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Interactive comment on "Effects of climatic seasonality on the isotopic composition of evaporating soil waters" *by* Paolo Benettin et al.

Anonymous Referee #1

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This article describes a modelling exercise to calculate the isotopic composition of evaporated soil water under seasonal varying isotopic composition of precipitation input and evaporation flux. In such the authors present a very insightful contribution to the difference between the real physical evaporation line and the trendline through the fractionated soil water compositions. The importance of this well structured and written paper is that it reminds the hydrological community on the physics of soil evaporation and shows that the intercept of this trendline on the LMWL is not the source of the soil water in real life hydrological cycle. This is only the case the evaporating source has a constant composition which is rarily the case in hydrological studies. However, the large seasonal variation in isotopic input and evaporation fluxes result in trendlines through soil water isotopic residuals having no information of the original source com-

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Discussion paper

position. The method and examples are elegantly simple and convincing. The paper has the correct length.

My only minor suggestions are that the title, intro and abstract could be formulated slightly stronger. Although I like the modesty with which the authors present it, they can be ‘more firm’ in the fact that soil water isotopic information has been used incorrectly. - For the title, maybe something more like: Soil isotopic composition through evaporation unveiled: the effect of etc.. Or: On the origin of soil water isotopic composition under seasonal isotopic input and evaporation

Second, I think the introduction (and the abstract equally) could be improved a little. It is a bit too ‘modest’. For example: L9 (abstract) write “thus they are often not the evaporation line.” Replace with: “we show these trendlines are not evaporation lines (under seasonal varying hydrological cycle).”

P2L13-P3L10: several time you write: "If...If....this should be valid if ....But what if the don’t?" But if you know something is incorrect then also write it like this. For example: "The erroneous interpretation of these trendlines as single-source evaporation lines, ..."

P3L5: I suggest to the authors to rephrase this objective: In my opinion you do not test something, you use numerical experiments to shed insight in the origin of fractionated soil water samples.

Lastly, the authors mention xylem water samples but as they neglect transpiration in their analysis (I agree) I think it is more correct to only talk of soil water samples.

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