

Parameter	Description and unit	min estimate	optimized/set mid estimate	max estimate
c_1^a	empirical coefficient 1 (see Eq. 3) (–)		–4.298	
c_2^a	empirical coefficient 2 (see Eq. 3) (–)		0.3295	
c_3^a	empirical coefficient 3 (see Eq. 3) (–)		–0.07757	
ae_scale_factor ^a	scaling factor for actual evapotranspiration (–)		1.43	
tx ^a	temperature threshold rain/snow (°C)		–0.92	
wind_const ^a	determining wind profile (–)		6.32	
wind_scale ^a	determining wind profile (–)		1.12	
snowfall_reset_depth	minimum snowfall required to reset A_s (mm SWE)		5.0	
snow_cv_forest	snow CV in forested area (–)		0.17	
snow_cv_intercept	intercept of linear elevation–CV relation (–)		–0.05	
snow_cv_slope	slope of linear elevation–CV relation (m^{-1})		0.00056	
max_water	fractional max water content of snow (–)		0.10	
$A_{s,0}$	A_s of fresh snowfall ($m^2 kg^{-1}$)		73.0	
surface_magnitude	maximum snow depth for snow heat content (mm SWE)		30.0	
max_surface_layer ^b	maximum thickness of surface layer (mm SWE)	16.0	8.0	4.0
depo_factor ^b	multiplication factor for deposition (–)	0.5	1.0	1.5
k_{phob}^b	scavenging ratio of hydrophobic BC (–)	0.3	0.03	0.003
k_{phil}^b	scavenging ratio of hydrophilic BC (–)	2.0	0.2	0.02