

- + *Implementation of surface routing with dynamically calculated roughness*: either use conserving (e.g. meadows) or non-conserving (e.g. conventional corn crops) land-use types or other types (e.g. forest) to parameterize k-modeling.  
The resulting k-values may not be realistic for extremely shallow flow sheets, especially in steep terrain and with low flow velocities. The iteration equations for calculating some parameters were heavily limited: if a parameter leaves the allowed range, it (or relation of parameters) is set to an allowed minimum or maximum. Flow directions will be calculated including multiple flow path for diverging areas. To use surface routing, a new section [surface\_routing] is added to the control file and some parameters must be added for each land-use code (otherwise default values are applied). The surface runoff, interflow and baseflow are then used from the surface routing instead of [unsatzon\_model] (however: [unsatzon\_model] will write results for those runoff components as well, with QD being not the real QD but the content of the surface storage). See documentation for further details.