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Atmospheric Chemistry and Physics Discussions



# *Interactive comment on* "South African EUCAARI – measurements: a site with high atmospheric variability" *by* L. Laakso et al.

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"The paper "South African EUCAARI – measurements: a site with high atmospheric variability" has an ambition to describe aerosol and trace gas variability on EUCAARI site in South Africa. As authors mentioned, there is lack of relevant observations and long-term measurements on Southern Hemisphere, however, presenting only 9 days of data from a station where measurements for more nearly one and half year were available in time of submission is far from sufficient. Data analysis part is weak. What is the message of this study? I believe that from nearly every station one can select a short period showing large variability, but it does not provide any information about seasonal or long-term trends. With data available, authors can provide at least seasonal variability. If ambition is to present the site, then more thorough technical description



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should be provided and such manuscript is more appropriate for AMT journal for example. Mainly for this reason I recommend rejection of this manuscript from publication in ACP. It does not reach quality level appropriate for this journal."

Both referees criticized, for a good reason, the manuscript for short data period. The aim of the article was to get some results published fast, and to act as a reference publication for the future publications. There were also long delays in writing and production of the article, which caused the article to be “out of date”. As we got all data cleaned and corrected in July 2011, we decided to focus on gases and some aspects of aerosol optics utilizing the whole two years data series. This aerosol absorption and scattering data set now utilized is to our knowledge, the longest from continental Africa. We now discuss the seasonal variation of meteorology, trace gases and aerosol optics and look some relations between the parameters.

Additional comments: "Page 30700, lines 9-11: How resulting size distribution can be up to 20 microns while 10 micron cut-off PM10 inlet is used?"

Corrected. The upper limit of the OPC was 20 um, but the actual maximum size was limited by a PM10-inlet.

"Section 4.3.5: What was the temperature in aerosol filter sampler during sampling and how were the filters stored? Without this information it is hard to assess relevance of volatile components analysis."

The instrument was protected from direct sunlight and ventilated, so the samples were collected in outdoor temperature. After the sampling, they were storage in a cool indoor place and send to Italy with fast courier, according to the EUCAARI-standards for all four developing countries sites. Also this part of the explanations improved

"Page 30704, line 20: change of synoptic conditions is a broad term. What happened?"

The results of the article were changed, so this was not further analyzed. However, the weather type changed from atmospheric re-circulation due to high pressure system to



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easterly disturbance (Garstang et al., 1996)

"Page 30705, line 17: How it is obvious? It can be also just sampling different air mass with lower aerosol load. There is no clear analysis showing that trace gases were obviously removed by wet scavenging"

Removed.

"Page 30706, lines 6 – 9: Same as above, but it can be valid also for aerosols. Moreover later in the paper authors claim that supermicron aerosol plays an important role during this period."

Removed.

"Page 30706, lines 10-11: Why only scattering and absorption data are recalculated for STP conditions and not the rest of aerosol data? What is meaning of this approach? Now all data is corrected for STP."

"Figure 8: There is a strange feature in aerosol size distribution during 9 June at the same time like very high spike in PM10? What is this? Size distribution data seem to show some erroneous measurements? Can this be result of not proper cleaning of data or local contamination?"

It can be local pollution, however, also this part of the text removed.

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 30691, 2010.