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**Dear Prof. Dr. Lorena Grabowski**

**Editor-in-Chief**  
**SOIL**

*23 March 2023*

Greetings;

Attached please find the revised version of our manuscript entitled "**Mapping land degradation risk due to wind and water erosion**". Full revision has been carried out by responding to the comments and considering suggestions made by the reviewers. The implementation of those valuable comments and suggestions has significantly improved the quality of the paper for which we are grateful to the editor and the reviewers. I am also attaching a note in which major changes carried out in the paper have been explained. **All revised parts have been highlighted in red color.**

I hope the emendations caused to consent the respected editor and make my paper well qualified for further processing leading to final acceptance and publication. The acknowledge receipt of the same and informing me about the final status of the paper is appreciated.

Sincerely,

Dr. M. Boroghani  
Enclosure

**Reviewer 1 # Revision comments:**

The paper entitled as "Mapping land degradation risk due to soil erosion by storms and water:

The authors use machine learning to assess wind and water erosion susceptibility in the study region. The article is interesting and has potential. I carefully read the manuscript and it is suitable for publication after minor revision.

**Ans.** Thanking you so much for your encouraging and nice words towards my work.

1. I suggest some literature that can be helpful in this regard. But authors are not bound to cite them in this manuscript:

<https://doi.org/10.1002/ldr.4380>

<https://doi.org/10.1002/ecs2.2650>

**Ans.** It was added as the respectful reviewer suggested.

2. MODIS first time used, abbreviation not explained and no reference.

**Ans.** It was revised. MODIS is the abbreviation of “Moderate Resolution Imaging Spectroradiometer” which is added in Line 61.

Line 66: The present study uses **Moderate Resolution Imaging Spectroradiometer (MODIS)** satellite images to detect dust aerosols over the Lut Desert.

3. Lines 77-79: Please state the possible applications of your study

**Ans.** It was added.

Line 482: **The results of the study will be helpful and applicable for identifying water-induced and dust sources hotspots across the watershed and prioritizing appropriate conservation measurements and rehabilitative policies.**

4. Please indicate the limitations of this work.

**Ans.** It was added.

Line 518-521: **The current study has some limitation including the small sample size and non-uniform distribution of water-induced soil erosion points because of lack of accessibility to a road network in some parts of the watershed.**

5. Dust sources are locations of dust particles where are susceptible to wind erosion. So I think that "wind erosion susceptibility" is more appropriate than dust source susceptibility (DSS).

**Ans.** The authors agree with the respectful reviewer that dust sources are the location of dust particles. But this term has been also used by previous research (such as Identifying sources of dust aerosol using a new framework based on remote sensing and modelling; Spatial mapping of the provenance of storm dust: Application of data mining and ensemble modelling) which conducted using similar methods. Therefore, it would be better to remain this term in the present study to avoid any confusion. Correspondingly, the title of the study is changed to "Mapping land degradation risk due to land susceptibility to dust emission and water erosion"

6. What is the outlook or scope of the future research for this work?

**Ans.** However there is suggested for the future research in the conclusion of the manuscript, another suggestion was provided and added to this section as below:

Line 523-531: Future studies could work on improving the spatial resolution and coverage of the risk assessment for providing more information on risks for land degradation. In addition, it is suggested that future research should estimate the role of other climatic factors such as humidity, and air temperature on soil erosion and dust source susceptibility. Prediction of NDVI and rainfall as the most effective factors on soil erosion and dust sources and estimation of their impacts on future water induced-soil erosion and dust sources susceptibility are also suggested for the other studies.