

SUPPLEMENTARY MATERTIAL

Assessing digital soil inventories for predicting streamflow in the headwaters of the Blue Nile

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Table S1: Calibrated parameters, their range and fitted values for the streamflow simulations using ADSWE, AfSIS and FAO in the Rib and Gomit watersheds. See Table 4 for the parameters descriptions. PVISSP means parameter values including sensitive soil parameters and PVESSP means parameter values excluding sensitive soil parameters. ADSWE, AfSIS, and FAO refer Amhara Design and Supervision Works Enterprise, Africa Soil Information Service, and Food and Agricultural Organization soil databases, respectively.

Parameters	Min value	Max value	Rib						Gomit					
			ADSWE		AFSIS		FAO		ADSWE		AFSIS		FAO	
			PVISSP	PVESSP	PVISSP	PVESSP	PVISSP	PVESSP	PVISSP	PVESSP	PVISSP	PVESSP	PVISSP	PVESSP
¹ a_GW_DELAY	-30	60	11.8	11.8	4.5	4.5	-7.0	4.0	45.3	47.7	-25.2	6.6	50.6	59.1
² v_GW_REVAP	-0.04	0.2	0.18	0.18	0.12	0.12	0.12	0.17	0.11	0.11	0.16	0.19	0.05	0.12
³ r_CN2	-0.15	0.15	0.01	0.01	-0.07	-0.07	-0.03	-0.03	-0.14	-0.14	-0.14	-0.14	-0.14	-0.15
a_GWQMN	-1000	1000	990	990	543	543	543	317	285	291	-81	459	721	-51
v_RCHRG_DP	0	1	-0.01	-0.01	0.42	0.42	0.42	0.36	0.34	0.00	0.55	0.64	0.37	0.58
v_ESCO	0	1	0.34	0.34	0.51	0.51	0.44	0.24	0.04	0.10	0.15	0.12	0.32	0.41
v_ALPHA_BNK	0	1	0.41	0.41	0.05	0.05	0.50	0.22	0.04	0.19	0.37	0.19	0.71	0.45
v_ALPHA_BF_D	0	1	0.47	0.46	0.00	0.00	0.00	0.01	0.31	0.08	0.43	0.05	0.13	0.02
a_CANMX	0	5	4.53	4.53	4.6	4.6	0.6	2.2	3.2	4.9	4.3	8.6	0.9	5.0
v_BIOMIX	0	1	0.04	0.05	0.39	0.49	0.39	0.42	0.86	0.59	0.40	0.37	0.13	0.55
r_SOL_AWC	-0.2	0.2	0.05	-	0.07	-	0.07	-	0.06	-	-0.11	-	0.18	-
r_SOL_Z	-0.15	0.15	0.004	-	0.04	-	0.04	-	-0.01	-	0.02	-	-0.11	-
r_SOL_K	-0.15	0.15	-0.04	-	-0.02	-	-0.02	-	-0.05	-	-0.15	-	-0.11	-
r_SOL_ALB	-0.2	0.2	-0.17	-	-0.03	-	-0.03	-	0.10	-	0.17	-	-0.10	-

¹a__ means a given value is added to the existing parameter value, ²v__ means the existing parameter value is to be replaced by a given value, ³r__ means an existing parameter value is multiplied by (1+ a given value),