

***Interactive comment on* “The Trace Element Composition of Size Fractionated Suspended Particulate Matter Samples from the Qatari EEZ of the Arabian Gulf: The Role of Atmospheric Dust” by Oguz Yigiterhan et al.**

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Response to Comments of the Reviewer # 2

The manuscript on The Trace Element Composition of Size Fractionated Suspended Particulate Matter Samples from the Qatari EEZ of the Arabian Gulf: The Role of Atmospheric Dust by Yigiterhan et al presents work on the suspended particulate matter (SPM) from the Qatari EEZ. The samples have been collected during October 2012 and 2014. They have also used dust samples from the land that were previously col-

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lected. Trace element composition data of SPM is compared with that of leached, unleached dust, UCC and also applied various corrections like salt lithogenic corrections to get the clear idea of the source of the SPM. They have normalized the data with Al and also calculated excess metals using atmospheric dust as the background and fate of the dust reaching the EEZ is discussed. With help of the data, the authors have distinguished between lithogenic and anthropogenic trace metals reaching the EEZ. The data is of interest as this is the first report and includes systematic study that will help in understanding the biogeochemistry. Abstract, Introduction, Study area, methods, Results discussions and conclusions are clear. Overall, manuscript is nicely written with the clarity that readers will understand. This manuscript has potential and I would suggest that the manuscript may be accepted with moderate revision as I find that there are a lot of repetitions in the text. The text could be further improved. Specific comments have been included in the pdf attached.

Comment 1: I would suggest to reduce the number of figures or add them to the supplement

- We feel that all Figures are required and made no changes for keeping the integrity and completeness of the manuscript. We are kindly requesting keeping the figures inside the manuscript.

Comment 2: Results and discussion could be combined as same things are repeated.

- We also feel that the best presentation separates Results from Discussion; because of this reason we preferred to keep Results and Discussion separately.

Comment 3: Please check time of sample collection October or April?

- The text has been revised. Months added in to the manuscript text.

Comment 4: Check tables 2 and 3- same stations during two different years? Change the tables or the captions.

- We have done goal oriented research sampling in 2012 and 2014 campaigns and

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added metal concentration data in Table 2 and 3. Kindly see the clarification below that was done for the comments of the other reviewer:

“We have not specifically focused on temporal and seasonal variations of size fractionated SPM in our manuscript. We have conducted 2 sampling campaigns in October 2012 and April 2014. The second sampling campaign was not the continuation or repetition of the first one. Due to logistic reasons, we were able to conduct the 2nd sampling after a while. Additional samples were collected during a third cruise in October 2014. The data from these samples will be used in a later publication (Yigiterhan et al., in preparation). During the 1st sampling campaign, the size fractionated net-tow samples were collected from off-shore stations (away from the coast and bay areas), we specially focused to catch the influence of the intense anthropogenic impact of oil and gas industry around the islands and deep water rings, heavy industries located along the southeastern coast, offshore hydrocarbon extraction fields etc. Doha and Dukhan offshore stations were also part of the campaign, which were selected to reflect the influence of desalinization plants and oil fields. All samples were collected out of the bays, away from the coast, relatively loaded with less SPM and reflecting more integrated coverage of the EEZ. However, in 2014 sampling campaign, as you can see from Figure 2; sampling was conducted from semi-closed bay areas for Doha and Dukhan stations, both from the East and West sides of the Qatar Peninsula, reflecting completely different water characteristics, under large anthropogenic effect due to more re-suspended sediments and dust load. The samples were collected along a linear transect inside the Bays and average composition was used for interpreting the data in the manuscript. That is why we have different metal concentrations between 2 years for the same “named” stations (Doha and Dukhan). These differences in concentrations may not point out the temporal variations. We tried to reflect these compositional variations in Figure 6 and 7 for small and large size fractions and for two campaigns with different sampling characteristics. Rather than focusing on temporal and seasonal variations, compositional change of SPM versus distance were targeted for two different size fractions.”

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Comment 5: Please also note the supplement to this comment: <https://www.biogeosciences-discuss.net/bg-2019-183/bg-2019-183-RC2-supplement.pdf>

- We thank the reviewer for the extensive suggestions. We found them very useful to improve the quality of the manuscript significantly. We incorporated most (but not all) of the revisions suggested, paying special attention to removing duplications. For those edits not adopted, we feel that the short phrases are necessary for transition and stating the whole argument.

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