Dear Editor,

We thank you for the feedback on the revisions.

Regarding the instruction to shorten the manuscript, we have completed a sentence by sentence revision to make the text more concise, without sacrificing content or interpretation. This effort has shortened the manuscript by 584 words.

Regarding the suggestion to implement the bucket model of Baker et al (2020, 2021), we fully appreciate the value of quantitative modeling for geochemical and hydrological data and the value of the bucket model published by Baker et al (2020, 2021). Baker et al uses highly temporally resolved drip water estimates (15 minute resolution, during 6 years) to "determine recharge thresholds, and their spatiotemporal heterogeneity" (Baker et al., 2021).

In detail, the stated purpose of the bucket model is to estimate overflow capacity [mm] and a drainage parameter [mm/day]. The bucket model employs the precipitation and AET or PET as input. Then "The two free parameters are optimised on the observation of recharge within a 7-day window of a precipitation event, to minimise the difference between observed recharge events and modelled concentrated recharge." The use of the bucket model to estimate these parameters is contingent on time-resolved drip rate (recharge) measurements within this 7-day interval.

In our monitoring study, spanning 16 months, the median time interval between our instantaneous drip rate observations is 28 days, with three monitoring periods separated by 13 to 15 days. The rationale for choosing a 7-day window in the midlatitude site described in Baker et al., 2021 is also appropriate for our midlatitude setting (typical duration of precipitation events and their frequency due to frontal systems from the mid-latitude westerly zonal circulation). Because the focus of our study was on geochemical tracers rather than high resolution hydrological response, the data resolution collected in our observations is not sufficient to apply the bucket model as described in Baker et al (2020, 2021). While in some cases, there may be a rainfall event within 7 days of our sampling date, from a single measurement, we cannot distinguish if our sample corresponds to the peak or rising or falling limb of the discharge response. Our samplings do not occur at a standard time following the onset of a precipitation event, and it is very unlikely that our samplings would always correspond to the same relative position (e.g. rising limb) of the response.

We have revised the discussion on hydrographic response to explicitly mention the challenges in application of models to our resolution drip data:

"**However, the long median interval between drip rate measurements in this study (28 days) complicates efforts to derive relationships between drip rate and rainfall or precipitation-evapotranspiration, and precludes the use of quantitative flow models such as bucket models to derive recharge thresholds and overflow capacity (Baker et al., 2020; Baker et al., 2021) since we cannot ascertain if our single estimation of drip rate reflects peak discharge or rising or falling limb of discharge after a precipitation event.** For example, we did not identify a relationship between 7-day antecedent cumulative rainfall and drip rate, found in studies featuring higher resolution drip rate data (Baker et al., 2020; Baker et al., 2021). Continuous hydrographs recording drip rates or tracer experiments would be necessary to determine the response time to rain events and to define thresholds of rainfall amount affecting drip sites individually (Markowska et al., 2016)(Baker et al., 2020; Baker et al., 2021)."

Finally, we have substituted one new reference published since the manuscript was submitted, which includes growth rates of the active stalagmites in the same monitored cave, rather than two older references with ages of non-active stalagmites.

Kind regards,

Oliver Kost, Heather Stoll and co-authors