

**We are grateful to the editors and anonymous referees for the insightful comments which highly helped us to improve the quality of our paper. We now turn to addressing concerns specific to reviewer one by one as below.**

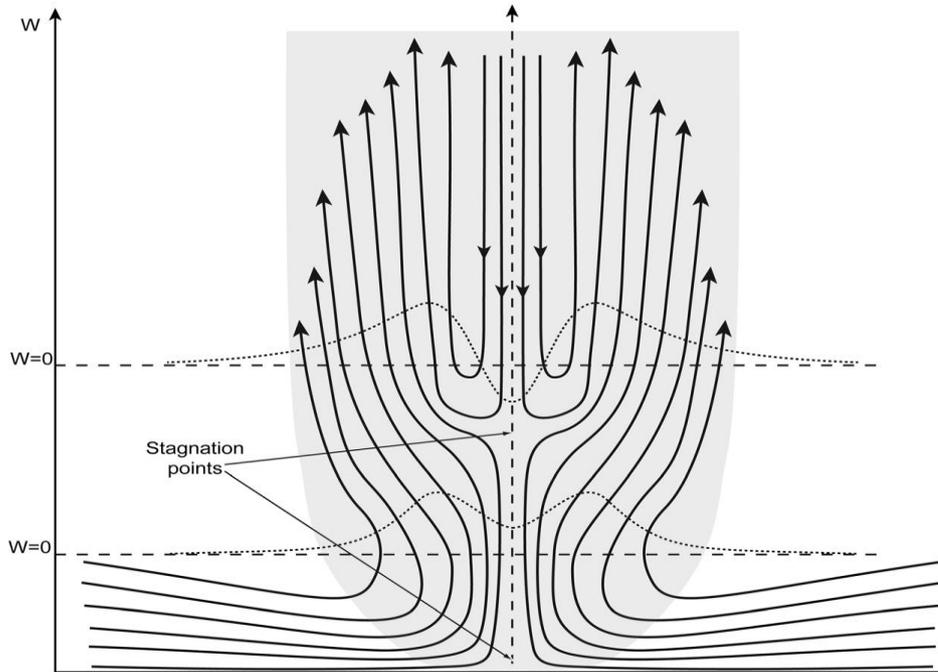
*[1.The authors mentioned the structure of dust devil (DD)'s zone of weak winds is similar to the eye of tropical cyclone. However, according to figure 1b in the paper, the center of dust devil has strong upward motion, which is different from the hurricane eye (Figure 1R) or tornado center (Figure 2R) described in textbook, which has weak subsidence in their center. How to justify this inconsistency?]*

**Reply 1:** Thanks for the comment. We are sorry for this misleading in the caption of Fig. 1. The black lines with letters and numbers in Fig. 1b are only for the further analysis of DD vertical structures, but not for the vertical motion. Actually the vertical motion in DD could be not measured by using DOM. Our observation results only found the existence of DD's eye, In the revised manuscript, we clarified it with the following caption for Fig. 1:

“A typical DD observed on July 2, 2014 with (a) the original photo, and (b) the image marked with black lines, letters and numbers for the analysis of DD vertical structures”

*[2.It is true that the center of dust devil can has weak horizontal wind (e.g. the schematic drawing of dust devil from NASA website <http://science.ksc.nasa.gov/mars/ops/dustdevil.gif>); and similar study (e.g., Zhang et. al. 2015) also confirmed that. However, no eye ( or subsidence) was claimed in all these previous studies. The reader of the paper may wonder whether the authors' current results are consistent with the results of previous studies.]*

**Reply 2:** Downdrafts within dust devils have been found currently by Kaimal and Bussinger (1970), Sinclair (1973), Metzger (1999), et al. The dust devil eye (Fig. 1 in this reply) also was proposed by Balme et al. (2006) as well as Gu et al.(2008). By using DOM, our observation confirmed the existence of DD's eye.



**Figure.1.** Sketch showing possible vertical flow in a dust devil (Balme et al., 2006)

References:

Kaimal, J. C., and J. A. Bussinger (1970), Case studies of a convective plume and a dust devil, *J. Appl. Meteorol.*, 9, 612–620.

Sinclair, P. C. (1973), The lower structure of dust devils, *J. Atmos.Sci.*, 30, 1599–1619.

Metzger, S. M., J. R. Carr, J. R. Johnson, T. J. Parker, and M. T. Lemmon (1999), Dust devil vortices seen by the Mars Pathfinder camera, *Geophys. Res. Lett.*, 26, 2781–2784.

Balme, M., and R. Greeley (2006), Dust devils on Earth and Mars, *Rev. Geophys.*, 44, RG3003, doi:10.1029/2005RG000188

Gu, Z., Qiu, J., Zhao, Y., and Hou, X. (2008), Analysis on dust devil containing loess dusts of different sizes, *Aerosol Air Qual. Res.*, 8, 65-77, doi:10.4209/aaqr.2007.03.0026