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Interactive comment on "Soil moisture: variable in space but redundant in time" *by* Mirko Mälicke et al.

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We would like to thank Ryan Teuling for his helpful comment. His insights on temporal stability of soil water content are highly appreciated.

We admit that parts of the existing literature are not referenced in our work and we will happily review and include the given references from the short comment, wherever possible.

We agree that the review by Vanderlinden et al. (2012) should be given more visibility in our work. We will highlight the many previous studies, reviewed in Vanderlinden et al. that support our findings. However, Vanderlinden also states that the "the basic question about TS SWC [time stability of soil water content] and its controls remain

unanswered. Moreover, the evidence found in literature with respect to TS SWC controls remains contradictory." (Vanderlinden et al, 2012, p.2 l.2ff). We will stress that from our point of view the proposed method can contribute to a better understanding of if and how transitions in persistent soil moisture patterns are controlled by forcing. This is the more appropriate context to place Vanderlinden's work.

We acknowledge that a lot of work on rank stability of soil water content exists. We included only a few references on rank stability and accept that we might have to include some more references into our introduction. However, our work focuses on the methodology developed in this study. The combination of spatial dispersion functions with a clustering approach and the incorporation of uncertainty propagation into information theory to assess the loss of information is a novel approach. The calculation of information content with respect to propagated uncertainties would not be feasible using ranked data over the actual absolute values. We might have to stress this point more and the suggested references will be helpful to clarify where our method can contribute to the current understanding of soil moisture dynamics. We will therefore include a discussion of the studies by Teuling et al (2007), Mittelbach and Seneviratne (2012) and Albertson and Montaldo (2003) into our manuscript.

Albertson, J. and Montaldo, N.: Temporal dynamics of soil moisture variability: 1. Theoretical basis, Water Resour. Res., 39, 1274, doi:10.1029/2002WR001616, 2003.

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