Earth Syst. Dynam. Discuss.,
https://doi.org/10.5194/esd-2019-28-RC2, 2019


Earth System Dynamics
Discussions

# *Interactive comment on* "Organization of Dust Storms and Synoptic Scale Transport of Dust by Kelvin Waves" *by* A. K. Pokharel and M. L. Kaplan

**Anonymous Referee #2**

Received and published: 23 August 2019

Review of the manuscript (ESD-2019-28): "Organization of dust storms and synoptic scale transport of dust by Kelvin waves" by A. K. Pokharel and M. L. Kaplan

General and specific comments:

This is an interesting work concerning the large-scale dust transport in the vicinity of mountain ranges and the organization of dust storms by Kelvin waves in sequence to evolving finer scale atmospheric processes. In my opinion, the authors have taken excellent attention into the evolution of different scales of motion and methodology details to infer the hypothesis proposed for examination. This study is unquestionably a commendable effort with appropriate schematics to demonstrate the atmospheric processes (blocking of air near the mountains and mesoscale geostrophic adjustments in conjunction with geostrophic imbalances) and dust transport by Kelvin waves di-



rected parallel to the mountain barriers. Relevant aspects of ESD are considered in this study with adequate figures and tables to substantiate the details. Also, the advanced modelling tools and datasets available are used for the analysis to substantiate the hypothesis proposed in this study.

In all sense, I am fully convinced with the arguments and rationale presented in the study, and I do not really see any pitfalls in the reporting. Therefore, I recommend the manuscript for publication with a few minor concerns in figures for better clarity to the readers, given in the following.

My minor concerns are:

1. Figures are little bit clumsy to decipher the details. Contours can be a bit smoother for clarity, and the colours could be lighter (e.g., Figure 6) 2. Section 2.1.1: Surface stations described in the study (lines 35-40) can be marked in Figure 3 similar to Figure 9. 3. For better reading in the vertical cross-section figures, locations can be marked with vertical line in tune with the text.

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