

# ***Interactive comment on “Spatial, temporal and source contribution assessments of BC over the northern interior of South Africa” by Kgaugelo Euphinia Chiloane et al.***

## **Anonymous Referee #2**

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General comments: This paper presents some very valuable measurements of Black Carbon made from South Africa, from a poorly sampled region of the globe. The data analysis in most part seems sound and the work is valuable, however in my opinion the paper needs some tightening up before it is suitable for publication in ACP. Specific comments: 1. I suggest that the title uses the full term “black carbon” rather than shortening to “BC” 2. The Abstract is long and introduces a lot of Acronyms that are later dispensed with. In particular the text is much easier to understand later in the document when the names of measurement sites are used in full, rather than shorten to initials. I suggest that the abstract is shortened perhaps by cutting down on the first paragraph of introductory text. 3. The introduction is clear as are the measurement site

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descriptions and methods. 4. Page 12 – Figure 5 is confusing to me: did Welgeund measurements switch between PM10 to PM1 and back again during the time period shown? 5. Page 13. I am also confused by the arguments outlined here. They seem to say that eBC cannot be from the same source as the NO<sub>2</sub> because they do not have the same diurnal cycles, however this is not obvious to me since NO<sub>2</sub> may be photochemically produced from NO and does not have the same atmospheric lifetime as black carbon and so co-emitted species could have different diurnal patterns. Please clarify the reasoning here. 6. The use of different times of year to characterise the main sources is generally well explained, however by Page 16 the mention of the NO<sub>2</sub> hotspot near Elandsfontein seemed repetitive. I think that some significant shortening of the text could be achieved with a re-write of this section and that this is likely to improve the clarity of the paper. 7. Page 21, Figure 17 – it is not clear that the word “predict” is suitable here, because the text seems to imply that the whole dataset is used to generate the equation. Did I misunderstand and a subset is used to create the equation and then used to predict some later observations? Please clarify the text.

8. The conclusions section is clear, but maybe could be renamed Summary and Conclusions to better represent the contents.

Typo: Pg11 line 5, “experience” should be “experiences”

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