

***Interactive comment on* “Basic characteristics of atmospheric particles, trace gases and meteorology in a relatively clean Southern African Savannah environment” by L. Laakso et al.**

Anonymous Referee #1

Received and published: 13 May 2008

General comments: The authors present a fluently written paper on regional air pollution parameters in a region which has not been investigated in depth yet. They have made great efforts to perform valuable long-term measurements in this area.

Unfortunately data availability does not allow more detailed analysis of correlations between individual parameters, which would be desirable. The available data are, however, sufficient to provide a basic understanding of the pollution in this area and make this paper worth to be published in ACP.

I would personally appreciate a more detailed presentation and discussion of both DMPS and AIS data as both performance and results of these measurements under

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adverse conditions may be of special interest for the scientific community.

Abstract: "Gases and particles had a clear seasonal and diurnal variation, which was associated with field fires and biological activity together with local meteorology"; The statement about the seasonal variability of particles needs to be removed. A clear seasonality is not visible in the presented graphs. Furthermore data availability is not sufficient for such statement (see below).

Section 3: Please add correction factors derived from calibrations for gaseous pollutants to provide information about the stability of the gas monitors for the reader.

Section 4.1: A deeper statistical analysis of the correlation between trace gases and particles would be desirable. For this purpose data availability should, however, typically exceed 66 percent either for daily or monthly averages. As summarized in table 1 data availability for particle number and mass concentrations does not fulfill this requirement for about half of the observation months. The authors should state this problem in the text of the manuscript more clearly.

Met. Data: July 33

Gases : July 33 October 62

Number C : July 27 Aug 50 Sept 37 Oct 57 Nov 19 Dec 15

PMx : July 33 Aug 0 Sept 56 Oct 33 Nov 33 Jan 44 Apr 43

AIS Not presented

Table1: Percent Data availability below 66

It may be more appropriate to omit boxes like December in figure 10 because this box is only 4.65 days of measurements. This amount of data is not representative for the whole month.

Missing discussion about some visible annual variability of gaseous pollutants as well

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as scattered description of reasons for these have been discussed in depth by reviewer 2.

Y-Axis labeling in Figure 10 needs to be changed, could be mistaken as a log scale at the first glance!

"The highest particle number concentrations were observed in the same wind sector as the highest SO₂ concentrations (Fig. 11). The reason for this is discussed shortly in Sect. 4.3." needs to be discussed there, it is not.

Section 4.3 The discussion of new particle formation events is rather short. Discrepancies between DMPS and AIS derived concentrations in the overlap region (Fig. 18) need to be clarified. Furthermore a color code for dN/log dp is missing in this graph. "clearly, we have enough nucleating and condensing vapors as well as solar radiation for nucleation to take place throughout the year" : Available data should be sufficient to identify primary factors necessary for new particle formation events. Please identify those factors by statistical analysis and provide results in this paper.

Minor remarks:

Page 6315 line 24: No article...has

Figure 3 is not referenced in the text

Page 6319 line 21-22: The concentrations...are

Hameed (6327-3) or Hamed (6330-1)

Piketh or Pikketh

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 6313, 2008.

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