

Dear Author/s

## **Egusphere-2023-1120**

The manuscript egusphere-2023-1120 titled (Variability in grain size, mineralogy, and mode of occurrence of Fe in surface sediments of preferential dust-source inland drainage basins: The case of the Lower Drâa Valley, S Morocco) is well written and contains appreciable efforts, we do really enjoy reading the MS and we do encourage to be published meanwhile, the manuscript needs more effort to raise it to the level of acceptance within egusphere. The dust source areas upon definition from the three UN agreements are called (hotspot/s). We were wondering why the authors mentioned sand dunes to be a source (hotspot) for dust? although dunes are mainly composed of sand particles (99%), while mud size fractions are only less than 0.5% of the total weight of all dunes in the world. On the other hand, dunes usually formed in drainage systems which is a source of dust as mentioned by the authors in the abstract and the introduction. So the drainage systems are the source, not the dunes. The introduction contains many old global studies (some are from the last century) and very little from regional (Africa and the Middle East) for comparison and no statement about the importance of this study for Morocco particularly and the region and the methods need some more information mainly within the desert regions. Author/s did not refer to important regional studies as we mentioned. On the other hand, this type of research benefits the surrounding community and humanity not only for research purposes, therefore, some recommendations/solutions should be addressed. Please go through the comments in detail, and hope to see your reply. Adding some regional dust mineralogy and specifications will give support your study.

There are some essential comments authors should take into consideration such as below:

### **General remarks:**

- A scientific manuscript should not use (we, I, ... and so on) that has been used in the present MS within the abstract, introduction, and methodology sections, we would request to be rewritten.

### **Specific remarks:**

- **The title**
  - Too long. To attract citations title should be the fewest words possible, and changed (Grain size) to (particle size) in all the text.
- **Abstract**

Simplify it as possible and be rewritten (add the number of samples, aim, and importance of this study, and main conclusions and recommendations), most researchers will give focus on your title and abstract, so make it perfect as possible. The advice was given to me by one reviewer a long time ago (always make your fingerprint in your manuscript (figures, tables, text), that if anyone sees it in the street, he knows it belongs to you.
- **Keywords**

To be changed to (Aeolian; desert, arid land, sand dunes, dust, mineralogy, Morocco)
- **The introduction:**

Authors need to think outside of Morocco. So introduction should begin with regional studies and then with local studies. Regional references were very little mentioned and some statements are without supportive references. Also, some sentences are mentioned without a reference. Therefore, we suggested to the author to put some supportive references for some statements he mentioned. Such as:

  - Add a reference as follows to show the importance of the study and end with the aim as the last paragraph of the introduction section as follows
    - {Aeolian activities including dust occur predominantly in the desert regions. Aeolian activities may cause direct and indirect adverse effects on fauna, flora, and human health on a regional scale in Iran (Doranzo et al. 2016), Kuwait (Alshemmari et al.2013), and Saudi Arabia (Al-Dousari et al. 2020). It has a socio-economic impact on health (Al-

Dousari et al. 2018), and photovoltaic energy efficiency (Al-Dousari et al. 2019), Therefore the aim of this study is to.....}.

- Delete all references of the last 20 years and add new ones from 2012-2022
- We like when the author wrote in line 160 (For example.... Sahara dust and china dust)
- Remove all (we, I, ..... ) and replace by (This study show/provide...) line 182
- Replace (we provide ) with (Therefore, the aim of this study is to provide) line 182 and add it to the end of a suggested above sentence

• **Materials and methods**

- Line 215 (the precipitation) put the average instead of the range (50-800mm), as the range is so variable
- Do you think 42 samples are representative,
- A proper sample map is needed for all sampling sites as Fig. 1 is not showing the sampling sites

• **Results and discussion**

- We think it is essential to add the table below after adding your results, why? Because it gives your study a real comparison and strengthens your discussion section.
- The authors mentioned Aeolian risk evaluation without referring to sand dunes fluxes in Morocco or the region, therefore, we suggest adding the table below to support this good study with regional data.
- Add a supportive following table for comparison to justify and support your results

**Table.** Average particle size and mineralogical percentages of deposited dust in Morocco compared to global dust samples.

Sector	Reference	Size particle %			Minerals %			
		Mud	Sand	Quartz	Feldspars	Carbonates	Clay	Others
<b>Morocco</b>	<b>Present study</b>	<b>add</b>	<b>add</b>	<b>add</b>	<b>add</b>	<b>add</b>	<b>add</b>	<b>add</b>
Ahwar-Iraq	Doronzo et al. 2016	97	3	13	8	80	0	0
Manamah-Bahrain	Al-Dousari et al. 2019	87	12	32	10	41	3	15
Walameen-south Saudi	Al-Dousari et al. 2020	61	40	62	24	13	1	0
Ain-Emirates	Al-Dousari et al. 2018	4	97	26	20	52	1	0
Dubai-Emirates	Subramaniam et al. 2015	82	17	21	6	45	0	27
Amman-Jordan	Alshemmari et al.2013	70	30	21	4	68	0	7
Tripoli-Libya	Al-Ghadban et al. 1999	81	20	64	5	27	4	0
Cartagena-Colombia	Doronzo et al. 2016	90	10	66	33	0	0	1
Cairo-Egypt	Al-Dousari et al. 2020	90	10	51	15	34	0	0
Bald Hill-Australia	Cattle et al. 2002	90	9	57	21	0	14	7
Average		75	25	41	14	38	2	5

• **Conclusion**

- Make it much shorter and add a sentence about your recommendations and what is your future / upcoming studies after this research. For example, the effect of native vegetation in reducing Aeolian dust (mobile sand and dust) in the region. Therefore, we suggest adding {Native plants and green belts have also contributed to the reduction in the annual rates of mobile sand by 94 and 95.3%, and dust by 64.5 and 68.4%, respectively (Al-Dousari et al. 2020)}
- some recommendations/solutions should be addressed. Please go through the comments in detail, and hope to see your reply. Adding some regional dust mineralogy and specifications will give support your study.

Supportive references suggested to be added as mentioned in the comments:

**Suggested references**

- Cattle, S.R., McTainsh, G.H., Wagner, S., 2002. Aeolian dust contribution to soil of the Namoi Valley, northern NSW, Australia. *Catena* 47, 245-264.
- Al-Ghadban, et al. (1999). Preliminary assessment of the impact of draining of Iraqi marshes on Kuwait's northern marine environment. parti. physical manipulation. *Water science and technology*, 40(7), 75-87. [https://doi.org/10.1016/S0273-1223\(99\)00586-7](https://doi.org/10.1016/S0273-1223(99)00586-7)
- Alshemmari, et al. (2013). Mineralogical characteristics of surface sediment in Sulaibikhat Bay, Kuwait. *Kuwait Journal of Science*, 40(2).
- Doronzo, et al. (2016). Preface to the Dust Topical Collection. *Arab J Geosci* 9, 468 (2016). <https://doi.org/10.1007/s12517-016-2504-9>
- Subramaniam, et al. (2015). Probability distribution and extreme value analysis of total suspended particulate matter in Kuwait. *Arabian Journal of Geosciences*, 8(12), 11329-11344. <https://doi.org/10.1007/s12517-015-2008-z>
- Al-Dousari, A.M., Ibrahim, M.I., Al-Dousari, N. et al. (2018). Pollen in aeolian dust with relation to allergy and asthma in Kuwait. *Aerobiologia* 34, 325–336. <https://doi.org/10.1007/s10453-018-9516-8>
- Al-Dousari, et al. (2019). Off-road vehicle tracks and grazing points in relation to soil compaction and land degradation. *Earth systems and environment*, 3(3), 471-482. <https://doi.org/10.1007/s41748-019-00115-y>
- Al-Dousari, A., Ramadan, A., Al-Qattan, A., Al-Ateeqi, S., Dashti, H., Ahmed, M., Al-Dousari, N., Al-Hashash, N. and Othman, A., 2020. Cost and effect of native vegetation change on aeolian sand, dust, microclimate and sustainable energy in Kuwait. *Journal of Taibah University for Science*, 14(1), pp.628-639. <https://doi.org/10.1080/16583655.2020.1761662>