

$$V_p(t) = \begin{cases} V_p(t-1) + Ro(t) - I(t) - E(t) + Rf(t) & \text{if } h < h_{max} \\ V_p(t) & \text{otherwise} \end{cases}$$

Where

t = time

V_p = volume of the puddle (m^3)

Ro = Run-off to+ the puddle (m^3)

I = infiltration (m^3)

E = evaporation (m^3)

Rf = rainfall (m^3)

h = depth of puddle (m)

h_{max} = maximum depth of puddle (m)