Review comments to “Hillslope-scale experiment demonstrates roleof convergence during two-step saturation”

I can tell that the authors have made efforts to revise the manuscript based on review comments to the previous version, and I appreciate the improvement in the current version. However, I still have some comments, mainly in the discussion on the runoff mechanisms.

1. P.12 L.10-15: This is not clear to me. I don't see necessarily a conflict here. The gravitational flow rate, in this conceptual manner, is not determined by the lower storage deficit. It is only determined by the availability of water from the upper layer. If multiple layers are considered in such conceptual models, water can fill the tension water reservoirs from the top layer to the bottom layer, and then fill the free water reservoirs from bottom to top.
2. P.13 L.19-25: It is more likely due to the change of porosity with depth. One reason could be the bulk density increase with depth due to consolidation. Another reason may be fine particles being flushed down to fill pores in the lower layer. An increase of hydraulic conductivity with depth seems unlikely to occur in an originally uniform soil profile. Have you measured soil properties at various depths? It will be more helpful to discuss possible mechanisms based on measured data.
   Even though this observation is apparently unexpected, I don’t think the observation and any of the potential mechanisms go beyond the framework of the basic theory of vadose zone hydrology.
3. P.14 L.2: Any data to support this statement? It will be helpful to note here that the infiltration front is downward and the saturation front is upward.
4. P.14. L.6: It is not a surprise that the speed of saturation front was faster than the infiltration rate because the infiltration rate is measured over the entire surface but the saturation front moves in the pore space.
5. P.14. L.8-9: This expectation is based on the assumption that the total pore space is vertically constant. However, the observation does not support it. The observation suggests that the available pore space does not decrease upward, so that the total pore space decreases downward, which means the soil in the lower layer is more compacted. It supports my discussion in 2.
6. P. 16 L.15-16: I don't think this is a valid argument. When the tension saturation is reached, extra water from the top can still move downward to fill the free water reservoir and does not generate runoff unless the infiltration rate exceeds the soil infiltrability. This does not explain the early overland flow, but the lateral flow occurred at this time could be the mechanism.