

Replies to Editor

Dear Authors

Many thanks for the careful second round of revisions of this manuscript. There are a few remaining corrections that need to be addressed:

We thank the editor for reviewing our manuscript and replies to reviewers' comments. We incorporated all suggestions and provided below a point-by point replies to her comments in blue font. Apart from this we have formatted the supplementary material as per a suggestion of the editorial support, checked the grammar, typos etc.

1) Add a sentence on the broader implications of this work in the abstract, ideally connecting to the last two sentences of the abstract, which are currently somewhat loosely integrated into the flow.

R-1: The following sentence is added (L 27-30): "In addition, our study shows that drop evaporation reduces the rainfall amount considerably, especially in the lower range of precipitation. A precise quantification of raindrop evaporation is required for validation of the models used routinely for monsoon rainfall predictions."

2) Make Figure 1 larger as it is very difficult to read.

R-2: A revised Figure-1 is included in the manuscript and copied below.

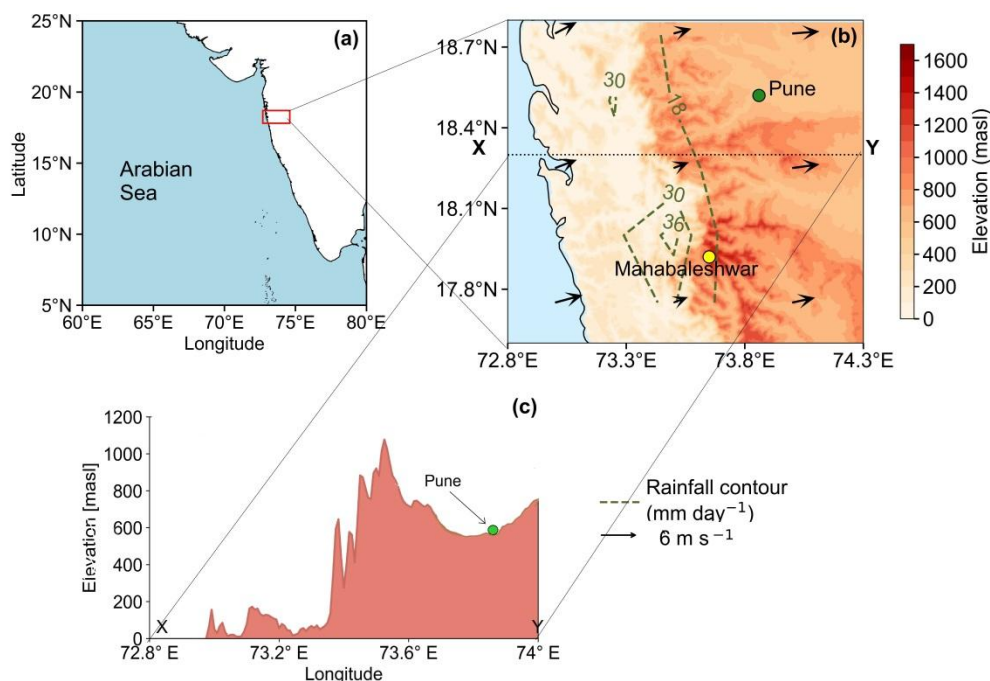


Figure 1. (a) The location of the study area in India. (b) Topographic map of the northern Western Ghats, India (prepared based on the GTOPO30 digital elevation model). The rainfall contours (long-term mean June-September rainfall in mm day⁻¹) were constructed using gridded (0.25°x0.25°) rainfall data (1901-2020) from the India Meteorological Department (IMD). (c) A topographic profile along the latitude 18.53° N through Pune (Green circle at an altitude of 580 m) shows its position.

3) In Section 4.3, add "which is consistent" in the phrasing "...evaporation fractions are moderately high (23 ± 16) % consistent with...".

R-3: The suggested change is made (L650).

4) L. 677: ". and yields:" remove the "."

R-4: Done (L666).

5) L. 454: "evaporation/ evapotranspiration" what do you mean by this? What do you mean "surface evaporation and evapotranspiration"? As opposed to rain evaporation?

R-5: The sentence is modified as- "The reason for this could be a significant contribution from the local moisture having a different isotopic composition (sourced from evaporation from various water bodies like lakes, rivers, ponds etc. or evapotranspiration from trees located within a few hundred meters)." (L441-444)

6) L. 709: "the drop diameter was..." not "were".

R-6: The suggested change is made (L699).

7) L. 815: "The average seasonal evaporation means considerable cooling" replace "means" by "implies" or "results in", which are more formal alternatives to "means".

R-7: We now write: "Raindrop evaporation can reduce the rainfall substantially, especially during low rain (less than 10 mm day^{-1}). In addition, the evaporation can cool the boundary layer leading to localized downdrafts and hindering formation of convection." (L802-804).

8) Use "raindrop" consistently rather than "rain drop"; both versions are used in the text.

R-8: Suggested corrections are made.

9) Use British English consistently throughout the manuscript.

R-9: We have changed to the British English throughout.

10) Rewrite the conclusions in a continuous-text format. Currently the pure numbering of points summarising the manuscript is very strange to read.

R-10: Revised accordingly (see Section-5)

11) In the conclusions, briefly summarise the limitations and caveats.

R-11: The following paragraph is added to the Conclusion: "The isotope based BCIM used for estimating raindrop evaporation fraction in this study has many limitations which include constructing vapour isotope profile with TES data available for a different period, using values of input parameters (in Run-2 and Run-3) from multiple data sources having different spatiotemporal resolution, a mismatch in rain and vapour collection periods, assuming the CLWC peak height as the drop formation altitude, and neglecting

collision-coalescence. These limitations and their associated uncertainties are explicitly discussed in Section 4.6.” (L 805-810)

12) Please end the conclusions with your perspective on future research directions opened up by the findings in your study.

R-12: The following paragraph is added to the Conclusion: “Our current findings pave the way for several avenues of future research. Future studies should prioritize continuous, high-resolution measurements of atmospheric water vapour and rain isotopes to quantify event-based raindrop evaporation. Additionally, deploying an isotope-enabled limited-area model over the study region will reduce uncertainties in model-derived vapor isotope profiles, yielding more precise estimates of the evaporation fraction. Long-term observations spanning multiple monsoon seasons across a broader network in the Western Ghats will help map the spatial and temporal variability of sub-cloud evaporation. Finally, further work is necessary to determine the influence of these processes on regional moisture recycling, monsoon energy budgets, groundwater recharge, and projected changes in monsoon precipitation under future climate scenarios.” (L 811-818)

13) Very importantly: change the title: "Assessing raindrop evaporation over northern Western Ghat from stable isotope signature of rain and vapour" or something equivalent. "Assessing raindrop evolution" sounds very strange... By the way is it Ghat or Ghats (as in many of your references)?

R-13: The title is revised as ‘**Assessing raindrop evaporation over northern Western Ghats from stable isotope signature of rain and vapour**’

Once these points have been addressed, the article can be accepted for final publication.

Kind regards

Franziska Aemisegger