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Hydrol. Earth Syst. Sci. Discuss., referee comment RC1
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Comment on hess-2021-269

Anonymous Referee #1

Referee comment on "Water vapor isotopes indicating rapid shift among multiple moisture sources for the 2018/2019 winter extreme precipitation events in Southeast China" by Tao Xu et al., Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2021-269-RC1, 2021

General comments:

Through isotope observation data and HYSPLIT model simulation, this study reveals the close relationship between isotope changes and different water vapor sources, and clearly shows the rapid movement of water vapor source area through d-excess, which provides a certain theoretical basis for in-depth analysis of water vapor source path and water vapor supply in extreme precipitation area. Although there are still some shortcomings in this paper, I suggest that this paper be revised and published on HESS.

Specific comments,

1ï¼☐L.73 'above sea level' can be abbreviated as 'a.s.l.'.

2ï¼☐L. 78-80 How to define extreme precipitation in this paper? What standards are used?

3ï¼☐There are six extreme precipitation indexes (WMO). Which indexes are studied in this study? The reviewers believe that the relationship between precipitation events, precipitation intensity and stable isotopes should be analyzed respectively;

4ï¼☐How long did the HYSPLIT backward trajectory mode simulation track?

5ï¼☐The typical reason for the formation of cold wave in winter is the complex weather in 2018 / 2019. In addition to sufficient water vapor conditions and circulation field, atmospheric stability is also a necessary condition for the formation of extreme precipitation events. The analysis of atmospheric stability is lack in this paper

6ï¼☐The variations in δ18Ov and dv values of water vapor have a good correspondence with wind direction, but what is the relationship with the vapor transport simulated by the HYSPLIT model?

7) L.118-119 '(c) January 7−11, (d) February 16−22, and (e) January 27−31, 2019. ' should be '(c) January 7−11, (d) January 27−31, and (e) February 16−22, 2019.