

Supplementary Materials

Table S1. Metadata for all utilized Landsat 8 images.

#	Season	Date	Scene ID	% Cloud
1	Dry Hot	1/16/14	LC80170502014016LGN01	43.73
2	Dry Hot	2/1/14	LC80170502014032LGN01	70.73
3	Dry Hot	2/17/14	LC80170502014048LGN01	68.36
4	Dry Hot	3/5/14	LC80170502014064LGN01	37.13
5	Dry Hot	3/21/14	LC80170502014080LGN01	38.12
6	Dry Hot	4/6/14	LC80170502014096LGN01	26.99
7	Dry Hot	4/22/14	LC80170502014112LGN01	33.13
8	Dry Hot	1/19/15	LC80170502015019LGN01	23.4
9	Dry Hot	2/4/15	LC80170502015035LGN01	28.31
10	Dry Hot	3/8/15	LC80170502015067LGN01	76.65
11	Dry Hot	4/9/15	LC80170502015099LGN01	62.9
12	Dry Hot	4/25/15	LC80170502015115LGN01	16.38
13	Dry Hot	1/22/16	LC80170502016022LGN01	10.79
14	Dry Hot	2/23/16	LC80170502016054LGN01	54.8
15	Dry Hot	3/26/16	LC80170502016086LGN01	68.72
16	Dry Hot	4/11/16	LC80170502016102LGN01	77.08
17	Dry Hot	1/8/17	LC80170502017008LGN01	69.66
18	Dry Hot	1/24/17	LC80170502017024LGN01	3.51
19	Dry Hot	2/9/17	LC80170502017040LGN00	59.27
20	Dry Hot	2/25/17	LC80170502017056LGN00	3.69
21	Dry Hot	3/13/17	LC80170502017072LGN00	44.3
22	Dry Hot	3/29/17	LC80170502017088LGN00	50.29
23	Dry Hot	4/14/17	LC80170502017104LGN00	34.66
24	Dry Hot	1/16/14	LC80170512014016LGN01	3.8
25	Dry Hot	2/1/14	LC80170512014032LGN01	37.55
26	Dry Hot	2/17/14	LC80170512014048LGN01	28.76
27	Dry Hot	3/5/14	LC80170512014064LGN01	31.97
28	Dry Hot	3/21/14	LC80170512014080LGN01	9.58
29	Dry Hot	4/6/14	LC80170512014096LGN01	23.33
30	Dry Hot	4/22/14	LC80170512014112LGN01	21.75
31	Dry Hot	1/3/15	LC80170512015003LGN01	56.54
32	Dry Hot	1/19/15	LC80170512015019LGN01	14.22
33	Dry Hot	2/4/15	LC80170512015035LGN01	15.55
34	Dry Hot	2/20/15	LC80170512015051LGN01	29.36

35	Dry Hot	3/8/15	LC80170512015067LGN01	33.78
36	Dry Hot	3/24/15	LC80170512015083LGN01	26.71
37	Dry Hot	4/9/15	LC80170512015099LGN01	43.19
38	Dry Hot	4/25/15	LC80170512015115LGN01	49.85
39	Dry Hot	1/6/16	LC80170512016006LGN01	38.43
40	Dry Hot	1/22/16	LC80170512016022LGN01	17.87
41	Dry Hot	2/7/16	LC80170512016038LGN01	41.62
42	Dry Hot	2/23/16	LC80170512016054LGN01	32.63
43	Dry Hot	3/10/16	LC80170512016070LGN01	68.86
44	Dry Hot	3/26/16	LC80170512016086LGN01	27.06
45	Dry Hot	4/11/16	LC80170512016102LGN01	51.56
46	Dry Hot	1/8/17	LC80170512017008LGN01	23.63
47	Dry Hot	1/24/17	LC80170512017024LGN01	21.07
48	Dry Hot	2/9/17	LC80170512017040LGN00	27.67
49	Dry Hot	2/25/17	LC80170512017056LGN00	8.73
50	Dry Hot	3/13/17	LC80170512017072LGN00	16.56
51	Dry Hot	3/29/17	LC80170512017088LGN00	51.63
52	Dry Hot	4/14/17	LC80170512017104LGN00	41.96
53	Rainy	5/8/14	LC80170502014128LGN01	79.66
54	Rainy	5/24/14	LC80170502014144LGN01	70.84
55	Rainy	6/9/14	LC80170502014160LGN01	45.91
56	Rainy	6/25/14	LC80170502014176LGN01	66.56
57	Rainy	7/11/14	LC80170502014192LGN01	65.16
58	Rainy	7/27/14	LC80170502014208LGN01	67.55
59	Rainy	8/12/14	LC80170502014224LGN01	62.98
60	Rainy	8/28/14	LC80170502014240LGN01	63.79
61	Rainy	9/29/14	LC80170502014272LGN01	29.34
62	Rainy	5/27/15	LC80170502015147LGN01	39.36
63	Rainy	7/14/15	LC80170502015195LGN01	74.09
64	Rainy	9/16/15	LC80170502015259LGN01	41.98
65	Rainy	10/2/15	LC80170502015275LGN01	34.73
66	Rainy	10/18/15	LC80170502015291LGN01	42.58
67	Rainy	5/13/16	LC80170502016134LGN01	46.7
68	Rainy	5/29/16	LC80170502016150LGN01	36.17
69	Rainy	6/14/16	LC80170502016166LGN01	23.15
70	Rainy	6/30/16	LC80170502016182LGN01	79.93
71	Rainy	7/16/16	LC80170502016198LGN01	42.17
72	Rainy	8/1/16	LC80170502016214LGN01	50.99
73	Rainy	8/17/16	LC80170502016230LGN01	72.75

74	Rainy	9/2/16	LC80170502016246LGN01	75.9
75	Rainy	9/18/16	LC80170502016262LGN01	42.07
76	Rainy	10/4/16	LC80170502016278LGN01	8.25
77	Rainy	5/16/17	LC80170502017136LGN00	30.99
78	Rainy	6/17/17	LC80170502017168LGN00	67.13
79	Rainy	7/19/17	LC80170502017200LGN00	49.61
80	Rainy	9/5/17	LC80170502017248LGN00	36
81	Rainy	9/21/17	LC80170502017264LGN00	37.38
82	Rainy	10/23/17	LC80170502017296LGN00	59.24
83	Rainy	5/8/14	LC80170512014128LGN01	48.85
84	Rainy	5/24/14	LC80170512014144LGN01	41.54
85	Rainy	6/9/14	LC80170512014160LGN01	44.63
86	Rainy	6/25/14	LC80170512014176LGN01	48.42
87	Rainy	7/11/14	LC80170512014192LGN01	28.87
88	Rainy	7/27/14	LC80170512014208LGN01	63.88
89	Rainy	8/28/14	LC80170512014240LGN01	70.25
90	Rainy	9/13/14	LC80170512014256LGN01	63.53
91	Rainy	9/29/14	LC80170512014272LGN01	22.54
92	Rainy	5/11/15	LC80170512015131LGN01	41.62
93	Rainy	5/27/15	LC80170512015147LGN01	65.65
94	Rainy	6/12/15	LC80170512015163LGN01	42.95
95	Rainy	6/28/15	LC80170512015179LGN01	67.16
96	Rainy	7/30/15	LC80170512015211LGN01	70.97
97	Rainy	8/31/15	LC80170512015243LGN01	41.62
98	Rainy	9/16/15	LC80170512015259LGN01	27.83
99	Rainy	10/2/15	LC80170512015275LGN01	20.28
100	Rainy	5/13/16	LC80170512016134LGN01	54.04
101	Rainy	5/29/16	LC80170512016150LGN01	73.51
102	Rainy	6/14/16	LC80170512016166LGN01	15.68
103	Rainy	6/30/16	LC80170512016182LGN01	70.43
104	Rainy	7/16/16	LC80170512016198LGN01	54.02
105	Rainy	8/1/16	LC80170512016214LGN01	25.54
106	Rainy	8/17/16	LC80170512016230LGN01	62.4
107	Rainy	9/18/16	LC80170512016262LGN01	40.95
108	Rainy	10/4/16	LC80170512016278LGN01	39.15
109	Rainy	6/1/17	LC80170512017152LGN00	53.33
110	Rainy	7/3/17	LC80170512017184LGN00	71.07
111	Rainy	7/19/17	LC80170512017200LGN00	52.13
112	Rainy	8/4/17	LC80170512017216LGN00	51.05

113	Rainy	8/20/17	LC80170512017232LGN00	60.41
114	Rainy	9/5/17	LC80170512017248LGN00	25.68
115	Rainy	9/21/17	LC80170512017264LGN00	49.72
116	Rainy	10/23/17	LC80170512017296LGN00	40.86
117	Dry Cool	11/16/14	LC80170502014320LGN01	70.43
118	Dry Cool	12/2/14	LC80170502014336LGN01	70.43
119	Dry Cool	12/18/14	LC80170502014352LGN01	4.29
120	Dry Cool	11/3/15	LC80170502015307LGN01	23.67
121	Dry Cool	12/21/15	LC80170502015355LGN01	68.35
122	Dry Cool	11/5/16	LC80170502016310LGN01	46.29
123	Dry Cool	11/21/16	LC80170502016326LGN01	53.86
124	Dry Cool	12/23/16	LC80170502016358LGN01	72.22
125	Dry Cool	11/8/17	LC80170502017312LGN00	56.12
126	Dry Cool	11/24/17	LC80170502017328LGN00	39.77
127	Dry Cool	12/10/17	LC80170502017344LGN00	66.55
128	Dry Cool	12/26/17	LC80170502017360LGN00	65.35
129	Dry Cool	11/16/14	LC80170512014320LGN01	55.35
130	Dry Cool	12/2/14	LC80170512014336LGN01	48.57
131	Dry Cool	12/18/14	LC80170512014352LGN01	5.18
132	Dry Cool	11/3/15	LC80170512015307LGN01	16
133	Dry Cool	11/19/15	LC80170512015323LGN01	57.61
134	Dry Cool	12/5/15	LC80170512015339LGN01	64.7
135	Dry Cool	12/21/15	LC80170512015355LGN01	30.16
136	Dry Cool	11/5/16	LC80170512016310LGN01	76.96
137	Dry Cool	11/21/16	LC80170512016326LGN01	28.85
138	Dry Cool	12/7/16	LC80170512016342LGN01	53.65
139	Dry Cool	12/23/16	LC80170512016358LGN01	29.8
140	Dry Cool	11/8/17	LC80170512017312LGN00	32.05
141	Dry Cool	11/24/17	LC80170512017328LGN00	0.34
142	Dry Cool	12/10/17	LC80170512017344LGN00	30.11
143	Dry Cool	12/26/17	LC80170512017360LGN00	39.89

Notes: All metadata extracted from the Google Earth Engine. USGS Landsat 8 Data.

Table S2. Kappa Index Values for the Multi-Seasonal Spectral Model (S+TP) with Different Specifications of *mtry* and N

N, <i>mtry</i>	10	50	100	200	500	1000	5000
1	0.79	0.86	0.87	0.86	0.87	0.87	0.89
2	0.84	0.89	0.88	0.89	0.897	0.89	0.89
3	0.87	0.905	0.897	0.908	0.908	0.908	0.905
4	0.83	0.86	0.88	0.87	0.87	0.87	0.87

ID	1	2	3	4	5	6	7	8	9	10	Total	UA	PA
1	31	1	0	0	0	2	1	3	0	0	38	81.6	77.5
2	1	31	0	1	0	0	1	6	0	1	41	75.6	77.5
3	1	1	40	0	0	0	0	0	0	0	42	95.2	100
4	1	0	0	36	0	0	1	0	0	0	38	94.7	90.0
5	0	0	0	0	36	0	7	1	0	0	44	81.8	90.0
6	3	4	0	1	0	38	0	1	0	0	47	80.9	95.0
7	0	0	0	2	4	0	30	1	0	0	37	81.2	75.0
8	2	3	0	0	0	0	0	25	1	1	32	78.1	62.5
9	1	0	0	0	0	0	0	0	37	0	38	97.4	94.5
10	0	0	0	0	0	0	0	3	1	38	42	90.5	95.0
Total	40	40	40	40	40	40	40	40	39	40	312/399	OA: 85.7%	
Kappa: 0.84													

Kappa: 0.84

NS

ID	1	2	3	4	5	6	7	8	9	10	Total	UA	PA
1	15	5	1	4	0	6	2	3	1	7	44	34.1	37.5
2	1	24	1	0	0	0	0	4	0	5	35	68.6	60.0
3	3	3	38	5	0	0	1	0	0	0	50	76.0	95.0
4	2	0	0	21	0	4	1	1	0	3	32	65.6	52.5
5	0	0	0	1	33	0	9	1	0	0	44	75.0	82.5
6	8	1	0	9	0	28	0	2	1	4	53	52.8	70.0
7	0	0	0	0	7	0	27	1	0	0	35	77.1	67.5
8	2	5	0	0	0	2	0	22	0	1	32	68.8	55.0
9	0	0	0	0	0	0	0	1	35	1	37	94.6	89.7
10	9	2	0	0	0	0	0	5	2	19	37	51.4	47.5
Total	40	40	40	40	40	40	40	40	39	40	262/399	OA:	65.7%
Kappa: 0.62													

Kappa: 0.62