

Table 4. Best-performing parameter sets on Case 1 (best fit on RMSE), Case 2 (balancing climate dependence of model error with RMSE) and Case 3 (reducing climate dependence of model error). Soil layer 1 extends from 0-10 cm; layer 2 extends from 11-40 cm, and layer 3 extends from 41 cm to 6 m.

Parameter	Soil layer	Case 1 parameters	Case 2 parameters	Case 3 parameters
K_{sat} (cm/hr)	1	63	82	58
	2	96	26	5
	3	2.6	10	27
θ_{res}	1	0.10	0.03	0.10
	2	0.07	0.03	0.04
	3	0.07	0.10	0.10
α (m ⁻¹)	1	0.54	5.0	1.5
	2	4.4	5.1	3.1
	3	2.4	3.4	4.1
Lower boundary condition (°C)	-	1.7	1.0	0.6