

We thank the editor for the continued support of this manuscript and comments on the second revision, which we address in the point-by-point responses below (EC: Editor comment; AR: Authors' response).

EC-1: in L91 you write that soil moisture measurements are easy and cost-efficient. Which is true in comparison to detailed interception measurements. However, I would not say that soil moisture measurements are easy, once you want to derive interception from it. To achieve this, many soil moisture observations are needed plus a HYDRUS model, plus a complex data analysis. Hence I would downtune this statement.

AR: We feel that the sentence is accurate as written, as it only claims that, “*successful inference of interception from soil moisture time series may greatly expand the temporal and spatial domains of empirical interception measurements*” (emphasis added) and is followed by a sentence describing this work as a proof of concept for that proposition. Moreover, the fact that multiple moisture observations and additional analyses are required does not restrict the method's potential to expand the temporal and spatial domains of empirical interception measurements. However, we also understand the editor's concern about overselling the “ease” of the proposed method and have thus removed the sentence from the revised manuscript.

EC-2: What is the reasoning for using equation 1? Would it not be easier to use a simple linear equation, since to me the ($\Delta\theta$, P)-plots consist of 3 parts. 1) the part where the soil moisture is not responding to rainfall (i.e. filling of the interception storages + soil above sensor); 2) linear part where the soil moisture responds to infiltration (=rainfall-evaporation); 3) part where soil moisture does not further increase when rainfall continues (i.e. saturation). From part 2 you could derive f_{dt} and E_{dt} (or at least say something about the rates) and the interception of the linear line is P_s . Is this possible? To me this would make more sense (more related to the physics) than using an arbitrary exponential function...

AR: We have added a justification of the functional form of equation to the text on lines 119-125:

“We chose a reverse exponential function in Eq (1) to fit the observed $\Delta\theta$ -P relationship because it aligns well with observations and is physically representative of the typical infiltration behavior observed across most soil profiles (e.g., Horton 1941). While the data in Figure 2 suggest that other functional forms (e.g., a linear equation with thresholds at $\Delta\theta=0$ and $\Delta\theta_{max}$) could provide equivalent fidelity over the range of our observations, a constant slope would be inferior for describing the infiltration dynamics of the $\Delta\theta$ -P relationship more generally.”