

Supplementary Materials: Testing the SWAT Model with Gridded Weather Data of Different Spatial Resolutions

Youen Grusson, François Anctil, Sabine Sauvage and José Miguel Sánchez Pérez

Table S1. Calibrated parameters for all gauging stations and the three calibrated scenarios.

<i>St Beat</i> Parameters	Calibration Range		Calibrated with		
	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.097	-0.044	-0.083
V_ALPHA_BF.gw	0	1	0.928	0.044	0.196
A_GW_DELAY.gw	-30	60	55.830	29.910	22.230
A_GWQMN.gw	-500	500	266.333	437.667	343.667
V_ESCO.hru	0.5	0.95	0.657	0.646	0.684
V_GW_REVAP.gw	0.02	0.2	0.118	0.133	0.059
A_RCHRG_DP.gw	-0.04	0.04	-0.012	0.009	0.018
R_SOL_AWC(..).sol	-0.05	0.05	-0.022	-0.037	0.028
A_REVAPMN.gw	-500	500	493.667	349.667	409.000
V_CANMX.hru	0	30	0.230	2.610	14.070
V_PLAPS.sub	0	500	253.900	492.600	47.833
V_TLAPS.sub	-2	-6	-5.607	-2.009	-5.868
V_SFTMP.sno	-2	2	1.703	0.279	1.623
V_SMTMP.sno	-2	2	1.961	0.703	1.145
V_SMFMX.sno	2	6	4.345	2.727	3.873
V_SMFMN.sno	2	6	2.988	4.911	2.977
V_TIMP.sno	0	1	0.490	0.472	0.116
<i>Valentine</i> Parameters	Calibration Range		Calibrated with		
	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.066	-0.030	-0.070
V_ALPHA_BF.gw	0	1	0.052	0.024	0.182
A_GW_DELAY.gw	-30	60	12.510	40.350	46.890
A_GWQMN.gw	-500	500	-143.667	467.667	476.333
V_ESCO.hru	0.5	0.95	0.722	0.532	0.566
V_GW_REVAP.gw	0.02	0.2	0.200	0.130	0.184
A_RCHRG_DP.gw	-0.04	0.04	-0.027	-0.010	0.025
R_SOL_AWC(..).sol	-0.05	0.05	-0.003	-0.002	0.013
A_REVAPMN.gw	-500	500	181.000	368.333	367.000
V_CANMX.hru	0	30	20.530	3.190	8.610
V_PLAPS.sub	0	500	2.833	75.833	21.833
V_TLAPS.sub	-2	-6	-5.316	-2.788	-3.887
V_SFTMP.sno	-2	2	0.343	-1.599	1.047
V_SMTMP.sno	-2	2	1.260	1.353	-0.575
V_SMFMX.sno	2	6	2.689	2.015	2.508
V_SMFMN.sno	2	6	4.697	5.521	2.423
V_TIMP.sno	0	1	0.542	0.581	0.604
<i>Roquefort</i> Parameters	Calibration Range		Calibrated with		
	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.060	-0.052	-0.095
V_ALPHA_BF.gw	0	1	0.065	0.170	0.028
A_GW_DELAY.gw	-30	60	16.170	11.190	8.310
A_GWQMN.gw	-500	500	464.333	-449.000	-414.333
V_ESCO.hru	0.5	0.95	0.861	0.613	0.765
V_GW_REVAP.gw	0.02	0.2	0.108	0.121	0.040
A_RCHRG_DP.gw	-0.04	0.04	-0.019	-0.037	-0.001
R_SOL_AWC(..).sol	-0.05	0.05	0.034	-0.047	0.044
V_REVAPMN.gw	-500	500	-403.667	355.000	-405.000

V_CANMX.hru	0	30	4.690	0.310	0.670
V_PLAPS.sub	0	500	8.100	161.800	368.833
V_TLAPS.sub	-2	-6	-5.919	-5.407	-5.748
V_SFTMP.sno	-2	2	1.372	1.852	1.473
V_SMTMP.sno	-2	2	0.761	0.871	1.369
V_SMFMX.sno	2	6	4.511	2.369	2.151
V_SMFMN.sno	2	6	2.287	5.463	3.772
V_TIMP.sno	0	1	0.283	0.812	0.036
Foix					
	Calibration Range		Calibrated with		
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.098	-0.077	-0.099
V_ALPHA_BF.gw	0	1	0.070	0.058	0.194
A_GW_DELAY.gw	-30	60	6.150	59.130	25.950
A_GWQMN.gw	-500	500	57.000	-26.333	-402.333
V_ESCO.hru	0.5	0.95	0.680	0.629	0.595
V_GW_REVAP.gw	0.02	0.2	0.052	0.108	0.025
A_RCHRG_DP.gw	-0.04	0.04	-0.008	-0.010	-0.033
R_SOL_AWC(.).sol	-0.05	0.05	-0.042	-0.017	-0.020
V_REVAPMN.gw	-500	500	245.667	-30.333	-276.333
V_CANMX.hru	0	30	26.330	7.530	26.470
V_PLAPS.sub	0	500	47.100	102.200	329.167
V_TLAPS.sub	-2	-6	-5.705	-4.143	-5.716
V_SFTMP.sno	-2	2	-0.700	1.839	1.244
V_SMTMP.sno	-2	2	1.684	1.828	-1.169
V_SMFMX.sno	2	6	2.319	2.343	4.036
V_SMFMN.sno	2	6	5.764	2.236	2.055
V_TIMP.sno	0	1	0.149	0.538	0.453
Auterive					
	Calibration Range		Calibrated with		
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.063	-0.079	-0.089
V_ALPHA_BF.gw	0	1	0.773	0.240	0.962
A_GW_DELAY.gw	-30	60	-22.470	26.070	21.090
A_GWQMN.gw	-500	500	-32.333	273.000	-419.667
V_ESCO.hru	0.5	0.95	0.524	0.842	0.876
V_GW_REVAP.gw	0.02	0.2	0.049	0.025	0.031
A_RCHRG_DP.gw	-0.04	0.04	0.007	0.020	-0.008
R_SOL_AWC(.).sol	-0.05	0.05	0.014	-0.036	0.030
A_REVAPMN.gw	-500	500	-328.333	31.667	-67.667
V_CANMX.hru	0	30	27.510	19.670	22.810
Portet					
	Calibration range		Calibrated with CLC2006		
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.097	-0.071	-0.089
V_ALPHA_BF.gw	0	1	0.468	0.021	0.855
A_GW_DELAY.gw	-30	60	2.670	-13.830	-21.930
A_GWQMN.gw	-500	500	-55.667	-197.000	477.000
V_ESCO.hru	0.5	0.95	0.783	0.871	0.653
V_GW_REVAP.gw	0.02	0.2	0.035	0.072	0.159
A_RCHRG_DP.gw	-0.04	0.04	0.023	-0.007	-0.022
R_SOL_AWC(.).sol	-0.05	0.05	0.007	0.003	0.021
A_REVAPMN.gw	-500	500	479.667	-1.667	-259.000
V_CANMX.hru	0	30	24.610	29.430	26.210
Larra					
	Calibration Range		Calibrated with		
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.010	-0.040	0.069
V_ALPHA_BF.gw	0	1	0.001	0.894	0.639
A_GW_DELAY.gw	-30	60	-5.970	59.490	59.070
A_GWQMN.gw	-500	500	23.667	-77.667	295.000
V_ESCO.hru	0.5	0.95	0.544	0.717	0.727

V_GW_REVAP.gw	0.02	0.2	0.196	0.028	0.160
A_RCHRГ_DP.gw	-0.04	0.04	0.008	0.013	-0.026
R_SOL_AWC(..).sol	-0.05	0.05	0.029	0.046	0.004
V_REVAPMN.gw	-500	500	103.000	449.667	481.000
V_CANMX.hru	0	30	15.510	28.250	10.710
Verdun					
	Calibration Range		Calibrated with		
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.039	-0.014	-0.094
V_ALPHA_BF.gw	0	1	0.637	0.444	0.485
A_GW_DELAY.gw	-30	60	-20.550	-27.330	-19.650
A_GWQMN.gw	-500	500	483.000	-43.667	-267.667
V_ESCO.hru	0.5	0.95	0.540	0.717	0.689
V_GW_REVAP.gw	0.02	0.2	0.034	0.062	0.059
A_RCHRГ_DP.gw	-0.04	0.04	0.008	0.033	0.007
R_SOL_AWC(..).sol	-0.05	0.05	0.030	0.009	-0.013
V_REVAPMN.gw	-500	500	431.667	-303.667	-259.000
V_CANMX.hru	0	30	22.950	22.650	6.890
R_GW_SPYLD.gw	0	0.4	0.030	0.168	0.265
R_GWHT.gw	0	25	8.192	0.308	9.392
Millau					
	Calibration Range		Calibrated with		
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.100	-0.024	-0.057
V_ALPHA_BF.gw	0	1	0.936	0.066	0.586
A_GW_DELAY.gw	-30	60	19.410	-24.030	23.970
A_GWQMN.gw	-500	500	96.333	139.000	233.667
V_ESCO.hru	0.5	0.95	0.614	0.827	0.866
V_GW_REVAP.gw	0.02	0.2	0.169	0.146	0.120
A_RCHRГ_DP.gw	-0.04	0.04	-0.035	0.038	0.008
R_SOL_AWC(..).sol	-0.05	0.05	0.034	-0.016	0.025
V_REVAPMN.gw	-500	500	300.333	-282.333	291.667
V_CANMX.hru	0	30	1.990	1.830	0.010
V_PLAPS.sub	0	500	160.900	490.833	242.500
V_TLAPS.sub	-2	-6	-3.487	-3.719	-5.625
V_SFTMP.sno	-2	2	0.124	1.847	-0.807
V_SMTMP.sno	-2	2	1.553	-0.812	1.593
V_SMFMX.sno	2	6	4.356	5.503	4.836
V_SMFMN.sno	2	6	4.596	5.527	5.606667
V_TIMP.sno	0	1	0.372	0.418	0.530
Marsal					
	Calibration Range		Calibrated with		
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.042	-0.097	-0.027
V_ALPHA_BF.gw	0	1	0.128	0.331	0.011
A_GW_DELAY.gw	-30	60	42.150	24.210	-26.790
A_GWQMN.gw	-500	500	313.667	-112.333	-167.667
V_ESCO.hru	0.5	0.95	0.880	0.938	0.916
V_GW_REVAP.gw	0.02	0.2	0.022	0.028	0.127
A_RCHRГ_DP.gw	-0.04	0.04	0.003	0.019	-0.016
R_SOL_AWC(..).sol	-0.05	0.05	0.002	0.028	-0.047
V_REVAPMN.gw	-500	500	206.333	-126.333	-97.000
V_CANMX.hru	0	30	29.010	29.150	9.170
V_GW_SPYLD.gw	0	0.4	0.346	0.140	0.339
V_GWHT.gw	0	25	14.842	10.908	21.242
Villemure					
	Calibration range		Calibrated with		
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.051	-0.032	0.008
V_ALPHA_BF.gw	0	1	0.779	0.482	0.530
A_GW_DELAY.gw	-30	60	26.070	37.650	-11.250
A_GWQMN.gw	-500	500	-239.667	-342.333	-431.000

V_ESCO.hru	0.5	0.95	0.811	0.562	0.935
V_GW_REVAP.gw	0.02	0.2	0.128	0.196	0.088
A_RCHRG_DP.gw	-0.04	0.04	-0.006	-0.039	0.034
V_REVAPMN.gw	-500	500	365.000	-452.333	243.667
V_CANMX.hru	0	30	22.530	4.010	0.070
R_GW_SPYLD.gw	0	0.4	0.134	0.044	0.203
V_PLAPS.sub	0	500	431.833	161.500	162.833
V_TLAPS.sub	-2	-6	-5.441	-4.161	-5.329
V_SFTMP.sno	-2	2	-0.001	0.404	1.929
V_SMTMP.sno	-2	2	1.255	1.887	0.599
V_SMFMX.sno	2	6	3.620	2.089	2.708
V_SMFMN.sno	2	6	2.479	3.761	2.292
V_TIMP.sno	0	1	0.122	0.256	0.249
Villefranche					
Parameters		Calibration Range		Calibrated with	
	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.038	-0.067	-0.076
V_ALPHA_BF.gw	0	1	0.004	0.284	0.298
A_GW_DELAY.gw	-30	60	42.750	-24.090	-24.030
A_GWQMN.gw	-500	500	-310.333	183.667	141.667
V_ESCO.hru	0.5	0.95	0.719	0.541	0.875
V_GW_REVAP.gw	0.02	0.2	0.189	0.125	0.175
A_RCHRG_DP.gw	-0.04	0.04	0.008	0.021	0.031
R_SOL_AWC(..).sol	-0.05	0.05	-0.021	0.021	0.049
A_REVAPMN.gw	-500	500	-193.667	-91.667	159.000
V_CANMX.hru	0	30	17.950	24.650	6.750
Laguepie					
Parameters		Calibration Range		Calibrated with	
	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.067	-0.074	-0.031
V_ALPHA_BF.gw	0	1	0.800	0.992	0.998
A_GW_DELAY.gw	-30	60	-11.430	48.210	56.190
A_GWQMN.gw	-500	500	-77.000	489.000	-155.667
V_ESCO.hru	0.5	0.95	0.544	0.677	0.620
V_GW_REVAP.gw	0.02	0.2	0.050	0.112	0.127
A_RCHRG_DP.gw	-0.04	0.04	0.025	-0.002	-0.010
R_SOL_AWC(..).sol	-0.05	0.05	0.047	-0.012	0.032
A_REVAPMN.gw	-500	500	399.667	235.000	161.000
V_CANMX.hru	0	30	16.170	10.310	16.570
Loubejac					
Parameters		Calibration Range		Calibrated with	
	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.063	0.050	0.061
V_ALPHA_BF.gw	0	1	0.910	0.959	0.248
A_GW_DELAY.gw	-30	60	-23.670	7.050	-9.390
A_GWQMN.gw	-500	500	93.000	312.333	425.000
V_ESCO.hru	0.5	0.95	0.938	0.616	0.749
V_GW_REVAP.gw	0.02	0.2	0.194	0.057	0.066
A_RCHRG_DP.gw	-0.04	0.04	0.006	0.032	-0.007
R_SOL_AWC(..).sol	-0.05	0.05	-0.031	0.028	0.041
V_REVAPMN.gw	-500	500	-450.333	1.000	-328.333
V_CANMX.hru	0	30	9.150	11.370	5.190
R_GW_SPYLD.gw	0	0.4	0.078	0.080	0.359
R_GWHT.gw	0	25	23.942	7.675	9.492
Lamagistere					
Parameters		Calibration Range		Calibrated with	
	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.073	-0.048	-0.098
V_ALPHA_BF.gw	0	1	0.788	0.345	0.970
A_GW_DELAY.gw	-30	60	-22.770	-23.190	-24.090
A_GWQMN.gw	-500	500	-130.333	181.667	-308.333
V_ESCO.hru	0.5	0.95	0.580	0.931	0.820

V_GW_REVAP.gw	0.02	0.2	0.199	0.072	0.056
A_RCHRГ_DP.gw	-0.04	0.04	-0.026	0.007	0.003
R_SOL_AWC(..).sol	-0.05	0.05	0.017	-0.019	-0.007
V_REVAPMN.gw	-500	500	231.667	-443.000	191.000
V_CANMX.hru	0	30	6.450	13.650	20.250
Sarrans					
	Calibration Range			Calibrated with	
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.009	-0.011	0.094
V_ALPHA_BF.gw	0	1	0.142	0.566	0.841
A_GW_DELAY.gw	-30	60	32.250	-4.530	3.810
A_GWQMN.gw	-500	500	265.000	91.667	484.333
V_ESCO.hru	0.5	0.95	0.502	0.526	0.644
V_GW_REVAP.gw	0.02	0.2	0.194	0.169	0.022
A_RCHRГ_DP.gw	-0.04	0.04	-0.015	-0.014	0.026
R_SOL_AWC(..).sol	-0.05	0.05	0.000	0.002	-0.020
V_REVAPMN.gw	-500	500	-67.000	-136.333	-219.000
V_CANMX.hru	0	30	0.770	0.970	1.190
V_PLAPS.sub	0	500	138.500	365.500	41.500
V_TLAPS.sub	-2	-6	-4.516	-5.207	-3.479
V_SFTMP.sno	-2	2	-1.836	1.657	0.804
V_SMTMP.sno	-2	2	1.927	1.385	1.012
V_SFMX.sno	2	6	3.897	5.377	2.281
V_SFMN.sno	2	6	3.092	4.001	2.313
V_TIMP.sno	0	1	0.999	0.346	0.173
R_GW_SPYLD.gw	0	0.4	0.304	0.206	0.332
TruyAmont					
	Calibration Range			Calibrated with	
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.088	-0.075	-0.096
V_ALPHA_BF.gw	0	1	0.095	0.942	0.066
A_GW_DELAY.gw	-30	60	44.070	51.270	36.030
A_GWQMN.gw	-500	500	288.333	355.000	-109.000
V_ESCO.hru	0.5	0.95	0.519	0.749	0.552
V_GW_REVAP.gw	0.02	0.2	0.192	0.199	0.101
A_RCHRГ_DP.gw	-0.04	0.04	0.024	-0.021	-0.025
V_REVAPMN.gw	-500	500	426.333	243.667	139.000
V_CANMX.hru	0	30	3.610	1.370	0.770
V_PLAPS.sub	0	500	260.833	43.167	410.833
V_TLAPS.sub	-2	-6	-4.340	-2.708	-4.473
V_SFTMP.sno	-2	2	0.855	-0.791	-1.441
V_SMTMP.sno	-2	2	1.343	-0.719	-1.201
V_SFMX.sno	2	6	5.081	4.625	5.953
V_SFMN.sno	2	6	5.868	4.532	2.220
V_TIMP.sno	0	1	0.214	0.265	0.518
V_GW_SPYLD.gw	0	0.4	0.341	0.343	0.145
TruyAval					
	Calibration Range			Calibrated with	
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km
R_CN2.mgt	-0.1	0.1	-0.09	-0.093	-0.057
V_ALPHA_BF.gw	0	1	0.14	0.074	0.106
A_GW_DELAY.gw	-30	60	-14.13	-19.950	-21.870
A_GWQMN.gw	-500	500	351.00	189.667	-385.667
V_ESCO.hru	0.5	0.95	0.59	0.847	0.560
V_GW_REVAP.gw	0.02	0.2	0.19	0.147	0.150
A_RCHRГ_DP.gw	-0.04	0.04	-0.02	0.006	-0.017
R_SOL_AWC(..).sol	-0.05	0.05	0.03	-0.032	-0.042
V_REVAPMN.gw	-500	500	-106.33	-468.333	428.333
V_CANMX.hru	0	30	21.09	26.690	27.010
V_GW_SPYLD.gw	0	0	0.04	0.234	0.015
V_GWHT.gw	0	25	14.21	22.125	10.842

<i>Cahors</i>		Calibration Range			Calibrated with	
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km	
R_CN2.mgt	-0.1	0.1	-0.006	-0.077	-0.077	
V_ALPHA_BF.gw	0	1	0.131	0.156	0.453	
A_GW_DELAY.gw	-30	60	-29.010	-28.650	-24.390	
A_GWQMN.gw	-500	500	-64.333	387.667	-115.667	
V_ESCO.hru	0.5	0.95	0.857	0.518	0.927	
V_GW_REVAP.gw	0.02	0.2	0.078	0.193	0.167	
A_RCHRG_DP.gw	-0.04	0.04	-0.025	0.016	-0.010	
R_SOL_AWC(..).sol	-0.05	0.05	-0.020	-0.046	0.024	
V_REVAPMN.gw	-500	500	450.333	260.333	179.000	
V_CANMX.hru	0	30	28.470	27.310	9.170	
V_GW_SPYLD.gw	0	0.4	0.234	0.066	0.199	
<i>Nerac</i>		Calibration Range			Calibrated with	
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km	
R_CN2.mgt	-0.1	0.1	-0.081	0.023	-0.006	
V_ALPHA_BF.gw	0	1	0.552	0.584	0.844	
A_GW_DELAY.gw	-30	60	37.110	24.090	47.430	
A_GWQMN.gw	-500	500	-201.000	-466.333	411.000	
V_ESCO.hru	0.5	0.95	0.912	0.753	0.655	
V_GW_REVAP.gw	0.02	0.2	0.182	0.042	0.032	
A_RCHRG_DP.gw	-0.04	0.04	-0.012	0.024	-0.006	
R_SOL_AWC(..).sol	-0.05	0.05	0.006	0.010	-0.006	
A_REVAPMN.gw	-500	500	-131.000	164.333	-296.333	
V_CANMX.hru	0	30	18.510	22.270	17.690	
<i>Tonneins</i>		Calibration Range			Calibrated with	
Parameters	Min	Max	Standard Stations	SAFRAN 8 km	SAFRAN 32 km	
R_CN2.mgt	-0.1	0.1	-0.073	-0.078	-0.062	
V_ALPHA_BF.gw	0	1	0.518	0.509	0.016	
A_GW_DELAY.gw	-30	60	12.030	-27.750	10.170	
A_GWQMN.gw	-500	500	134.333	49.667	167.667	
V_ESCO.hru	0.5	0.95	0.530	0.886	0.639	
V_GW_REVAP.gw	0.02	0.2	0.178	0.145	0.023	
A_RCHRG_DP.gw	-0.04	0.04	0.026	-0.039	-0.030	
V_REVAPMN.gw	-500	500	81.000	-116.333	460.333	
R_GW_SPYLD.gw	0	0.4	0.012	0.326	0.199	
R_GWHT.gw	0	25	14.808	7.642	0.675	