

Dear editor and authors of the manuscript “Variations in the East Asian summer monsoon over the past millennium and their links to the Tropic Pacific and North Atlantic oceans”, a speleothem with high resolution is an important contribution in the paleoclimate community, if the raw data can be archived in the published repository. Another new information is to discuss the difference between the northern and southern cave records. I am not specialist in speleothem record, and cannot assess the physical meaning of the speleothem oxygen-isotope. However, I am worried about the definition of the East Asian summer monsoon (EASM). As we known, the EASM is highly variable in the meridional direction. A strong reason is necessary to explain that the few records can reflect EASM variation. Moreover, the past millennium includes the 20th century, it is highlighted to quantitatively compare EASM variation between the proxy reconstruction and the instrumental dataset. Thus, I suggest that the manuscript should be accepted for publication after a revision.

Main comments:

1. The speleothem oxygen-isotope has high resolution, thus, its upward or downward trends over some specific time periods need to be quantified using the trend test methods e.g. Mann-Kendall non-parametric trend test. Moreover, the magnitude and amplitude of the EASM intensity also need to be calculated.
2. According to the background of the co-authors, a more mechanism of EASM variation should be discussed. e.g. how the NAO effects the East Asian summer monsoon, based on some instrumental datasets or CMIP5 datasets.
3. The other proxy reconstruction from tree-ring [*Liu et al.*, 2019] and historical documentary [*Ge et al.*, 2008] are suggested to cross check the speleothem EASM reconstruction. Moreover, a detailed and independent local temperature reconstruction should be used to explore the relationship between the speleothem oxygen-isotope and the temperature, e.g. [*Cook et al.*, 2013; *Shi et al.*, 2015; *Zhang et al.*, 2018].

Specific Comments:

1. Page 1, Lines 25-26. What meaning is the 'EASM intensity'? the amplitude or magnitude of the EASM variation?
2. Page 2, Line 49. It is 'Mann'. Moreover, Chen (2018) is not the temperature reconstruction.
3. Page 2, Lines 63-67. The detained review about the disagreement of the influence ENSO on EASM is very interesting and suggested to help the following analysis.
4. Page 3, Lines 78-79. The 'direct evidence' is not rigorous, even it is still difficult to connect the AMOC and EASM for the instrumental dataset analysis.
5. Page 4, Lines 132-133. There is a large discrepancy between YX262 and YX275 in the early 1600s. An discussion of this difference is suggested to indicate an stable condition of the isotope.
6. Page 5, Lines 141-142. The EASM intensity is not equal to the local rainfall, e.g. the increasing meiyu rainfall means the weak EASM.
7. Page 6. Lines 188-189. The statement is inaccurate, since the north-drought and south-flood can be affected by the same factor from the instrumental analysis.

8. Page 7, Lines 214-215. In fact, the EASM becomes weak since the late 1970s [*Wang, 2001*].
9. Pages 7-8. Lines 229-235. When you check Walker cell, the position of ascending or sinking branch is also important for atmosphere transport.
10. Pages 9-10, Lines 278-311. The relationship between NAO and EASM during the CWP is complex, why it is stable during the LIA or MCA. Is a possible reason the uncertainty of NAO reconstruction?

References:

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