

Interactive comment on “The benefits of gravimeter observations for modelling water storage changes at the field scale” by B. Creutzfeldt et al.

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The authors clearly point out the benefit of accurate gravity data (Superconducting & absolute gravity measurements for calibration) as an integral constraint on hydrological parameters, especially water storage changes. They present a simple, however, powerful model for modelling these gravity changes and demonstrate the close relation between gravity and water storage changes. The paper is a very interesting contribution to HESS.

Based on the good results the authors present in their paper, one could ask why grav-

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ity has not been integrated more frequently into hydrological monitoring. Therefore the authors should briefly address costs and maintenance of SC gravity meters. Today there are about 30 SC gravity meters in operation at geophysical-geodetic observatories only. Costs for instrument and maintenance exceed most probably the costs for a completely equipped classic hydrological monitoring field (say 10 boreholes, sensors for groundwater level, soil moisture, automated data acquisition, etc.).

Other remarks /questions are: – How is snow water equivalent derived from snow height? Has snow compaction been considered? – Is the hydrological model purely 1D (in vertical direction) or is horizontal transport also considered? – It would be very illustrative, if the authors would present one or more representative cross-sections showing the soil, saprolite, and groundwater layers.

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