



SDI Review Form 1.6

Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	Ms_BJAST_19232
Title of the Manuscript:	Ambient air PM10 particulate levels at Ashaiman near Tema in Ghana
Type of the Article	Original Research Article

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	The authors report about PM (fine and coarse) concentrations and speciation on 48 days in 7 months (Feb-Aug 2008) in an industrial and harbour town in Ghana. I am no expert in chemical analyses so I cannot be completely sure but I believe the chemical analyses are state-of-the-art. But the authors should also report indices of analytical performance, e.g. accuracy, reproducibility, limits of detection. For some results (PM_{2.5}, PM_{coarse}) the authors only report monthly averages. For the species they report means/medians and standard deviation over all 7 months combined. Daily values are only reported for selected species in figures 4 and 5. Why not report measures of variation for PM per month, why not report monthly averages for the species? The authors find variation (in PM and in some species) and they claim that this variation is due to seasonal climatic changes. I find this explanation plausible but it would be good to learn more about climatic conditions in that area. I am sure there is a meteorological station in the Accra area. So why not report temperature, humidity, wind speed and direction per month or even for each day when PM was measured? The authors even could perform a simple regression analysis to show how much of the variation is explained by weather parameters.	The necessary information added to Table 2 The seasonal or monthly variation of the species will mean adding 7 additional graphs. This can be comprehensively looked at in another paper since it is quite involving. The dry season (Dec-March) which is characterised by the Harmattan (cold dry winds) lowers the ambient temperatures. That is the period of high particulate levels. Temperatures are also lowered during the rainy season (May –July in southing Ghana). The dust and temperature levels will not follow a consistent pattern as will do for rainfall or humidity levels. The rainfall levels have been included (Fig 3) It is the coarse fraction that can be of very



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	The authors claim a high percentage of PM is from natural sources. I am not completely convinced. They report that Na is less than 3% in crustal materials. But this does not mean that Na cannot stem from anthropogenic activities. But they assume that practically all Na indicates sea salt. Likewise they assume that the “crustal elements” only stem from crustal materials. At least these assumptions should be discussed and maybe some sensitivity analysis should be performed. It would be best to perform some sort of <u>principal component analysis</u> to estimate the loading of the various elements to crustal and other sources. Even crustal materials do not only indicate “natural” sources. Construction work and road traffic, especially on unpaved roads, are important sources of crustal materials. If the authors had data on finer resolution to study diurnal variations they would find that crustal materials follow the frequency and intensity of human activities over the course of a day. At least the authors should discuss this issue!	high percentage from natural sources (mostly crustal and marine). However the fine can have several other sources which have been mentioned. The greater percentage of the Na in the coarse comes from the Sea but not so with the fine. <u>Lines 256-260</u> Source apportionment and other information has been provided in an earlier publication for the Fine Particulates Ofosu, F. G., Hopke, P. K, Aboh, I. J.K., Bamford, S. A. Characterization of fine particulate sources at Ashaiman in Greater Accra, Ghana . Atmospheric Pollution Research, 2012; 3 301-310 The issue of wind direction can be seen in this paper where wind direction speed speed was used for <u>conditional probability function</u> plots.
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<u>Minor</u> REVISION comments	Abstract: The sentence "Enrichment factor (EF) was used..." is repeated twice (first in methods, again in results). Once is enough. The term "Harmattan" is used twice but only explained on the second occasion. Methods: the formula on EF is placed wrongly. EF is only discussed later in the text (under 2.4) Some minor spelling mistakes, e.g. "exit" on page 4 instead of "exist". Two times "course" instead of "coarse" (particles, pages 10 and 11).	The second Enrichment factor removed Corrections made Corrections made "exit" changed to "exist" "course" changed to "coarse"
<u>@Optional/General</u> comments	The paper would really benefit from rearranging the data and include regression analysis to estimate the effect of weather variables on PM variations. I understand that this would substantially alter the paper so I am reluctant to have this enforced. Still I believe it would be worthwhile.	This can comprehensively be looked at in another paper.