

Supplementary material article
**“Sentinel-2 and Sentinel-1 Bare Soil Temporal Mosaics of
6-year Periods for Soil Organic Carbon Content Mapping in Central France”**

Table S1. Supplementary material

Soil moisture products (SMPs) derived from S1/S2 between February and May 2017-2021.

S2 Acquisition Date (d _{s2}) (year/month/day)	SMPs Date (d _{sm}) (year/month/day)	Days d _{s2} - d _{sm}	Soil Moisture (vol.%)			
			Min	\bar{x}	Max	SD
20170327	20170327	0	0.4	15.13	30.6	7.7
20170409	20170408	1	0.2	10.8	29.4	7.35
20180225	20180226	1	0.6	12.1	29.2	4
20180421	20180421	0	0.2	13.3	28.8	7.5
20180504	20180503	1	0.2	12.4	29.4	6.4
20190215	20190212	3	0.2	22.3	29.6	3.4
20190225	20190224	1	0.2	13.3	28.8	7.5
20190401	20190401	0	0.2	11.5	29	5.7
20190411	20190410	1	0.2	13.8	29.2	7
20190419	20190419/20 ^a	0	0.2	9.3	28.6	5.8
20190514	20190514/13 ^a	0	0.2	15	29	8.1
20200319	20200321	2	0.2	18.1	28.6	5.3
20200324	20200323	1	2	18.8	29.2	5.7
20200326	20200327	1	0.2	13.1	28.6	5.6
20200405	20200404	1	0.4	13	28.6	6.15
20200410	20200410	0	0.2	11.1	28	5.6
20200415	20200414	1	0.2	11.8	28.4	6.6
20200423	20200422	1	0.2	8.7	28.2	5.6
20200520	20200520	0	0.2	15.3	28.8	8.8
20200528	20200528	0	0.2	15	30.4	9.8
20210224	20210222	2	2.4	26.5	31	2.1
20210227	20210226	1	18.2	30	37.2	3
20210301	20210303	2	0.4	17.5	29.4	5
20210306	20210306	0	0.8	15.8	29.4	5.5
20210324	20210323	1	0.4	15.9	28.6	6.16
20210329	20210329	0	0.2	14.8	28.6	6.6
20210423	20210423	0	0.2	7.8	28.4	5
20210425	20210426	1	0.2	7.8	28.4	4.8

^aSMP was a mosaic of two different dates. The images highlighted in blue ($\bar{x} \geq 20\text{vol.}\%$) were not considered to obtain S2Bsoil_0, S2Bsoil_1 and S2Bsoil_2.

Table S2. Supplementary material

Soil moisture products (SMPs) derived from S1/S2 between July and November 2016-2021.

S2 Acquisition Date (d _{s2}) (year/month/day)	SMPs Date (d _{sm}) (year/month/day)	Days d _{s2} - d _{sm}	Soil Moisture (vol.%)			
			Min	\bar{x}	Max	SD
20160812	20160811	1	0.2	15,2	29.8	6.3
20160822	20160823	1	0.8	15,6	30.4	5.8
20161130	20161127	3	2.6	26	30.6	2.9
20170822	20170824	2	0.2	15,4	30.6	6.1
20170827	20170824	3	0.2	15,4	30.6	6.1
20170829	20170830	1	0.6	24,5	30.8	4.2
20170921	20170923	2	1.8	18	31	5.6
20171016	20171017	1	0.4	16,9	30	6.3
20171107	20171104	3	2	23	31.2	5.2
20180725	20180720	5	0.4	14,7	30.4	6.8
20180804	20180801	3	1.6	13,4	30.2	6.6
20180819	20180819	0	0.2	13,9	30.2	6
20180901	20180831	1	1.2	13,8	30.6	6
20180911	20180912	1	2	13	30.4	5.4
20180926	20180930	4	0.2	11,6	28.6	4.9
20181008	20181006	2	1.2	12,3	30.2	5.2
20181018	20181018	0	0.4	12,1	29.4	5.2
20181021	20181024	3	0.2	12	30	5.4
20181225	20181223	2	2.6	27,5	31	1.4
20190723	20190721	2	0.2	11,7	29.2	7.1
20190725	20190725	0	0.2	10,5	28.8	9
20190906	20190907	1	0.2	12,4	29.4	5.7
20190916	20190916	0	0.2	11,9	29.6	5.6
20190918	20190919	1	0.6	12,1	29	5.3
20190921	20190919	2	0.6	12,1	29	5.3
20200722	20200719	3	0.2	12,6	28.8	8.5
20200727	20200724	3	0.2	13	30.6	7.4
20200806	20200805	1	0.6	13,2	30.6	7.2
20200915	20200917	2	0.8	13,7	28.8	5.5
20200917	20200917	0	0.8	13,7	28.8	5.5
20200922	20200922	0	0.8	12	29.6	5.6
20201104	20201103	1	18.8	31,2	38.4	3.2
20201106	20201106	0	2	20	31.4	4.7
20201121	20201122	1	0.2	21	28.6	4.1
20210719	20210719	0	0.8	15,5	31.2	6.6
20210722	20210722	0	0.6	15,7	31.2	6.5
20210902	20210902	0	1.6	15,8	29.4	5.4
20210907	20210907	0	0.6	18	28.6	5.4
20210922	20210923	1	1.8	20,2	31.4	5.9
20211022	20211023	1	18.8	28	37.8	3.8
20211109	20211110	1	0.2	20	30.8	4.4
20211129	20211129	0	0.2	18,6	28.6	3.6
20211221	20211222	1	1.2	20,9	28.4	3.6

The images highlighted in blue ($\bar{x} \geq 20\text{vol.}\%$) were not considered to obtain S2Bsoil_0, S2Bsoil_1 and S2Bsoil_2.

Table S3. Supplementary material

Sentinel-2 imagery and percentage of bare soil between February and May 2017-2021.

	S2 Acquisition Date (year/month/day)	number of bare soil pixels	Bare soil pixels (%)
1	20170327	2206062	28,5
2	20170409	1535143	19,8
3	20180225	2459774	31,8
4	20180421	1233166	15,9
5	20180504	1295620	16,7
6	20190225	3815710	49,3
7	20190401	2064454	26,7
8	20190411	1576575	20,4
9	20190419	1489898	19,2
10	20190514	1362221	17,6
11	20200319	1819914	23,5
12	20200324	1968727	25,4
13	20200326	2260217	29,2
14	20200405	2215266	28,6
15	20200410	2088088	27,0
16	20200415	2014895	26,0
17	20200423	1655253	21,4
18	20200520	1292335	16,7
19	20200528	779879	10,1
20	20210301	2461543	31,8
21	20210306	2372825	30,7
22	20210324	1773662	22,9
23	20210329	1754860	22,7
24	20210423	1512342	19,5
25	20210425	1491054	19,3

Table S4. Supplementary material

Sentinel-2 imagery and percentage of bare soil between July and November 2016-2021.

	S2 Acquisition Date (year/month/day)	number of bare soil pixels	Bare soil pixels (%)
1	20160812	2139160	27,6
2	20160822	3210660	41,5
3	20170822	2792977	36,1
4	20170827	2307958	29,8
5	20170921	2234418	28,9
6	20171016	2995449	38,7
7	20180725	1748347	22,6
8	20180804	3418456	44,2
9	20180819	4029990	52,1
10	20180901	4685783	60,5
11	20180911	4677533	60,4
12	20180926	5116533	66,1
13	20181008	4610693	59,6
14	20181018	5145886	66,5
15	20181021	5118788	66,1
16	20190723	482202	6,2
17	20190725	563092	7,3
18	20190906	4188705	54,1
19	20190916	4202362	54,3
20	20190918	4538944	58,6
21	20190921	4241709	54,8
22	20200722	1267751	16,4
23	20200727	1943647	25,1
24	20200806	2701928	34,9
25	20200915	3334918	43,1
26	20200917	4894517	63,2
27	20200922	4992960	64,5
28	20210719	486412	6,3
29	20210722	588435	7,6
30	20210902	3869188	50,0
31	20210907	4044489	52,2
32	20211129	2101360	27,1

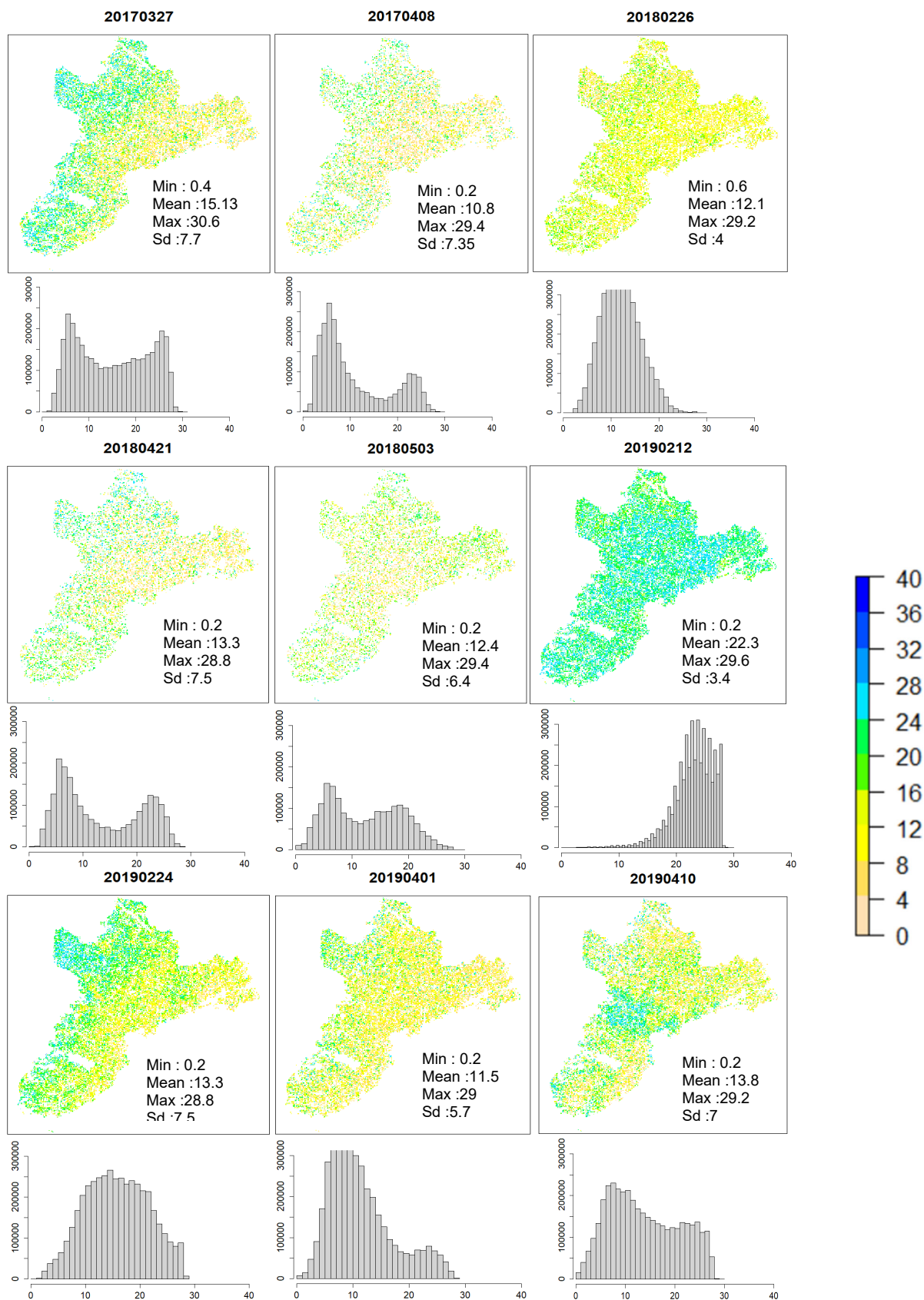


Figure S1. Supplementary material

Soil moisture products and their respective histograms between February and May 2017-2021. (values are in vol.%)

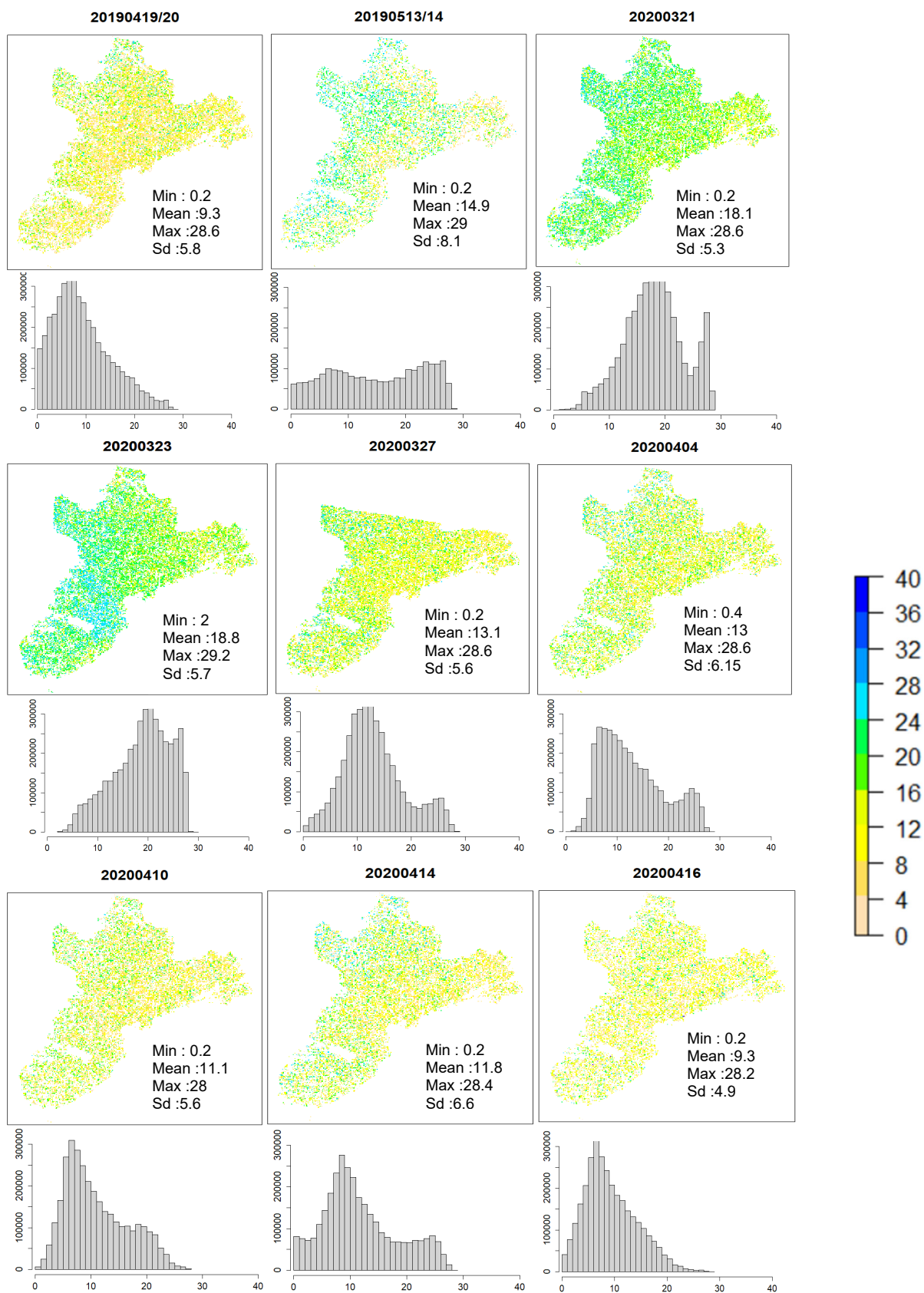


Figure S1. continued

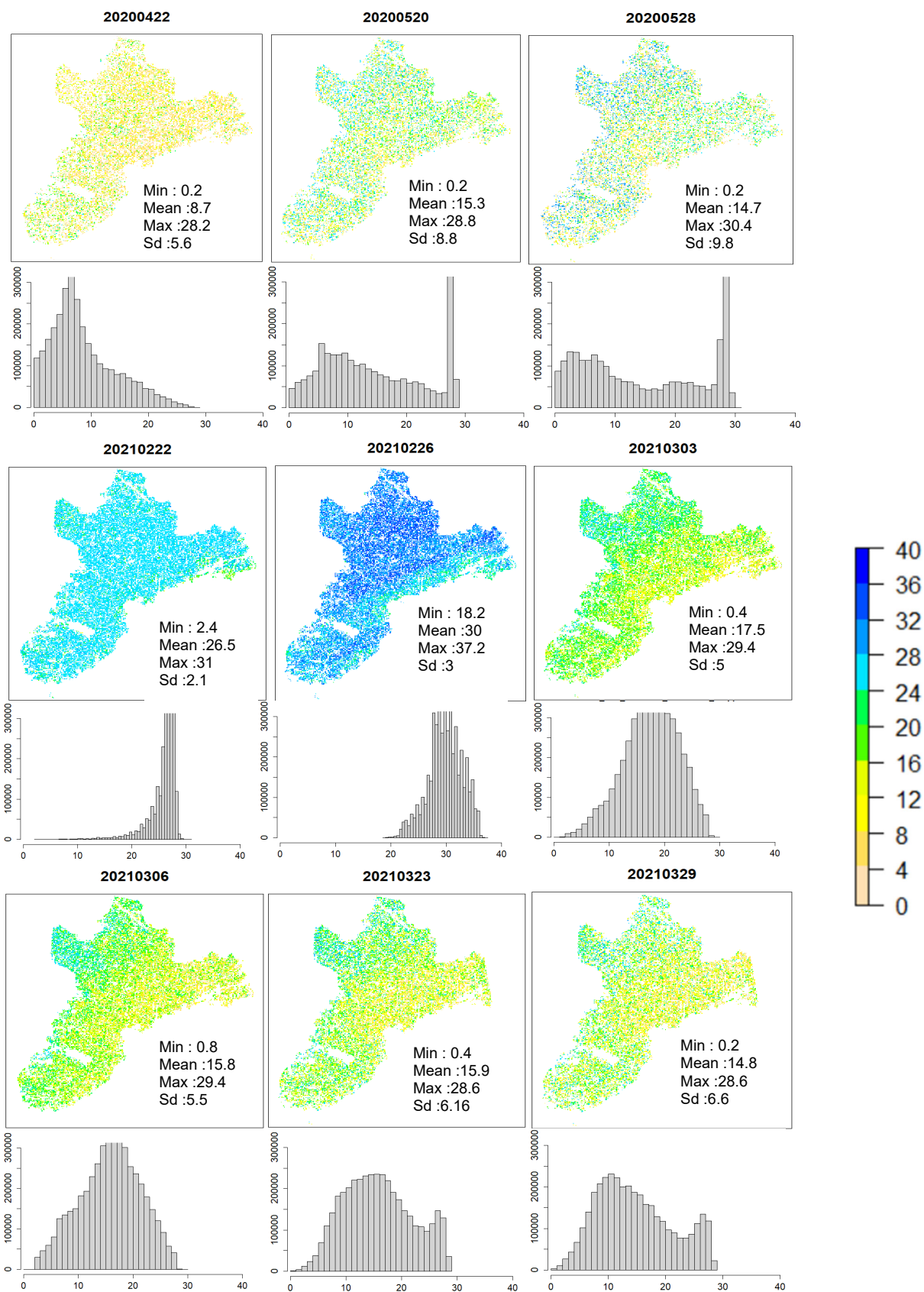


Figure S1. continued

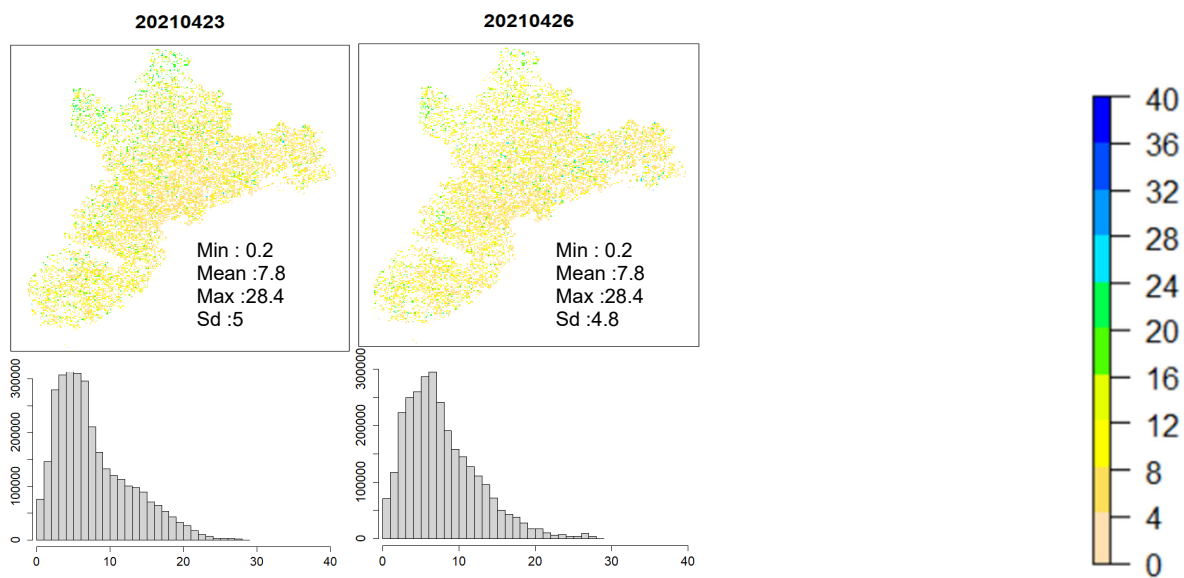


Figure S1. continued

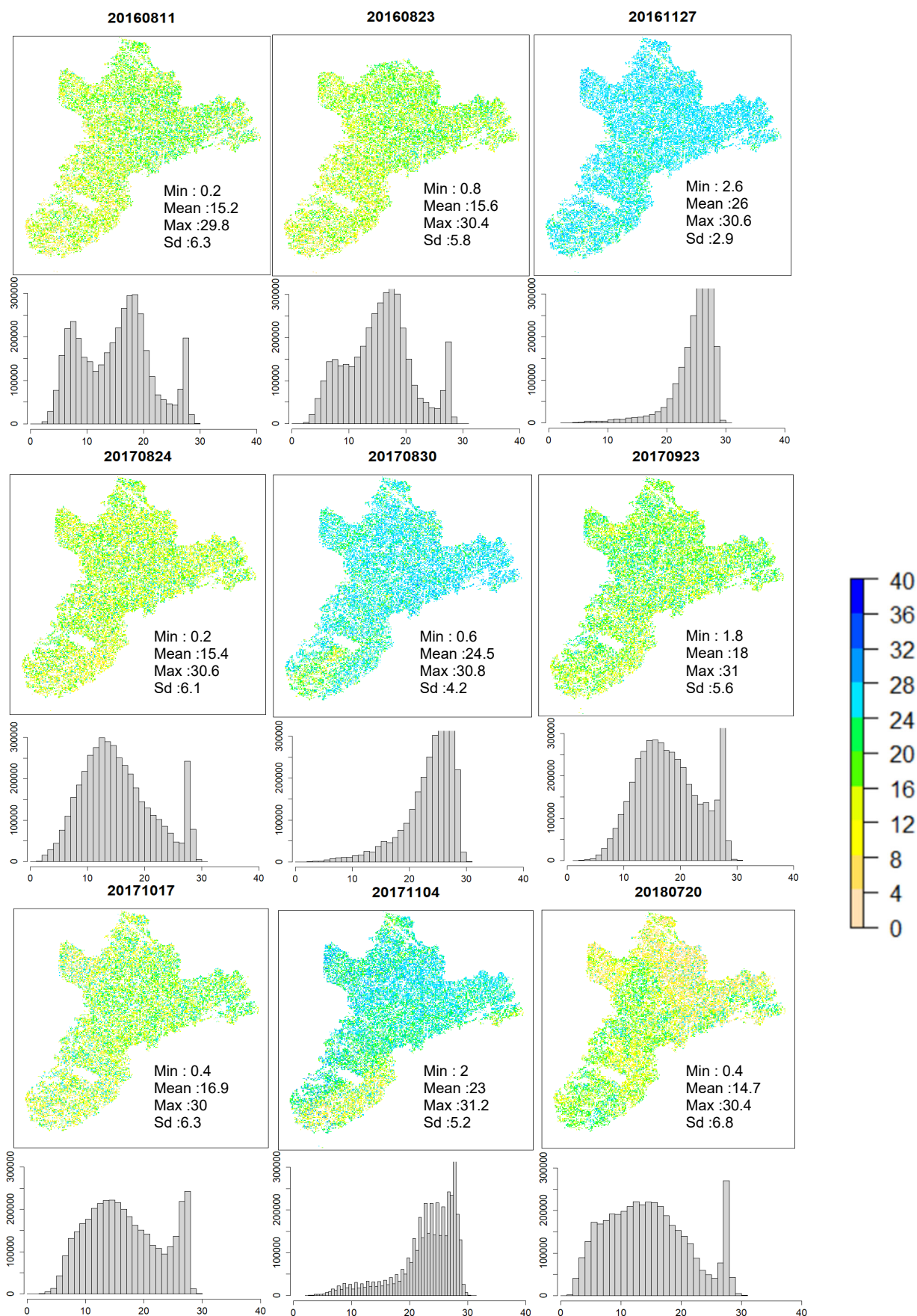


Figure S2. Supplementary material

Soil moisture products and their respective histograms between July and November 2016-2021.(values are in vol.%)

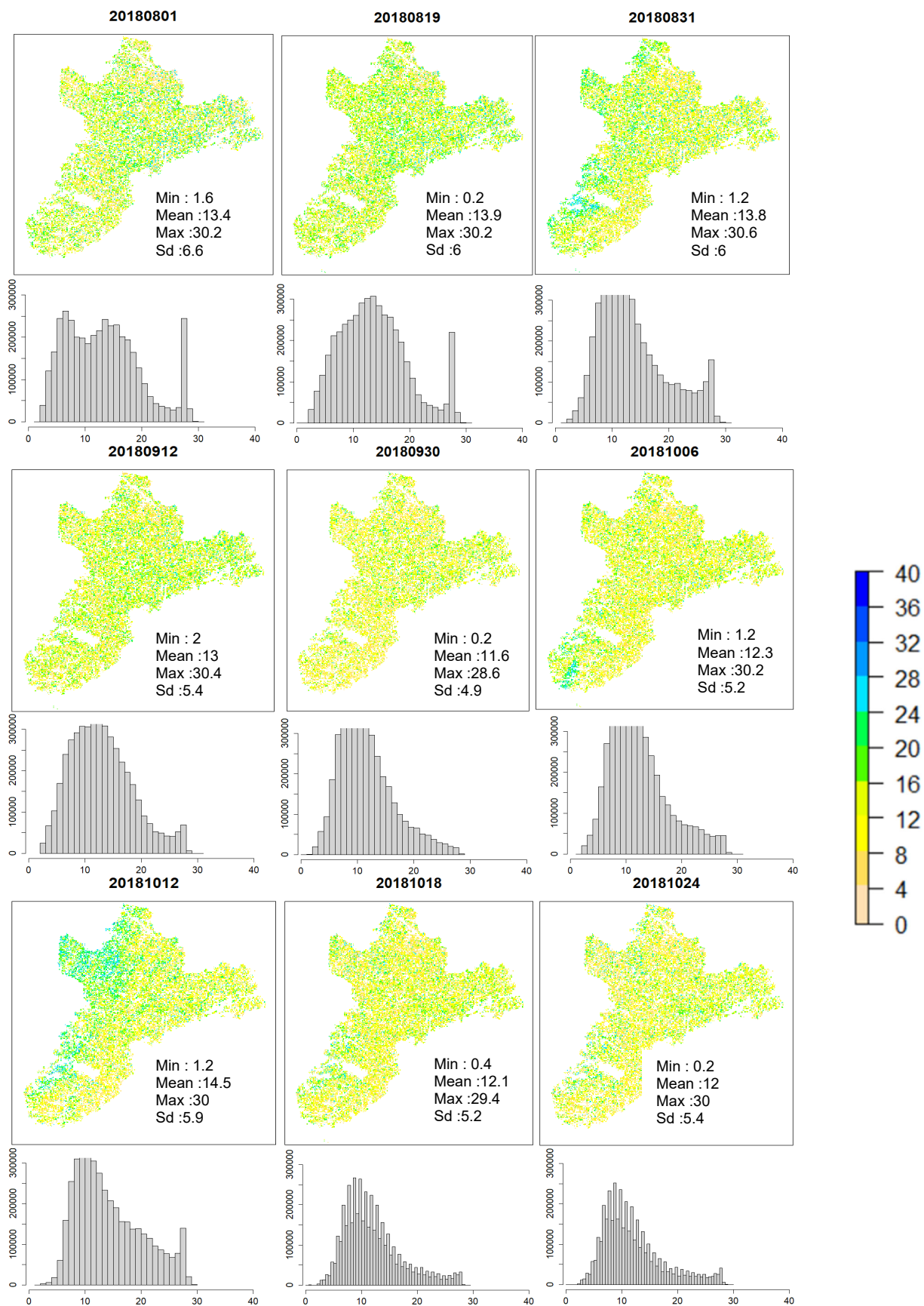


Figure S2. continued

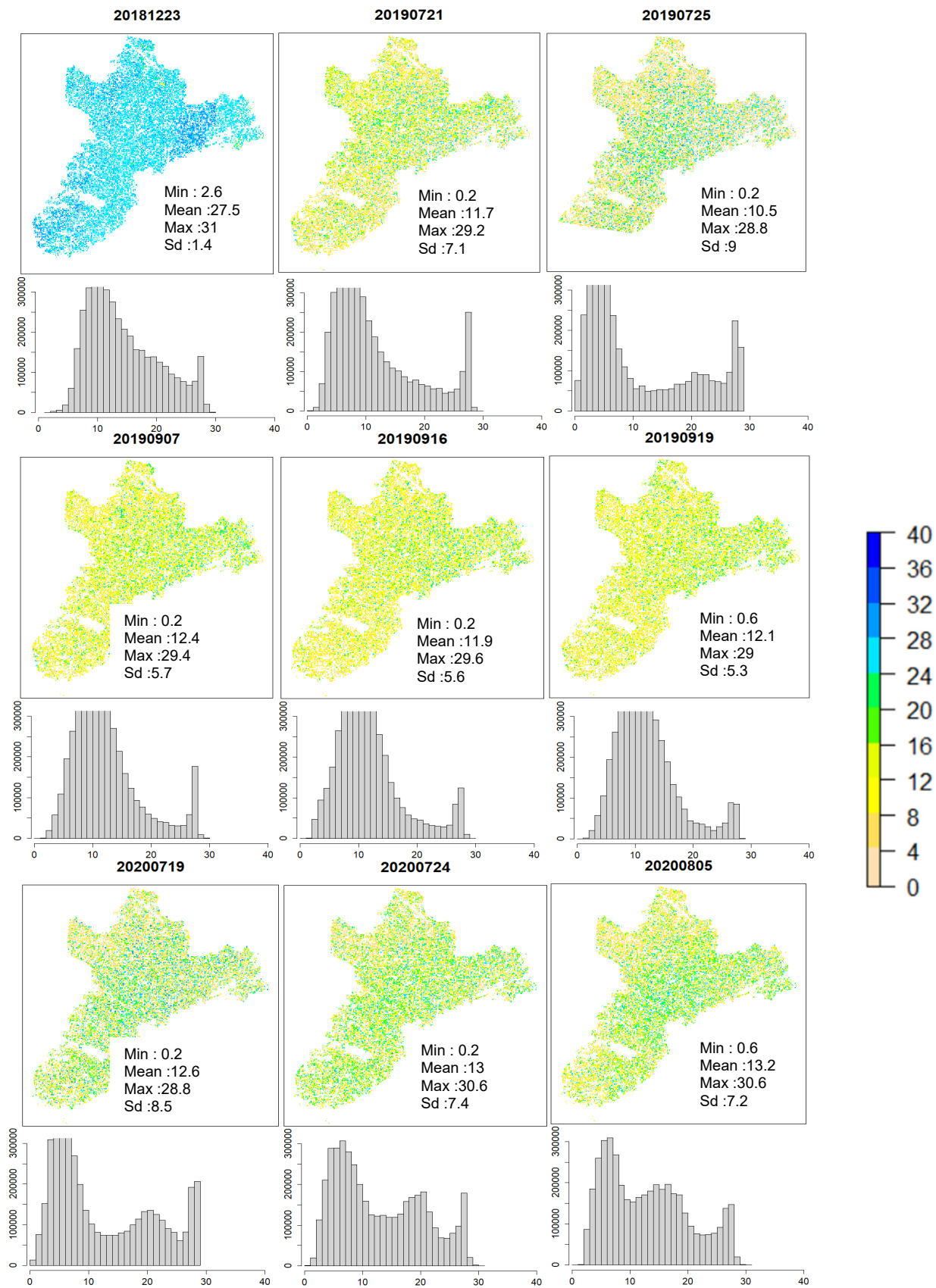


Figure S2. continued

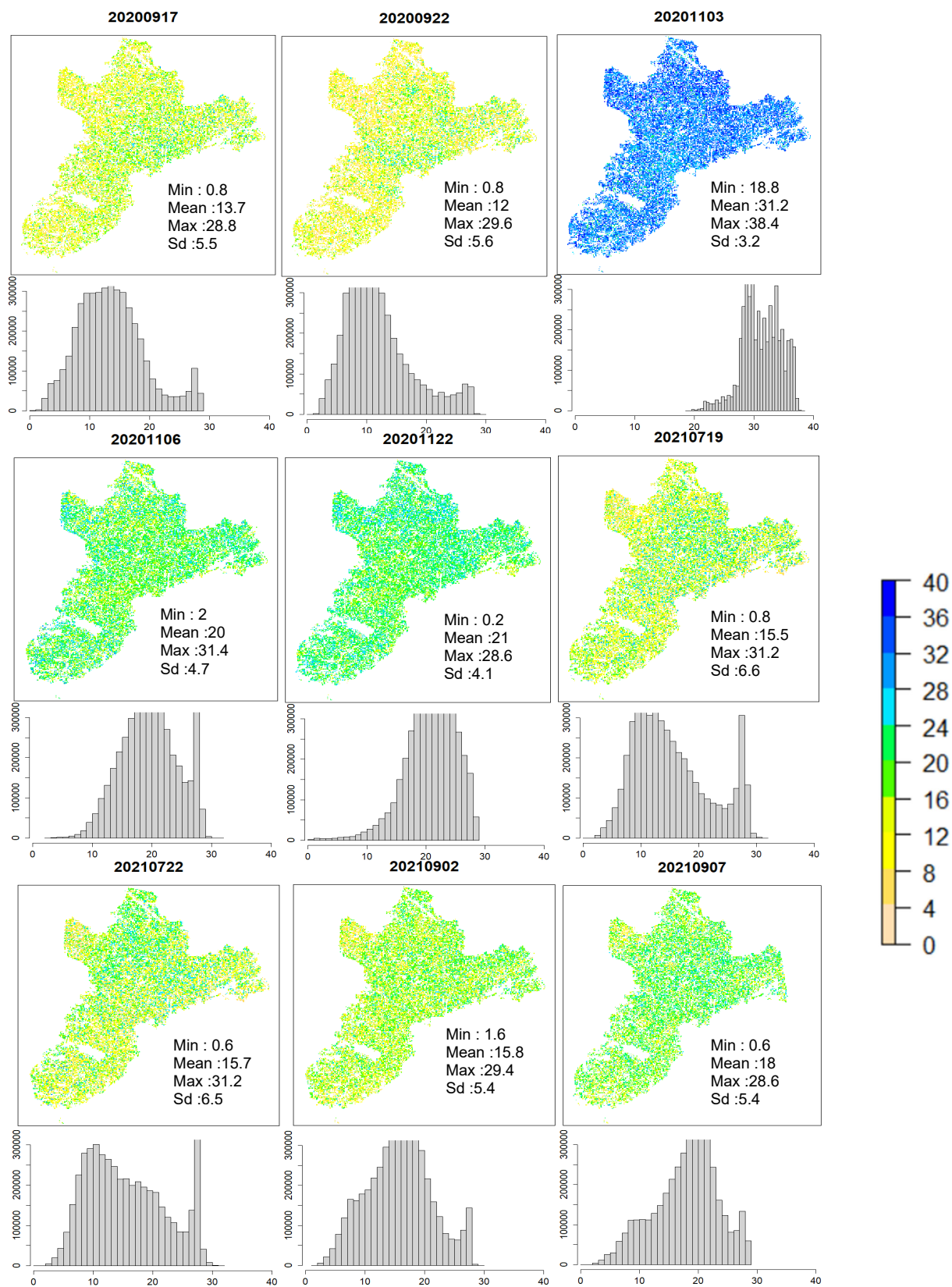


Figure S2. continued

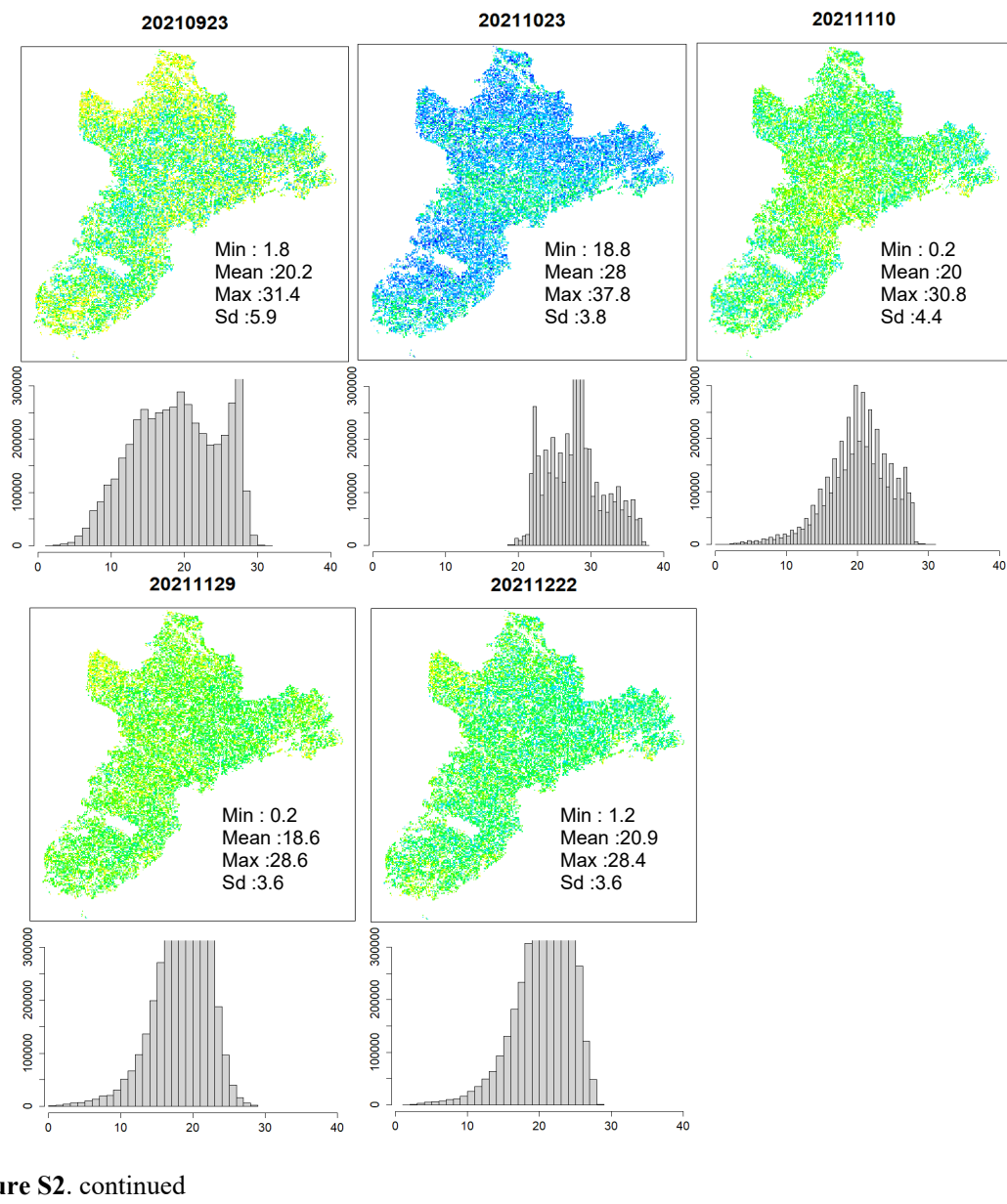


Figure S2. continued

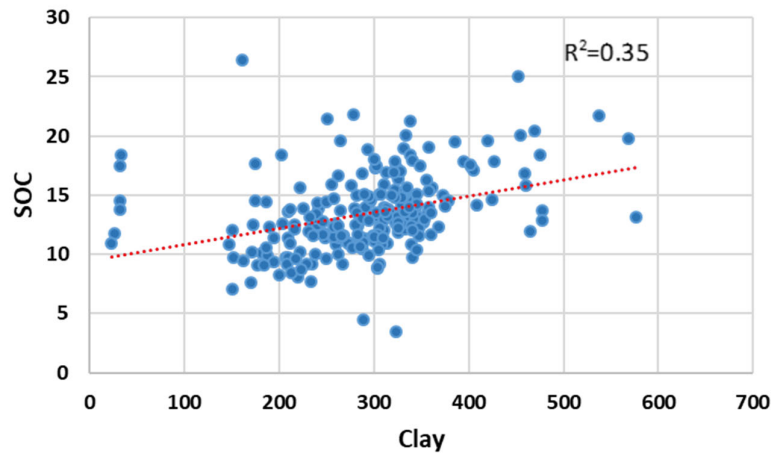


Figure S3. Relationship between SOC and clay from sampling locations in Beauce