

Authors' Responses to the Comments on the Manuscript

**“Modeling the Inhibition Effect of Straw Checkerboard  
Barriers on Wind-blown Sand”**

**General Response to the Comments and the Suggestions:**

Thanks to handling editor Andreas Baas for his help with this manuscript. As requested by reviewer#2 and suggested by the handling editor, we have made the following modifications to the revised manuscript.

**1. Abstract section**

“Although our model does not include the collision between sand particles and SCB walls, which makes the suppression of wind-blown sand by SCBs obtained from the current model conservative, our research still provides theoretical support for the minimum laying length of SCBs in anti-desertification projects.”

Please see lines 30-33 in the revised manuscript.

**2. Model section**

In the section of 2.5, we have supplemented the explanation about the model limitations on collision between sand particles and SCB walls.

“Due to the limitation of the drag force method, the SCBs only affect the velocity of the flow field rather than the real presence. Current model considers more the inhibition effect of the flow field on the particles and does not simulate the collision process between the sand particles and the SCBs. Therefore, this collision-obstruction process can be approximately simplified as the sudden drop in the drag force as the saltating particles pass through the region of the SCBs. The consequences of such a simplification may lead to an underestimation of the inhibition effect of the SCBs. Therefore, this limitation of the current model needs to be noted.”

Please see lines 261-269 in the revised manuscript.

**3. Conclusion and outlook section**

“The resolution of these issues is expected to reveal more details of particle deposition around the SCBs, which needs in-depth study.”

Please see lines 589-590 in the revised manuscript.

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### 4. Acknowledgments section

“And I am also thankful to Editor Andreas Baas for his careful help with the manuscript and to Dr. Catherine Le Ribault and another anonymous reviewer for their helpful comments.”

Please see lines 605-607 in the revised manuscript.