

Atmos. Chem. Phys. Discuss., referee comment RC2
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Comment on acp-2021-818

Anonymous Referee #2

Referee comment on "Observed slump of sea land breeze in Brisbane under the effect of aerosols from remote transport during 2019 Australian mega fire events" by Lixing Shen et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-818-RC2>, 2021

Comment to "Observed slump of sea land breeze in Brisbane under the effect of aerosols from remote transport during 2019 Australia mega fire events"

The 2019 Australia mega fires have got great concerns by the science community. Sea land breeze

(SLB) is a regional thermodynamic circulation closely related to coastal atmospheric environment yet few have looked into how it is influenced by different types of aerosols transported from either nearby or remote areas. By focusing on the 2019 Australia mega fire events, this study investigates this issue and found that SLB day number during the great fire month was only four, accounting for 33.3% of the multi-years' average. The land wind (LW) speed and sea wind (SW) speed also decreased by 22.3% and 14.8% compared with their averages respectively. Potential mechanisms how aerosols are transported here and affect the SLB through radiative cooling have been carefully analyzed and discussed. The findings are great contribution to the science community and definitely worthy for prompt publication after some necessary minor revisions.

Could the author clarify the continuity of the observation data? Since the SLB day is selected based on certain rules, it seems to be necessary that the original data is continuous throughout the study period, then it is meaningful to compare each year's SLB day number.

Line 43-44, "There were" should be "There are"

Line 50-51, "during different seasons" is suggested as "in different seasons"

Line 60, "is" should be "was"

Line 83, "Shen et al., 2021; Shen et al., 2021;" should be "Shen et al., 2021a, b"

Line 155, remove "The" for "The Several types of data"

Line 164: Please modify the decimal number of the spatial resolution to keep them uniform in terms of resolution.

Line 159, please confirm it is GADS or GDAS?

Line 200-204, please confirm and make it consistent for the dataset name, GDAS, GADS, or GDADS?

Line 243-244, "time period" is suggested as "period"

Line 330-331, "which is the direct cause of SW speed decrease" should be "which is the direct cause of decreased SW speed".

Line 388-390, considering the importance of solar radiation, it is worthy for the authors to check the change of radiation there. If there are ground-based observation of radiation, that will be great. If there are not, the authors might check the CERES radiation data while it might have too coarse spatial resolution to make the analysis not possible or challenging. Anyway, it is worthy to check if there are suitable data and check if the radiation has the expected changes. Of course, even if there are no radiation data, that would not affect the analysis here by directly considering the variation of temperature and aerosols.

Line 619, remove "This" in "This In this study"