aboa Antarctic base we do not know how the samplers where installed there, with or without the same sampling line.

On page 17 the authors suggest that Pb210 may be attaching to the surface area of aerosols. This is extremely likely. Indeed the epiphaniometer developed at the Paul Scherrer Institute, Switzerland for measuring aerosol surface area relies on the Pb211 isotopes attaching to aerosol surface area and is generally found to be more efficient for accumulation mode particles. If Pb211 successfully attaches to aerosol surfaces then it is a reasonable assumption that Pb210 will also do so.

Figure 1 shows the concentration for a number of ions from the 3 different samplers. Nitrate and ammonium concentrations are generally found to be lower from the high volume sampler compared to the other two. This is presumably due to the cut off size which was 3 μm for the HV and 10 μm for the other two instruments. As the SDI had 12 stages and the latter two collected particles $>$4 μm would it not have been of value to compare the first 10 stages of the SDI which would should give a closer comparison of aerosol collected on the HV sampler. These findings should also be included in Figure 1.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 455, 2006.