

Interactive comment on “Hydropedological insights when considering catchment classification” by J. Bouma et al.

J. Bouma et al.

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Reaction to the Interactive Comment by H.J.Vogel on: “Hydropedological insights when considering catchment classification” by J.Bouma et al. HESSD 8, 684-689.

We thank dr.Vogel for his comments. Indeed, the paper being discussed is not so much a review paper but a discussion paper presented in the context of a symposium on catchment classification. The relevant points he raises inspired us to the following reactions:

1. The distinction between additive features such as evapotranspiration and non-linear features with clear thresholds is quite relevant. We have now specifically mentioned

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solute transport as a crucial feature of hydraulic catchment behavior.

2. Soil classifications can provide clues to the possible occurrence of lateral flow either at the soil surface or on top of slowly permeable subsurface soil horizons. This has not been explored in this paper, except for surface runoff in case 1 which is a function of surface texture and soil structure stability, the latter determining the formation of surface crusts. However, occurrence of e.g. slowly permeable subsurface argillic or spodic horizons may lead to substantial lateral subsurface flow that may even develop over time into channeling. Thresholds are important here as relatively low fluxes of water can be handled by the slowly permeable horizon and lateral flow will only occur when a threshold is exceeded. Such phenomena represent a large as yet unexplored area of research requiring functional characterization of field- soils with physical monitoring and measuring techniques that are applied being guided by the occurrence of soil horizons and soil morphological wetness features, such as iron mottling. Slowly permeable subsurface soil horizons do not occur in the presented case studies so we only added a general statement in agreement with Dr.Vogel's observation.

3. Dr.Vogel is correct in stating that our original paper appears to suggest that little research has been done in pedology after establishing classification systems and making soil surveys. This indeed is incorrect and we should have mentioned major work in pedometrics and digital soil mapping. We have included references now in the revised paper. However, not too many contributions have focused on what we now like to call the Hydropedological approach.

4. We fully agree with Dr.Vogel that mentioning hydropedological data, -properties, -features and -processes is not helpful and is unnecessarily complicating our already complex terminology. We should indeed talk about a "Hydropedological approach" and stick to the use of basic terms such as e.g. soil hydrological properties and soil hydromorphic features. We have scrutinized the manuscript and deleted the hydropedological derivatives.

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