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Title: **Timing and Structure of the 4.2 ka BP Event in the Indian Summer Monsoon Domain from an Annually-Resolved Speleothem Record from Northeast India**

By: Gayatri Kathayat, et al

I would like that my review will be anonymous

I found the paper original, interesting, and well written and I highly recommend its acceptance for publication in the Special Issue: The 4.2 ka BP climatic event.

Before being accepted for publication, I recommend that the authors will consider the following comments:

1. The author claim (L.92) that a sharp increase in the speleothem $\delta^{18}O$ values implies a weaker ISM at ~ 4.07 ka. ***I agree***, but some explanation is needed why it is true.\

2. L. 198-200: "The ML.1 and ML.2 age models and associated uncertainties were constructed using COPRA (Constructing Proxy Records from Age model) (Breitenbach et al., 2012), Bchron (Haslett et al., 2008) and ISCAM (Fohlmeister, 2012) age modeling schemes (Fig. 3), respectively.
Not quite. Copra, Bchron, and ISCAM were used only for ML.1 (Fig. 3). For ML.2, only COPRA was used.

3. L. 218-220: the authors write "The subsamples (~80 μg) were continuously micromilled from ML. 1 and ML. 2 with typical increments between 50 and 100μm (**dependent on growth-rates**) along the stalagmites growth axes.
This is a mistake. The growth-rate dictates the age difference between the drilled samples. It does not affect the distance between the samples, which are drilled, regardless the growth-rate, with typical increments between 50 and 100 μm.

4. In L. 220 the authors write that $\delta^{13}C$ was also measured. It is OK with me that the paper is based only on $\delta^{18}O$ values, however, I suggest adding a short explanation why $\delta^{13}C$ values are not shown and are not discussed in the present manuscript.

5. In L. 239, the authors write that: "The ML.1 and ML.2 $\delta^{18}O$ values range between -6.6‰ and -**4.4‰** with mean values of -5.80‰ and -5.43‰, respectively.
Please check the values. I don't see any $\delta^{18}O$ higher than -5‰ in Fig. 4
L. 240-242: "A slight but systematic offset in the mean $\delta^{18}O$ values of **0.4‰** between the two records may possibly stem from karst-related difference in the drip and/or degassing rates."
Please check the number. Examining the profiles shown in Fig. 4, I do not see an offset in the order of 0.4‰ between the two profiles. It seems to me that the offset is much lower. If so, then the explanation given in lines 241-2 is not necessary.

6. The difference obtained between the isotopic profiles of ML.1 and ML.2 and KM-A (Berkelhammer et al., 2012), is rather puzzling. It seems to me that the reason for the very low $\delta^{18}O$ values measured for the time interval 3.9-3.7 ka in KM-A, not recorded in ML.1 and ML.2, is most likely due to diagenetic alteration of the top of the stalagmite, and I recommend to carefully examine the petrography of that portion and find evidence for recrystallization. It could be also that the youngest age (3.654 ka) measured for KM-A is incorrect. Since Berkelhammer is also a co-author in the present paper, I believe that the authors have access to KM-A stalagmite.

7. L. 265-270: "The 4.2 ka event in the KM-A record manifest as a two-step change, marked by an initial increase in $\delta^{18}O$ values (~0.6‰) between **~4.315 and 4.303** ka followed by a second and more abrupt increase between **~ 4.071 and 4.049** ka BP…..
The authors claim that the timing of most significant increase in both ML.1 and ML.2 $\delta^{18}O$ values is similar to that observed in the KM-A profile though the amplitudes of $\delta^{18}O$ change in our records are smaller by ~0.5 ‰. However, whereas the ~4.07 ka event is clear and significant also in ML.1 and ML.2 records, it is hardly observed at the ~4.3 ka event

Technical Remarks

1. In the Abstract (L. 20-22) it is written: "Our $\delta^{18}O$ record is constrained by 18 ^{230}Th dates with an average age uncertainty of ±13 years and a dating resolution of ~40 years……."
Whereas in L. 109 it is written that : "The ML.1 and ML.2 chronologies are established by 18 ^{230}Th dates with age uncertainty of ~±13 years (average dating resolution of ~40 years) and 5 ^{230}Th dates with age uncertainty of ~±16 years……"
i.e., 23 ^{230}Th ages.

2. In L. 107 it is written: "$\delta^{18}O$ records span from 4.440 to 3.780 ka BP and 4.530 to 3.370 ka BP, respectively……
However, according to the data shown in Fig. 2, the measured ^{230}Th ages for ML.2 range between 4.541 and 3.479 ka. Please check.

3. In L. 108, the authors claim that "Our new record is sub-annually to annually resolved" whereas in L. 100 it is written that the "average $\delta^{18}O$ resolutions of ~1 and ~5-year, respectively.

4. In L. 141, I suggest to write: "The temperature variations in the cave are small (varying between 18.0–18.5°C) and….."

5. L. 165: "above the cave floor in November 2015, ~700 meters from…"

6. L. 181: For sake of consistency (see L. 178), should be: "(Cheng et al., 2000 and 2013)."

7. In Fig. 4, only 3 ages are shown for ML.2. At least the 4.5 ka age should be added.

8. L. 262: "ISM variability recorded between KM-A and ML δ 18O profiles
Should be: "recorded by KM-A…..