

List of all relevant changes made in the manuscript.

All the corrections and remarks pointed out by the co-editors have been taken into account in the new version of the manuscript.

In the following, all the questions and answers are listed as well as the corresponding lines.

Also, two versions of manuscript are proposed: the first one is the definitive version, whereas the second highlights the changes in red.

Thanks to the co-editors, our manuscript is much improved.

31-Abstract has been revised and shortened.

41-Perhaps, modify this to acknowledge biomass burning is also a large combustion source.

The presentation of the sites and of the predominant sources which are studied in this paper has been rewritten for more clarity.

81-I would recommend a reference here.

Added.

96-The previous statement said that concentrations are high. I would recommend adding a sentence here on what the studies specific finds were on that (e.g. average mass conc or similar). I am not recommending this because of an issue with the current literature review at all; I think it is well-done. But rather because some of this literature may be less well-known for people not working in the SWA, and thus I think it would be helpful to ensure those studies are clearly highlighted here.

We changed the sentences to take into account this interesting note.

101- These are two studies done in these sites, but are these results consistent with other international findings? Highlighting this will help to also put these studies in context of the global body of knowledge on this.

We changed the presentation of the two studies in order to highlight this point.

116- The use of "extensive" here is not clear to me. I would recommend re-wording.

« Extensive » was replaced by 'for a period of two years'.

146- Is this informal waste burning or is this scheduled? It comes out in findings that there isn't
Description of the landfill site (AWB) was improved.

157- But the sampling periods are longer than three days. So was sampling not done at the same time for all the sites? Also, in the analysis of the different sites, it should be noted and the reader reminded that per season these are only 3 days of 3-hours each (what is impacting the max concentrations for 3-days). This is a limited time of sampling, and thus the analysis and interpretation of the results should always acknowledge that.

You are right. We clarified this point at different positions in the paper.

160- How were the peak times determined? Were there measurements before that indicated this? Or was this a finding from preliminary work here? It is interesting that AT peaks in afternoon as traffic sites often peak during morning and evening rush hour.

Peak times were established from preliminary observations in West African cities. It is now added in the text.

280- What does this range come from?

This range comes from table 1.

317- I strongly recommend either referring to wet and dry only, or months only. International audience will not remember which months are wet or dry, and it is not helpful to go back and check each.

We tried to be clear on this point.

320- There is no evidence in those backtrajectories of being impacted by southern or South African biomass burning.

You are right. We changed the sentence. We just mentioned that marine aerosols can be mixed with long-term south African biomass burning aerosols.

341- There is an extra space here. What is ACP style rules for PM2.5? Should the 2.5 not be subscript?

“PM2.5” was kept after a checking in ACP papers.

342- What are these +/-? 1 standard deviation?

The standard deviation here reflects scatter of the observations in dry seasons and in wet seasons.

415- What is this referring to? When were gases measured?

Sorry. This is a mistake. It is corrected with organic ions.

418- + should be superscript

Done.

482- Should be ADF

Corrected.

483- No need to redefine at this point.

Corrected.

504- I recommend adding in "mass concentration" here as the mass is larger, not that the coarse particles themselves are larger.

Corrected.

532- I recommend rewording. Perhaps "highly polluting"

Corrected.

540- Is this referencing to normal concentrations found in marine aerosols?

Yes. Paragraph has been rewritten to better explain why chloride measured at ADF would come preferentially from anthropogenic activities than from sea-salt influence.

561- Should this be PM1?

Yes. It is now better written.

564-is this stating that EC in the coarse fraction is indicative of a local source? If so, I would recommend a reference that found this link.

Yes it is linked to wood burning emissions. Now mentioned in the text with a reference.

602- As a consequence of what?

You are right. We changed the sentence. In fact, this sentence is the introduction of the following paragraph, dealing with the seasonal variability.

607- Are these differences statistically significant? I think in this discussion comparing the sites it would be helpful to understand which differences are significant.

This paragraph has been changed. Thanks to your comments, differences between the sites have been scrutinized and comments have been improved.

614- How would such a regional source impact CT more than AT?

As already mentioned, this paragraph has been rewritten. In the new version, the impact of nigerian anthropogenic air-masses arriving in Cotonou is clearly explained. Indeed, the back-trajectories arriving at CT in dry season may come from Nigera but not at AT as shown in figures 5.

639- is this r or r²?

R². This is added.

681- I would recommend clarifying how the distance impacts the PM values. Is it closer or farther? Also, why is that a driving factor when there are other things that are different as well?

This is now better detailed.

654- I would recommend not referring to emissions here as the study measured concentrations. I recommend clarifying this same statement that EC concentrations were higher while OC concentrations were constant can be a result of more diesel traffic.

The explanations given in this paragraph were now clearly given. Paragraph has been rewritten to show the impact of the strike or of the vacations to traffic activities and diesel vehicle numbers.

761- For tables 4-7 I strongly recommend clarifying the averaging time for these different studies. For example, are these all comparing daily averages? Weekly averages? Are they all the same or different? This is important information for readers to be able to understand when interpreting these tables.

You are right. This is done now.

775- How this is stated confuses me a little. Were the samples taken once a week or were they filter samples that were exposed for a full week?

This is now better described in the text.

785- Are the students closer to the site?

Yes, they are. It is now better detailed in the text.

790- This relates to my comment at the beginning of the section. I would recommend adding the averaging time to the table heading as well.

Done.

792- But sampling here was not 24-hr but was 3-hr, correct? So these are also 3-hr?

Yes, it is correct. This is better detailed in the text.

804- Is this waste area just always on fire then? Also, in the analysis of this dataset, it was found that AWB also was impacted strongly by more regional sources (and not just waste burning). Could that also be why the two measurements are similar as there is less variability in such regional sources?

Reasons to understand the comparison between the weekly-integrated (Djossou) and our 3-hours measurements have been better detailed by explaining temporal variations of burning practices around the landfill site and also by recalling the large distance between the site and the local and regional sources.

830- I would recommend here also acknowledging that these are 3 days of sampling the peak periods.

That was done.

844- I also think that a key results is that all sites seem to be impacted by so many sources, including natural and anthropogenic dust. This complicated mix of sources also makes management and then improvement of air quality so much more difficult. Also, as there are so many sources there is a range in composition, which also then makes estimating impacts so much more complicated. To me, this is an interesting finding as it really points out how much more work is needed to really understand the pollution here. Are there any long-term measurements at these sites? If not, I think that this paper is a great motivation for the government to start

Thanks for this comment. A sentence was added to mention this point.

1264- Figure 7 is helpful. Are these the same averaging periods? The text makes it seem like they are not. I strongly recommend indicating the averaging periods here.

All the figure and table legends have been improved following this advice.

1347- The "-" for -3 is not also superscript.

Corrected.