Atmos. Chem. Phys. Discuss.,
doi:10.5194/acp-2016-845-RC1, 2016

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Atmospheric trace metals measured at a regional background site (Welgegund) in South Africa" *by* Andrew D. Venter et al.

Anonymous Referee #2

Received and published: 11 November 2016

General comment:

This study reports trace metal composition of atmospheric particulate matter (aerosols) in three different size fractions (PM1, PM1-2.5 and PM2.5-10) at a regional background site (Welgegund) in South Africa. The reported data present a weekly averaged trace metal composition spanned over a year time. Authors have discussed the variation of different trace metals in various size fractions, their seasonal variability, compared data with several studies and tried to identify sources of different trace metals using statistical tool (PSCF). Overall, the study is OK in a regional/local context presuming paucity of aeolian trace metal composition data from the South African region. However, it lacks global significance and the manuscript appears to be just reporting observations

Printer-friendly version

Discussion paper

at the sampling location. Further, I feel, the scientific content is below the requirement of ACP. Thus, I think, this manuscript is not suitable for publication in ACP. Below, I have pointed out few specific comments which may help authors to revise and submit in a different Journals.

Specific comments: 1) Abstract and introduction: Why collection of samples were undertaken at the mentioned site? Why it is called background site? How background site is defined and why it is important to study background site composition?

2) Sampling and Analyses: A mixture of HCL and HNO3 have been used to dissolve (or leach) the trace metals (TM) in this study. So, the metals associated with aluminosilicate phase are underestimated. Authors have mentioned it in start of section 3.1. However, they should mention, several metals e.g. Al, Mg, Ca, Fe, e.t.c are underestimated concentrations especially those samples having high aeolian dust content.

3) Section 3.1 and 3.2 can be merged to a single section and the variability of trace metal composition in various sizes and total TM concentrations can be discussed.

4) Page 8, Line 7-9: How dust is impacting TM concentration? Its not clear. What is the source of dust? It is discussed by the authors that the sampling site is surrounded by pollutant emitting sources at least in the eastern region. However, there is no mention of dust source in the west or even eastern part of sampling site. Is there any hotspot for dust emission in the proximity of sampling site. Or is it local dust?

5) Section 3.3 on comparing data set with previous studies from similar and other area is over discussed. Why air-quality aspect suddenly brought in the discussion. Does this study have any bearing on health issues?

6) Page 10, Line 4-5: Why and how dust can contribute Cr to the particulate matter?

7) Section 3.4: Seasonal trend cannot be discussed based on 1 yr data, however seasonal variability can be.

Interactive comment on Atmos. Chem. Phys. Discuss., doi:10.5194/acp-2016-845, 2016.

Printer-friendly version

Discussion paper