

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

## Povrchový odtok

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

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

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

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

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

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

## Podpovrchový odtok

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

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

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

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

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

**další**

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

kde  $L_{puda}$  je hloubka půdního profilu.

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