

Table 20.2 Equations used in the model describing interception, transpiration and soil moisture content.

Interception	$IC_i = P \cdot \min \left(\frac{IC_{\max,i}}{5} \cdot LAI_i, IC_{\max,i} \right)$	eq 1
Penman-Monteith	$LE = \frac{\Delta \cdot R_n + r_{c_p} de / r_a}{\Delta + g(1 + r_c / r_a)}$	eq 2
Aerodynamic resistance	$r_a = \frac{\ln[(Z + z - d)/z] \cdot \ln[(Z + z_m - d)/z_m]}{k^2 u_a}$	eq 3
Canopy resistance	$r_c = (g_s LAI)^{-1}$	eq 4
	with $g_s = \frac{R_g}{R_g + R_0} \cdot \frac{g_{\max}}{1 + ade}$	eq 5
pF curve	$q_l = b \sqrt[1]{\left(\frac{y_{field,l}}{y_l} \cdot q_{field,l}^b \right)}$	eq 6
	with $b = \ln \left(\frac{y_{field,l}}{0.375} \right) / \ln \left(\frac{0.557}{q_{field,l}} \right)$	eq 7

Parameters: a = constant in stomatal conductance equation (kPa⁻¹), b = constant in pF curve equation (-), c_p = specific heat of air at constant pressure (1005 J kg⁻¹ K⁻¹), d = zero plane displacement (0.64xheight, m), g_{max} = maximal stomatal conductance (m s⁻¹), IC_{max,i} = maximum intercepted fraction of rain by species i (-), k = Karman's constant (0.40), R₀ = constant in stomatal conductance equation (W m⁻²), γ = psychrometric constant (66 Pa K⁻¹), λ = latent heat of vaporisation of water (2465 J g⁻¹), ρ = density of dry air (1.2 kg m⁻³), θ_{field,l} = volumetric moisture content at field capacity in soil layer l (m³ m⁻³), ξ = roughness parameter (0.026 x height, m), ξ_m = roughness parameter (0.13 x height, m), Ψ_{field,l} = water potential at field capacity in soil layer l (10 J kg⁻¹)

Variables: g_s = stomatal conductance (m s⁻¹), IC_i = intercepted rain by species i (mm H₂O timestep⁻¹), LAI_i = leaf area index of species i (-), R_g = global radiation above stand (W m⁻²), R_n = net radiation above stand (W m⁻²), r_a = aerodynamic resistance (s m⁻¹), r_c = canopy resistance (s m⁻¹), u_a = windspeed at reference height (m s⁻¹), Z = reference height (m), Δ = temperature derivative of saturated vapor pressure function (Pa K⁻¹), δe = vapor pressure deficit (Pa), θ_l = volumetric moisture content in soil layer l (m³ m⁻³), Ψ_l = water potential in soil layer l (J kg⁻¹).