



Groundwater modelling in conceptual hydrological models - introducing space

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The tiny Sæternbekken Minifelt (Muren) catchment (7500 m²) in Bærumsmarka, Norway, was during the 1990s, densely instrumented with more than a 100 observation points for measuring groundwater levels. The aim was to investigate the link between shallow groundwater dynamics and runoff. The DDD (Distance Distribution Dynamics) model is a newly developed rainfall-runoff model used operationally by the Norwegian Flood-Forecasting service at NVE. The model estimates the capacity of the subsurface reservoir at different levels of saturation and predicts overland flow. The subsurface in the DDD model has a 2-D representation that calculates the saturated and unsaturated soil moisture along a hillslope representing the entire catchment in question. The groundwater observations from more than two decades ago are used to verify assumptions of the subsurface reservoir in the DDD model and to validate its spatial representation of the subsurface reservoir. The Muren catchment will, during 2017, be re-instrumented in order to continue the work to bridge the gap between conceptual hydrological models, with typically single value or 0-dimension representation of the subsurface, and models with more realistic 2- or 3-dimension representation of the subsurface.