

Parameter	Symbol	Formula	Comment
Interception	$I_{\max}$	$I_{\max, \text{forest}} > I_{\max, \text{grass}}, I_{\max, \text{shrubs}},$ $I_{\max, \text{cropland}}$ $I_{\max, \text{shrubs}} > I_{\max, \text{grass}}, I_{\max, \text{cropland}}$	Based on perception
Reservoir coefficient	$K_s, K_f$	$K_s > K_f$	Based on perception
Storage capacity in unsaturated zone	$S_{u, \max}$	$S_{R, y_i} = \int P_e - E_d dt$  with: $\frac{E_d}{E_a} = \frac{\text{NDVI}_D}{\text{NDVI}_A}$ thus: $E_d = E_a \cdot \frac{\text{NDVI}_D}{\text{NDVI}_A}$	Based on NDVI, equivalent to the root zone storage capacity (Gao et al., 2014b)  $S_{R, y_i}$ : required storage for year $i$ $P_e$ : effective rainfall over dry season $E_d$ : annual mean dry season evaporation, calculated assuming a linear relation between the evaporation and the NDVI $E_a$ : actual mean annual evaporation $\text{NDVI}_D$ : annual mean dry season NDVI $\text{NDVI}_A$ : annual mean actual NDVI Through a statistical analysis of $S_R$ using the Gumbel distribution, the storage capacity $S_{u, \max}$ with a return period of 20 years is calculated.
Reservoir coefficient for groundwater system	$K_s$	$Q_s = Q_{t=0} \cdot \exp\left(-\frac{t}{K_s}\right)$	Based on hydrograph recession analysis $Q_s$ : groundwater discharge
Maximum surface water storage	$S_{\max}$	–	Based on DEM, assuming $S_{\max}$ is equal to the sink volumes
Slope-roughness parameter	$c$	$Q = c \cdot A \cdot R^{\frac{2}{3}} = u \cdot A$ $u = c \cdot R^{\frac{2}{3}} \rightarrow c_{\text{calculated}} = \frac{u}{R^{\frac{2}{3}}}$ $c_{\text{calculated}, -25\% \text{ error}} < c < c_{\text{calculated}, +25\% \text{ error}}$	Based on Strickler formula, cross-section data and a single discharge and velocity measurement at Mines allowing a wide error margin of 25 %