ES	efektivní srážka
X	plocha buňky
Exf	exfiltrace
Inf	infiltrace
Per	propad spodem

Povrchový odtok

tokově: $\frac{V_{i,t}-V_{i,t-1}}{\triangle t} = ES_{i,t-1}X + Exf_{i,t-1}X + \sum_j^{inflows} Q_{j,t-1}^{in} - Q_{i,t-1}^{out} - Inf_{i.t-1}X$

$$\cdot\triangle t + V_{i,t-1}$$

oběmovně: $V_{i,t} = V_{i,t-1} + es_{i,t-1}X + exf_{i,t-1} + \sum_j^{inflows} V_{j,t-1}^{in} - V_{i,t-1}^{out} - inf_{i.t-1}X$

$$\cdot\frac{1}{X}$$

výškově: $H_{i,t} = H_{i,t-1} + es_{i,t-1} + exf_{i,t-1} + \sum_j^{inflows} H_{j,t-1}^{in} - H_{i,t-1}^{out} - inf_{i.t-1}$

$$q = aH^b; \quad a = xI^y; \quad A = \frac{a}{100N}; \quad H_{i,t-1}^{in,out} = A\frac{6\triangle t q_{i,t-1}}{L_i}$$

$$H_{i,t} = H_{i,t-1} + es_{i,t-1} + exf_{i,t-1} + \sum_j^{inflows} \frac{A6\triangle t}{L_j} q_{j,t-1}^{in} - \frac{A6\triangle t}{L_i} q_{i,t-1}^{out} - inf_{i.t-1}$$

$$\boxed{H_{i,t} = H_{i,t-1} + es_{i,t-1} + exf_{i,t-1} + \sum_j^{inflows} \frac{A6\triangle t}{L_j} a_j H_{j,t-1}^{b_j} - \frac{A6\triangle t}{L_i} a_i H_{i,t-1}^{b_i} - inf_{i.t-1}}$$

Podpovrchový odtok

intenzitně (L/t): $\frac{H_{i,t}-H_{i,t-1}}{\triangle t} = Inf_{i,t-1} + \sum_j^{inflows} q_{j,t-1}^{in} - q_{j,t-1}^{out} - Per_{i,t-1} - Exf_{i,t-1}$

$$\cdot\triangle t + V_{i,t-1}$$

výškově: $H_{i,t} = H_{i,t-1} + inf_{i,t-1} + \triangle t \sum_j^{inflows} q_{j,t-1}^{in} - \triangle t q_{j,t-1}^{out} - per_{i,t-1} - exf_{i,t-1}$

$$q = k_s\alpha; \quad \alpha = sklon(H + z)$$

$$\boxed{H_{i,t} = H_{i,t-1} + inf_{i,t-1} + \triangle t \sum_j^{inflows} k_s\alpha_{j,t-1} - \triangle t k_s\alpha_{i,t-1} - per_{i,t-1} - exf_{i,t-1}}$$

další

$$exf_{i,t-1} = max(0, H_{i,t-1} + inf_{i,t-1} + \triangle t \sum_{j}^{inflows} q_{j,t-1}^{in} - \triangle t q_{j,t-1}^{out} - per_{i,t-1} - L_{puda}),$$

kde L_{puda} je hloubka půdního profilu.

$$per_{i,t-1} = \begin{cases} 0 & \text{if } H_{i,t-1} = 0 \\ min(\triangle t K_{s,sub}, H_{sub,i,t-1}) & \text{if } H_{i,t-1} > 0 \end{cases}$$