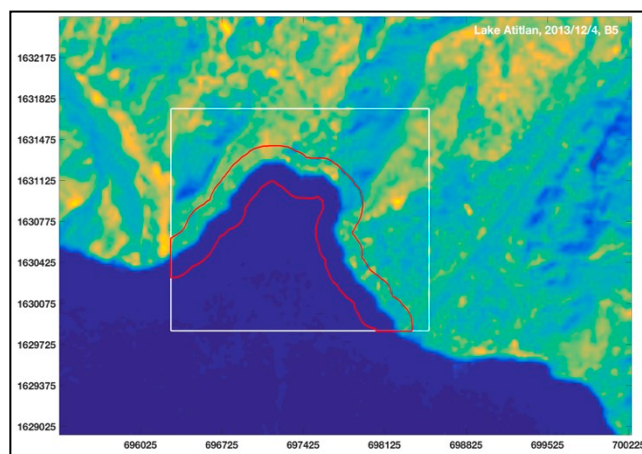
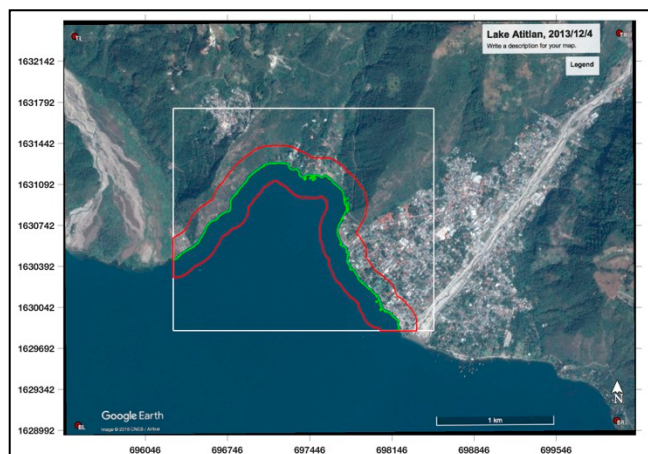
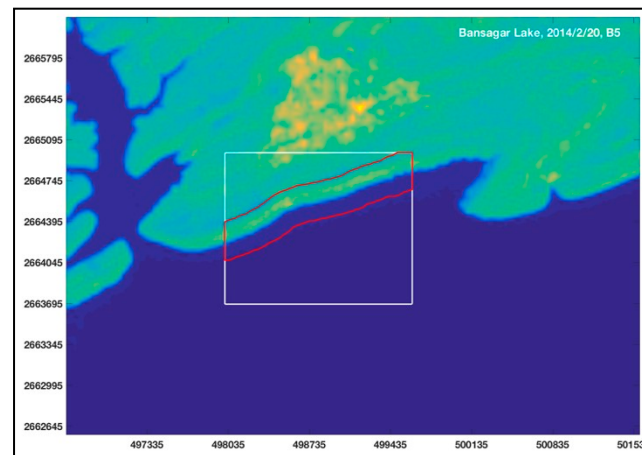
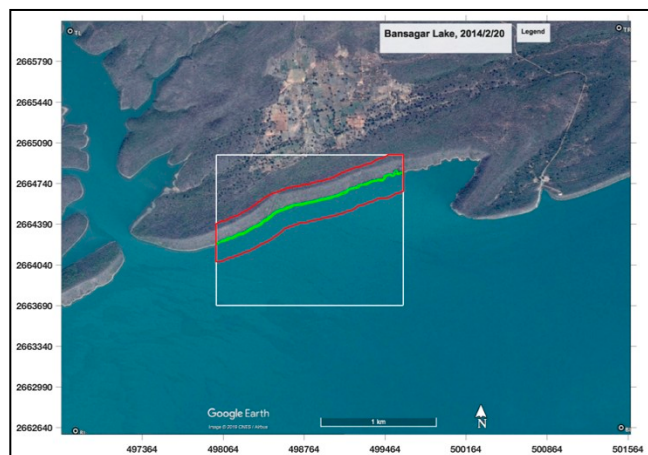
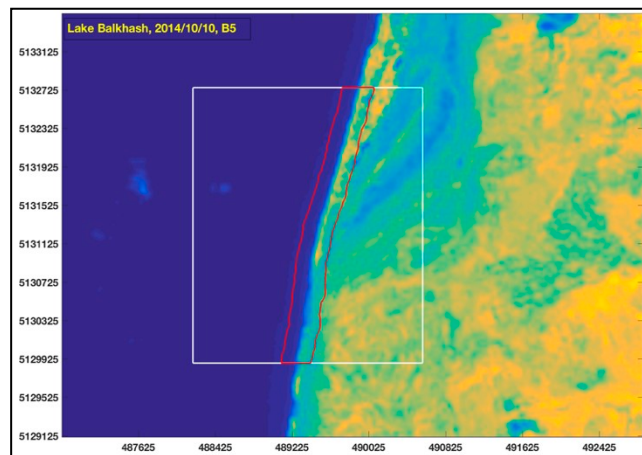
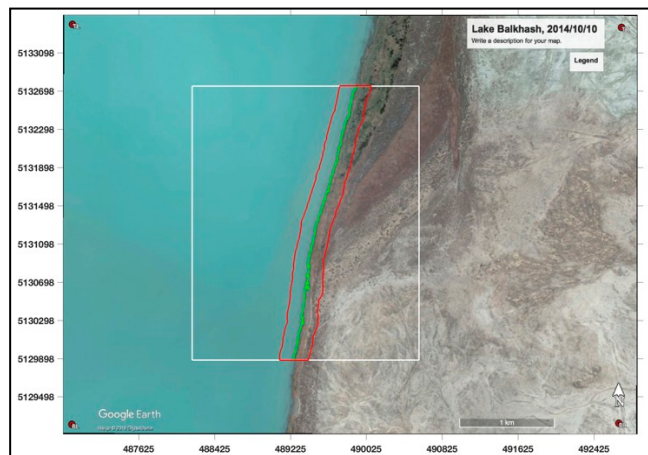
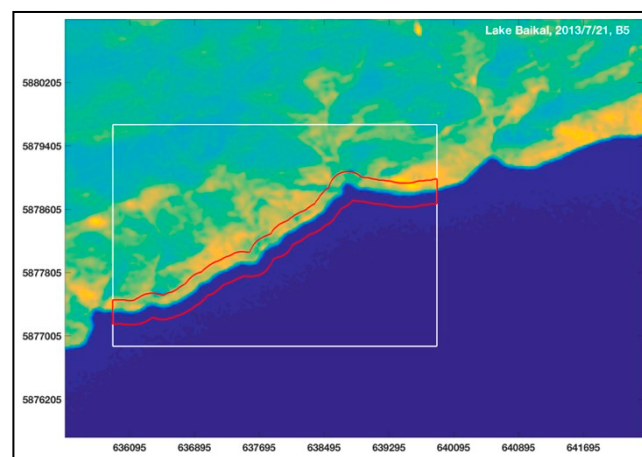
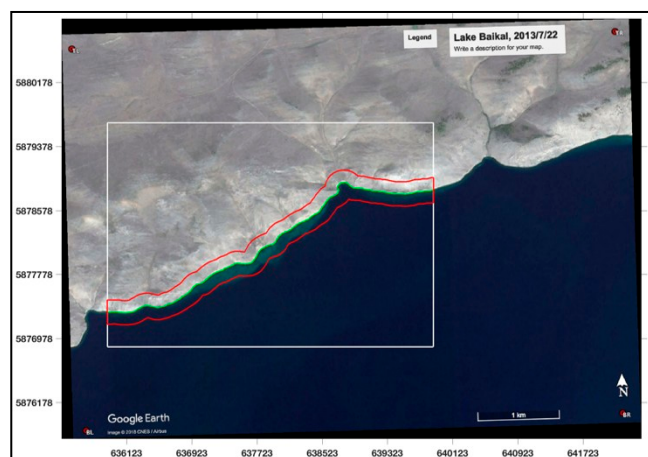
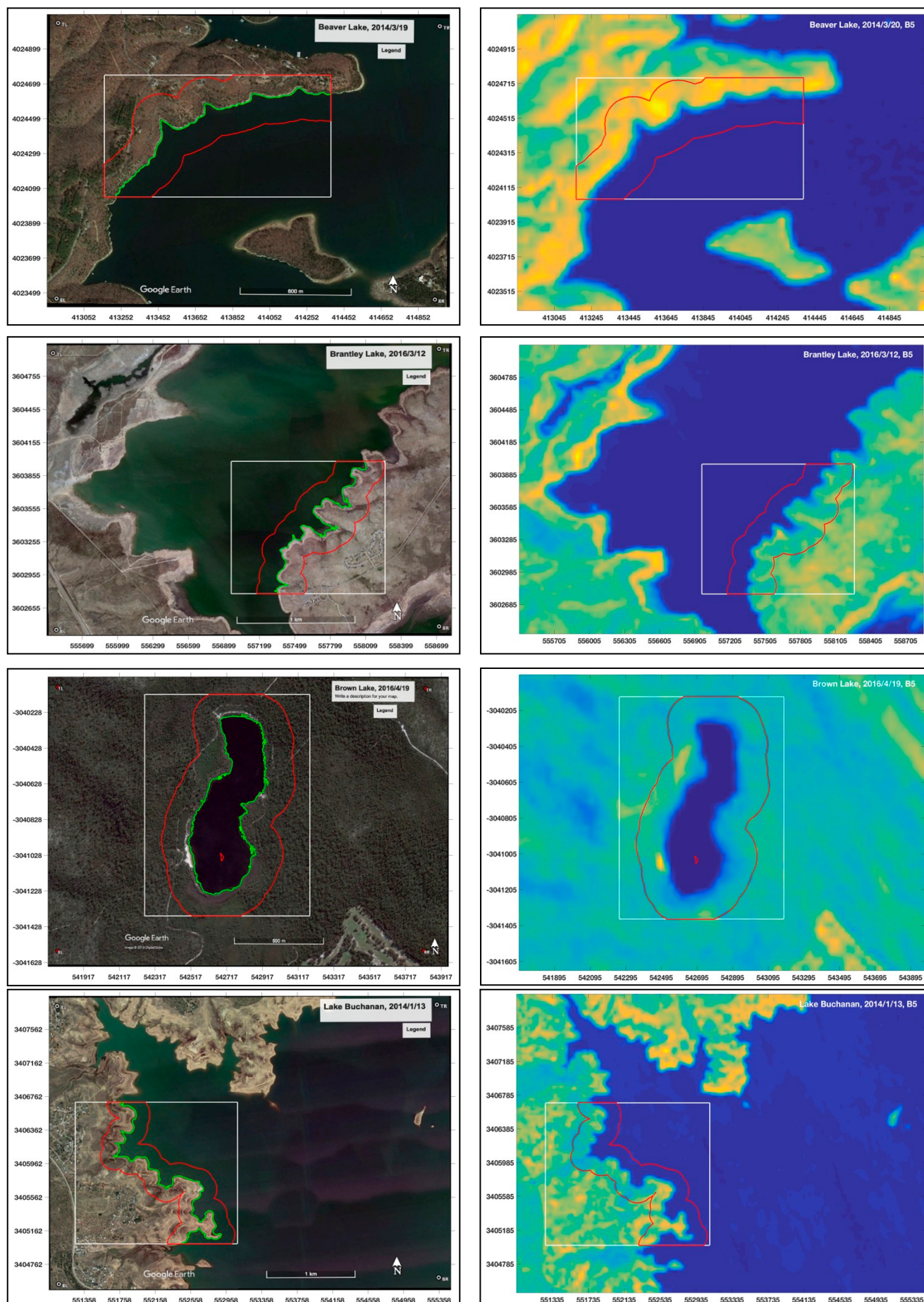


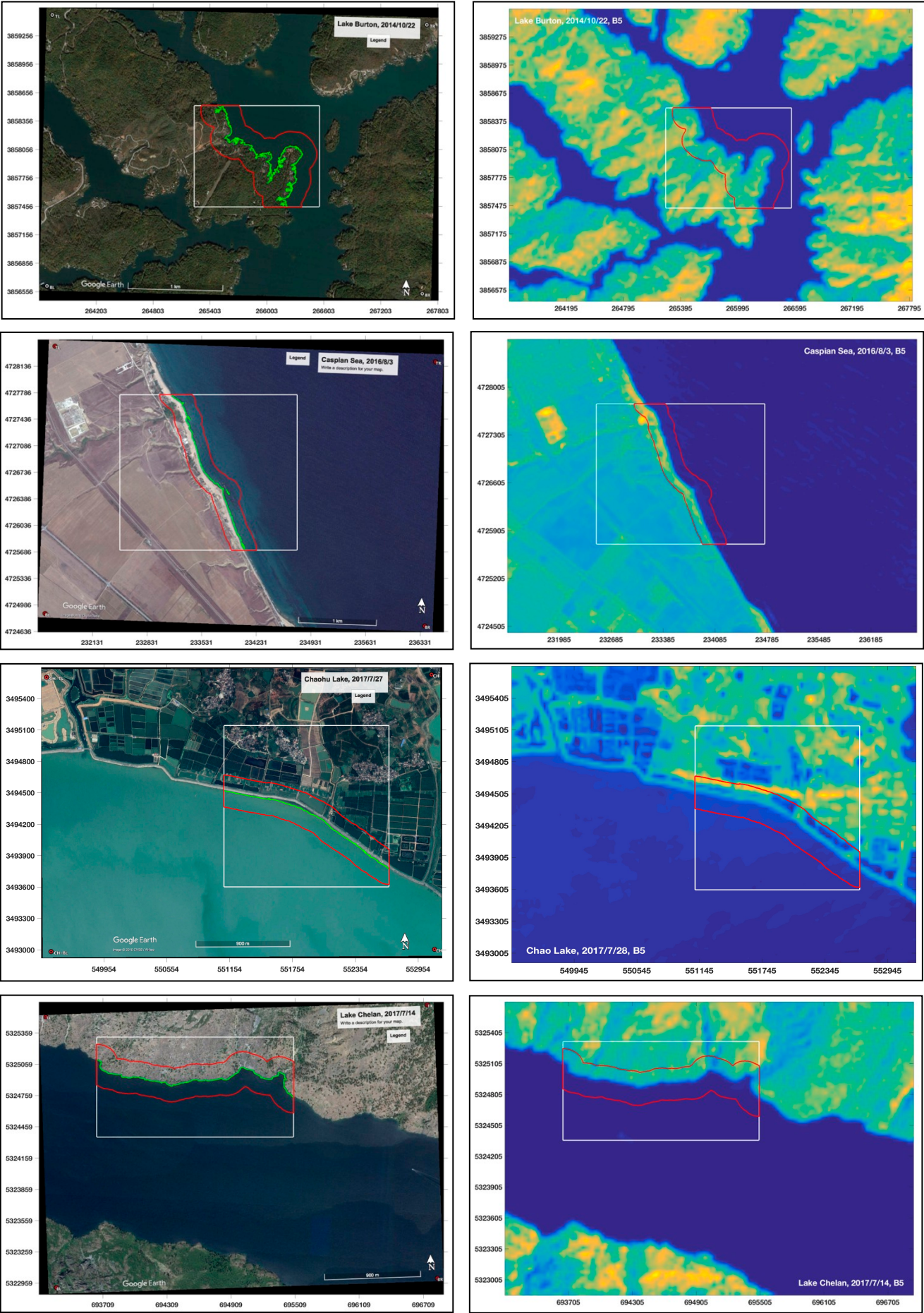
Figure SF1. (left panel): 24 Google Earth images overlaid by the predefined polygon (in white) and the identified water-land boundary (in green) and the buffer zone (in red); (right panel): 24

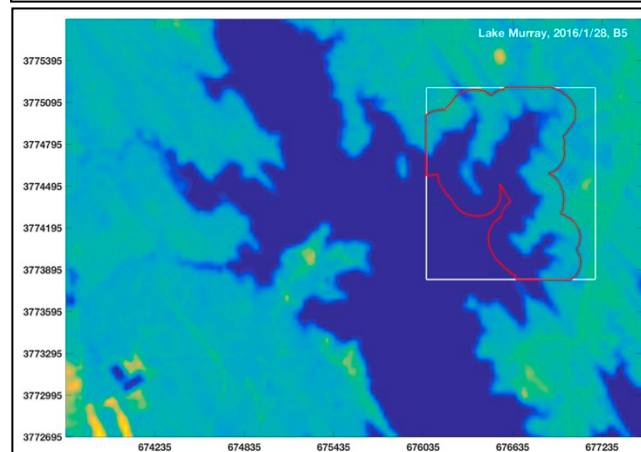
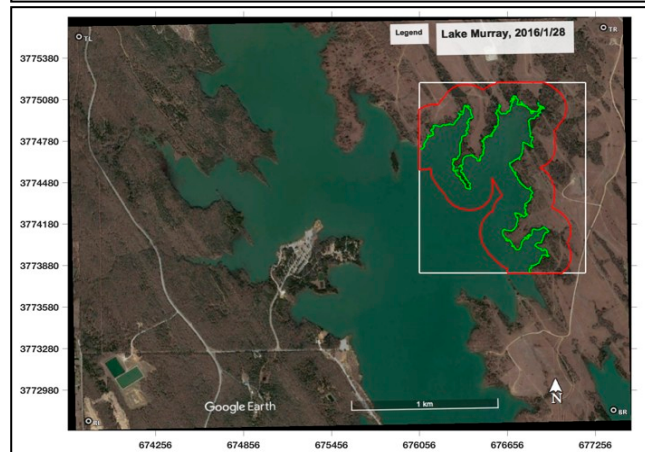
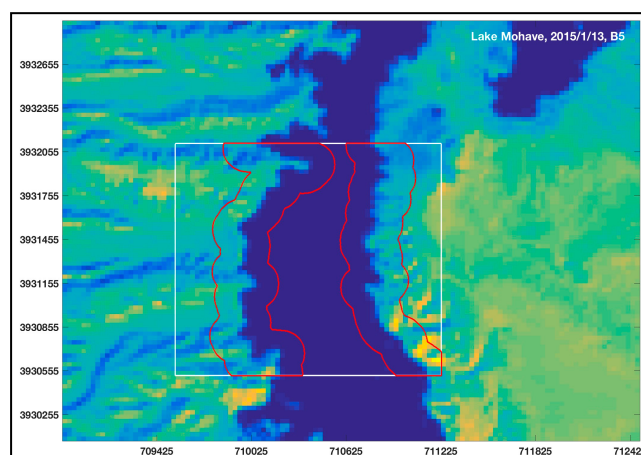
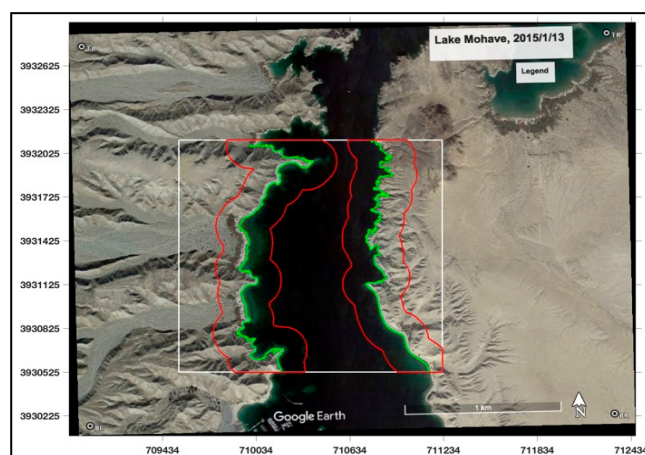
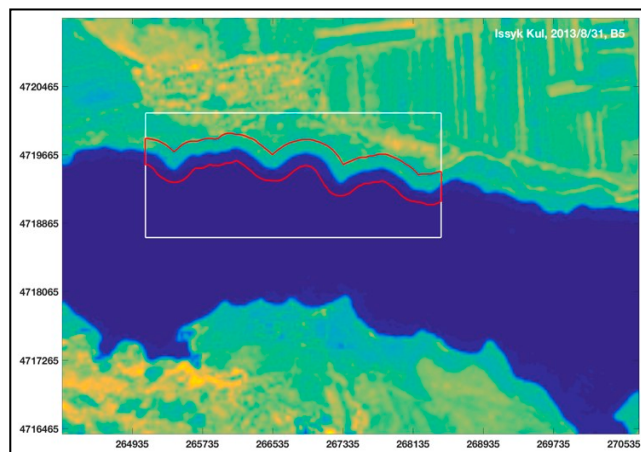
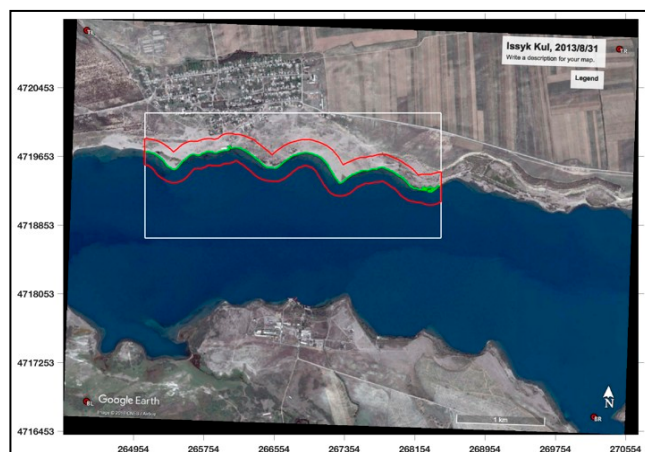
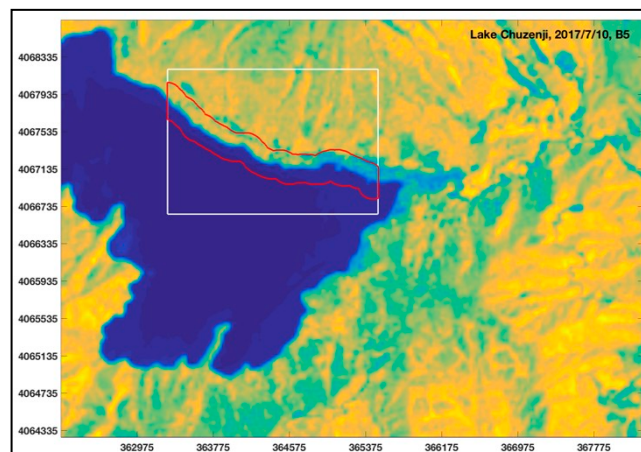
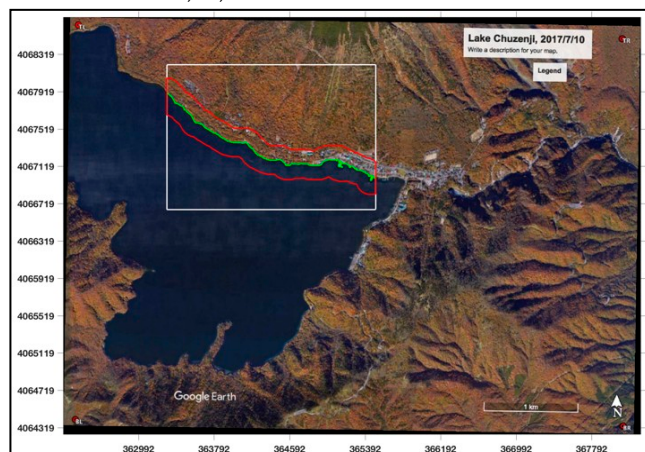


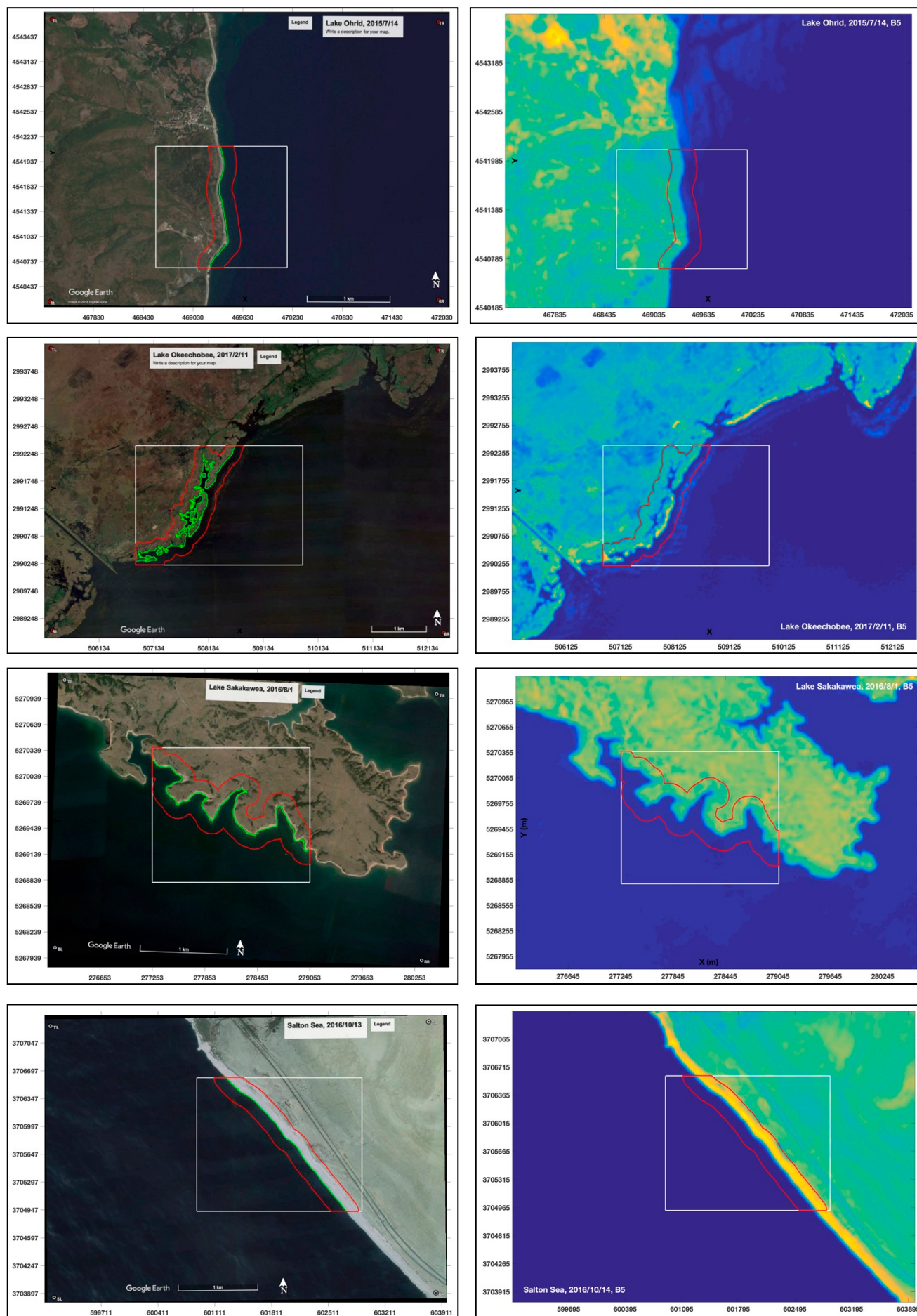
Landsat-8 OLI band 5 images overlaid by the predefined polygon and the identified buffer zone

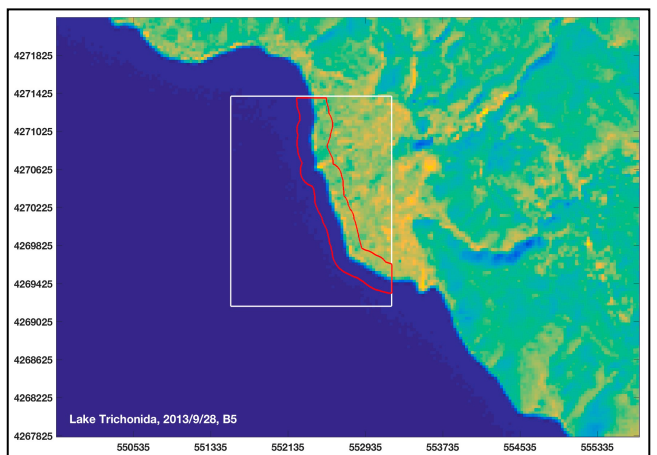
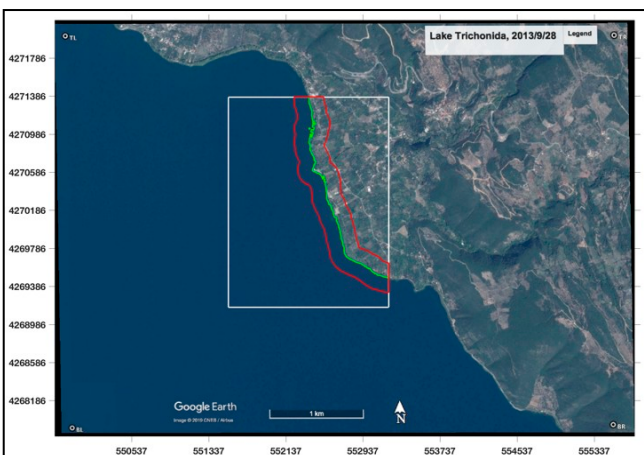
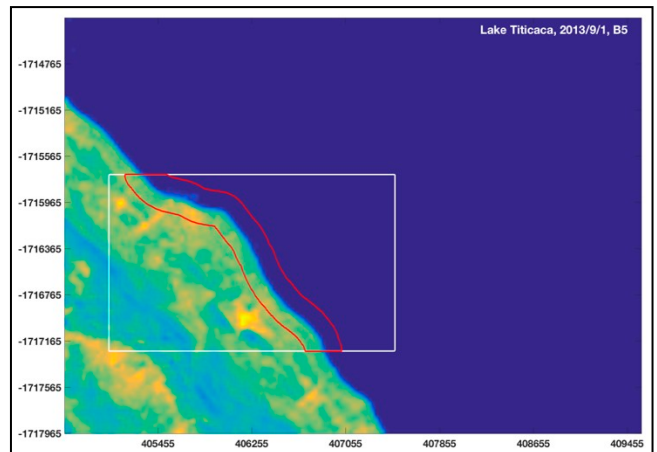
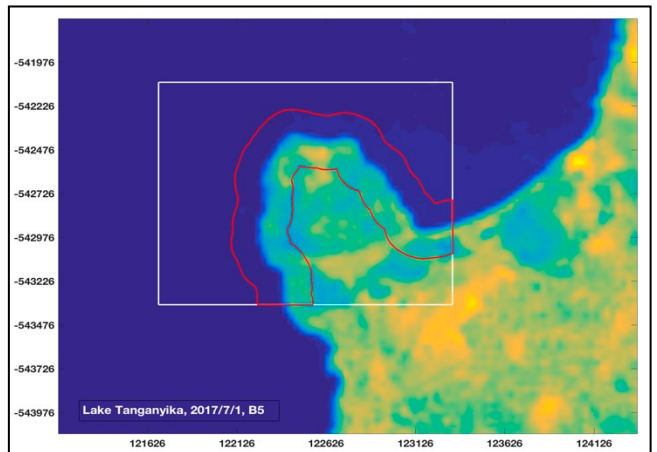
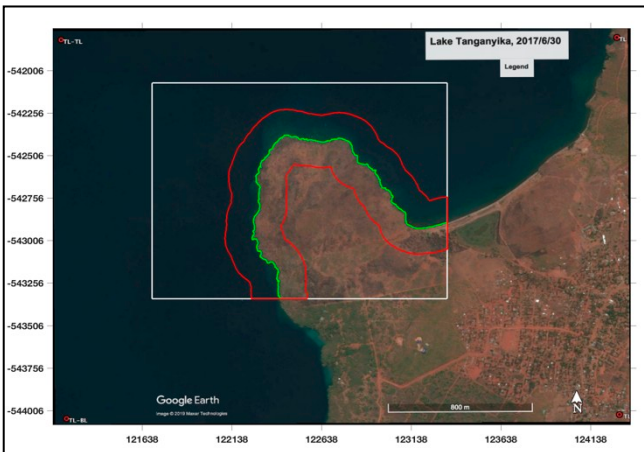
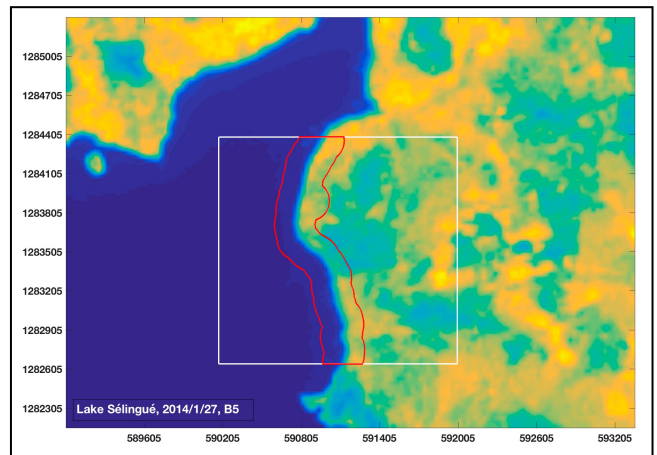
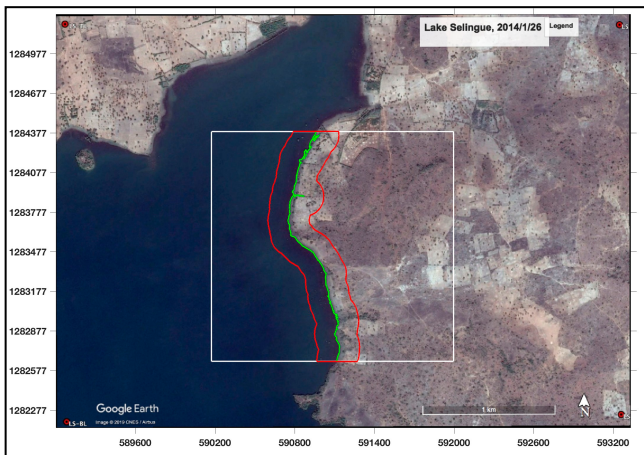












ST1. Relative errors (%) of Landsat-8 OLI water classification results using the zero-water index threshold (H0) method

Lake	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s
Atitlan	5.61	18.12	76.75	6.14	9.88	2.73	9.84	57.15	3.2	7.31	-1.67	5.27	39.97	-0.98	4.45	-8.35	-0.75	15.23	-7.23	1.25
Baikal	5.88	1.18	5.43	-5	3.88	2.45	-1.41	2.33	-7.13	1.63	-0.93	-4.26	-0.68	-10.02	-0.48	-7.27	-9.14	-5.57	-15.6	-3.16
Balkhash	9.43	18.91	80.5	7.49	14.77	6.68	14.23	76.01	5.28	12.25	3.54	10.8	56.55	3.01	10.08	2.02	10.37	68.35	1.94	9.8
Bansagar	-1.33	-5.33	2.19	-11.61	-2.75	-4.87	-7.76	-1.79	-13.5	-4.94	-8.36	-10.44	-5.2	-15.93	-7.12	-13.37	-14.41	-8.77	-20.3	-9.5
Beaver	6.01	4.6	16.22	-2.56	6.25	1.97	1.08	9.66	-5.47	3.35	-3.01	-3.18	3.94	-9.81	0.11	-9.17	-8.44	-1.26	-15.91	-2.76
Brantley	-6.15	-10.06	-2.97	-17.5	-6.91	-9.24	-12.27	-5.55	-19.28	-8.88	-10.84	-13.53	-6.79	-20.41	-9.89	-12.15	-15.29	-5.85	-23.09	-10.32
Brown	4.12	116.44	176.25	11.85	15.35	-4.36	31.8	175.52	-4.69	4.99	-15.46	-5.67	162.03	-14.97	-4.32	-24.74	-14.05	88.46	-22.35	-9.15
Buchanan	3.73	1.18	6.28	-6.88	3.36	0.34	-1.38	3.19	-8.99	1.19	-1.59	-2.91	1.51	-10.73	0.01	-1.62	-3.48	2.83	-13.59	0.42
Burton	-6.25	13.13	101.53	-3.33	0.33	-10.87	0.24	89.63	-8.67	-4.29	-16.45	-7.18	68.96	-14.43	-8.69	-23.85	-15.11	4.39	-21.56	-13.08
Caspian	6.07	6.1	13.96	0.01	7.41	4.25	4.74	12.25	-1.38	6.23	4.17	4.74	15.18	-2.33	6.52	3.47	4.54	21.17	-5.32	6.9
Chao	10.22	71.41	97.31	5.65	54.09	6.96	46.87	97.13	3.42	40.98	6.26	42.38	96.72	3	21.42	1.72	9.73	86.43	-0.46	10.2
Chelan	19.93	14.59	24.14	7.79	17.42	15.59	11.11	19.08	5.08	14.5	9.22	6.06	11.72	0.34	10.61	8.19	5.97	10.72	1.36	9.62
Chuzenji	-5.29	5.83	83.79	-2.57	0.1	-8.63	1.43	73.06	-5.83	-2.56	-13.85	-2.99	57.79	-10	-5.62	-50.26	-8.81	4.28	-15.91	-9.05
Issykkul	-0.15	-1.28	3	-9.42	0.62	-1.77	-2.87	0.88	-10.77	-0.64	-2.99	-4.21	-0.35	-12.57	-1.35	-5.51	-7.36	-2.79	-17.33	-2.62
Mohave	12.42	14.35	39.87	-1.76	18.85	2.96	8.1	26.24	-3.34	11.23	0.73	2.04	15.04	-6.49	4.68	-1.62	1.53	22.97	-10.04	5.99
Murray	19.6	12.27	49.01	0.92	17.04	10.38	5.98	24.09	-3.39	10.93	1.2	-0.63	10.78	-8.06	4.92	-5.29	-6.04	5.54	-13.61	1.38
Ohrid	6	9.65	64.16	1.14	9.38	3.44	7.1	18.65	-0.91	7.36	1.76	5.92	17.68	-2.81	6.6	-4.52	1.85	18.39	-9.86	4.44
Okeechobee	-26.24	39.09	115.09	-3.88	-1.17	-31	9.11	114.9	-19.86	-11.55	-41.76	-12.51	86.04	-32.15	-27.52	-50.47	-30.7	61.84	-39.16	-31.05
Sakakawea	8.23	9.63	84.74	0.14	10.94	4.49	6.65	36.7	-2.07	8.32	0.86	4.08	16.8	-4.43	6.22	-4.93	1.04	12.18	-8.07	4.1
Salton	-0.15	9.22	75.7	0.14	7.04	-2.39	8.67	77.67	-1.54	6.21	-5.62	8.76	82.3	-3.81	5.75	-8.96	19.63	91.46	-5.58	10.37
Sélingué	2.78	3.76	14.27	-2.77	4.37	-1.35	0.61	9.53	-5.7	1.63	-7.03	-3.36	5.14	-10.21	-1.46	-11.55	-5.79	3.38	-13.98	-3.05
Tanganyika	6.17	3.72	14.65	-3.69	5.7	1.12	0.35	8.24	-6.1	2.61	-4.23	-3.55	2.96	-9.61	-0.66	-9.79	-7.1	1.04	-14.14	-2.64
Titicaca	2.75	3.51	8.28	-3.02	4.14	0.42	1.36	6.04	-5.04	2.55	-1.34	0.25	6.01	-7.07	1.87	-6.06	-1.39	9.59	-11.42	1.62
Trichonida	-3.38	9.96	82.43	1.3	1.33	-5.03	4.87	68.42	-1.79	-1.5	-9.44	0.83	51.86	-5.03	-3.38	-13.49	-4.56	17.1	-10.61	-5.23

ST2. Relative errors (%) of Landsat-8 OLI water classification results using the Otsu method

Lake	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s
Atitlan	0.24	0.86	2.91	10.99	9.72	-0.69	-0.2	1.9	10.72	9.92	-2.51	-2.74	-0.81	11.14	10.43	-2.52	-6.03	-4.4	11.04	11.99
Baikal	-5.04	-6.69	-6.45	2.11	2.67	-5.98	-7.92	-7.65	2.18	2.86	-6.37	-9.74	-9.68	2.87	4.11	-9.26	-14.02	-14.6	2.63	3.97
Balkhash	-4.51	0.66	5.55	10.38	1.98	-5.29	-0.12	4.27	8.75	0.81	-6.51	-1.36	2.76	7.75	-0.32	-7.79	-2.93	1.07	10.64	1.43
Bansagar	-11.78	-14.27	-13.86	-7.93	-7.22	-12.05	-14.8	-14.33	-7.83	-7	-12.23	-15.73	-15.16	-7.54	-6.59	-12.65	-18.23	-18	-7.12	-5.85
Beaver	-4	-5.18	-4.55	5.94	6.05	-5.07	-6.55	-5.89	6.07	6.29	-6.66	-9.04	-8.47	6.6	6.98	-9.25	-13.54	-13.85	6.51	7.01
Brantley	-17.11	-18.48	-16.74	-2.2	-2.89	-18.29	-19.76	-18.13	-2.2	-2.95	-19.2	-20.71	-19.32	-2.32	-3.19	-21.11	-23.27	-22.2	-1.49	-1.78
Brown	-7.56	-12.2	-12.23	-4.51	3.44	-9.56	-13.82	-13.49	-4.38	3.89	-13	-17.71	-17.22	-4.35	4.64	-12.7	-19.73	-18.76	-3.16	6.62
Buchanan	-6.15	-6.22	-5.97	4.58	4.16	-6.87	-7.16	-6.91	4.65	4.27	-7.21	-7.7	-7.39	5.11	4.88	-7.31	-8.74	-8.93	6.74	7.74
Burton	-13.52	-12.06	-10.67	-2.46	-2.27	-14.92	-13.56	-11.87	-2.5	-2.25	-17.4	-16.53	-14.77	-2.35	-2.16	-20.12	-20.63	-18.83	-1.85	-1.51
Caspian	0.33	1.71	3.54	7.85	7.52	0.47	1.68	3.61	8.16	7.93	2.48	2.93	5.47	9.51	9.92	6.37	4.95	9.87	10.8	12.2
Chao	8.21	3.69	1.38	6.12	11.33	8.27	3.94	1.59	6.39	11.57	9.12	4.91	2.72	7.05	12.2	10.36	5.72	3.51	7.82	21.92
Chelan	8.65	5.98	7.13	20.21	18.86	7.14	4.22	5.27	20.26	18.86	4.45	0.8	1.37	20.45	19.57	5.81	2.47	3.3	19.5	18.37
Chuzenji	-4.85	-5.97	-6.16	0.71	7.28	-5.33	-6.82	-6.68	0.92	8.39	-5.28	-8.56	-8.58	1.43	10.26	6.08	-8.9	-8.69	2.2	15.24
Issykkul	-9.48	-11.31	-11.45	-2.05	-0.75	-10.18	-12.11	-12.19	-2.19	-0.8	-11.01	-13.48	-13.77	-1.42	0.7	-9.8	-16.23	-17.23	0.02	4.31
Mohave	-6.22	-6.09	-5.44	10.6	8.63	-7.53	-7.4	-6.49	10.19	8.49	-7.53	-9.11	-7.93	10.59	9.54	-9.77	-12.66	-11.87	10.69	8.61
Murray	-5.37	-5.2	-1.92	11.36	8.18	-6.76	-7.01	-3.64	10.91	7.57	-8.44	-9.07	-5.89	9.93	6.47	-12.62	-13.95	-11.36	10.73	7.25
Ohrid	0.31	-2.62	-3.79	3.75	8.63	0.26	-3.06	-4.15	4.21	9.55	2.48	-3.58	-5	5.79	12.25	10.04	-5.91	-9.58	6.6	15.2
Okeechobee	-36.92	-31.39	-25.79	-11.35	-26.15	-40.56	-32.91	-28.99	-15.47	-26.28	-43.82	-37.89	-32.07	-10.58	-26.25	-46.79	-41.37	-37.39	-16.31	-26.94
Sakakawea	3.09	-1.82	-3.44	6.14	9.68	3.23	-2.24	-3.8	6.48	10.18	5.02	-2.62	-4.27	7.34	11.52	10.61	-3.01	-5.25	8.48	13.65
Salton	-9.64	-4.71	1.91	10.89	6.02	-11.27	-6.29	0.57	11.95	6.94	-13.62	-8.56	-1.09	13.46	8.48	-16.6	-11.44	-2.29	17.31	12.56
Sélingué	-4.21	-2.76	-0.38	7.22	5.45	-5.58	-4.11	-1.76	7.1	5.26	-8.19	-6.46	-4.13	6.99	4.98	-9.88	-8.03	-6.21	6.84	4.58
Tanganyika	-5.97	-6.29	-4.17	2.49	1.48	-6.58	-7.26	-5.14	2.58	1.55	-6.92	-8.7	-6.64	3.26	2.43	-10.16	-12.34	-10.54	3.01	1.88
Titicaca	-3.94	-3.55	-2.74	9.44	9.9	-5.55	-5.09	-4.31	9.66	10.2	-7.05	-6.72	-6.15	10.73	11.82	-10.59	-10.93	-10.9	11.72	13.84
Trichonida	-6.98	-4.09	-1.29	2	0.62	-7.96	-5	-2.26	2	0.62	-9.44	-6.98	-4.12	4.37	1.56	-10.14	-10.17	-6.3	3.42	1.33

ST3. Relative errors (%) of Landsat-8 OLI water classification results using the kNN method

	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s
Atitlan	1.16	2.99	3.85	10.41	13.24	0.27	1.85	4.16	10.82	13.6	-1.28	-0.99	1.83	11.37	14.61	0.4	-4.62	-1.88	12.46	16.32
Baikal	-4.59	-6.22	-5.84	3.7	4.03	-5.74	-7.66	-7.42	3.63	4.29	-6.16	-9.58	-9.52	4.34	5.62	-9.19	-13.98	-14.68	4.22	5.63
Balkhash	-0.88	1.54	7.97	12.17	4.42	-1.39	0.45	6.43	10.97	3.78	-2.66	-0.84	4.34	10	2.94	-2.94	-1.61	2.45	13.17	6.38
Bansagar	-11.79	-13.04	-12.1	-5.91	-6	-12.14	-13.79	-12.8	-5.79	-5.82	-12.33	-14.76	-13.73	-5.36	-5.18	-12.48	-17.48	-16.81	-4.9	-4.54
Beaver	-3.5	-4.03	-3.15	6.03	6.7	-4.45	-5.45	-4.44	6.19	6.97	-5.81	-7.84	-6.84	6.52	7.74	-7.5	-12.55	-12.56	6.5	7.7
Brantley	-16.82	-18.14	-16.27	0.74	-0.64	-18.04	-19.38	-17.85	0.7	-0.81	-18.53	-20.14	-18.73	0.4	-1.35	-19.97	-22.48	-21.47	1.26	-0.28
Brown	-6.78	-8.69	-8.99	0.07	12.5	-9.14	-12.24	-9.76	0.12	11.51	-12.81	-18.08	-13.55	-0.38	11.48	-12.95	-21.33	-17.55	1.25	10.38
Buchanan	-5.45	-5.77	-4.98	6.55	5.4	-6.34	-6.91	-6.06	6.56	5.38	-6.45	-7.75	-7	6.96	5.85	-5.78	-9.23	-8.84	8.51	8.36
Burton	-12.36	-7.76	-2.18	5.92	4.29	-14.03	-10.13	-4.79	6.03	4.1	-16.88	-13.83	-9.1	6	4.23	-19.33	-18.97	-15.17	6.73	4.5
Caspian	1.27	2.42	4.69	10.04	9.17	1.44	2.23	4.48	10.3	9.48	3.83	3.51	6.46	11.83	11.62	9.81	5.82	11.52	13.43	14.1
Chao	-4.44	-11.99	-23.75	-12.37	-4.13	-2.21	-10.59	-19.35	-8.03	-2.27	2.58	-4.36	-8.73	-3.15	1.43	4.61	-3.31	-7.97	-3.35	1.67
Chelan	8.94	6.83	8.49	20.63	18.14	7.45	5.13	6.64	20.77	18.4	4.66	1.94	3.34	21.07	18.72	4.13	3.22	4.24	15.91	11
Chuzenji	-4.86	-5.75	-3.18	2.07	6.85	-5.33	-6.58	-4.3	2.06	7.83	-5.17	-8	-6.78	2.49	8.8	4.36	-8.42	-8.43	2.54	10.16
Issykkul	-7.56	-10.66	-10.54	-0.54	0.57	-8.76	-12.15	-12.14	-1.41	0.74	-8.67	-13.34	-13.75	-0.6	3.06	-3.34	-14.8	-16.4	0.91	11.58
Mohave	-4.26	-4	-2.55	5.99	7.17	-5.18	-5.7	-3.6	6.64	7.83	-6.88	-8.06	-6.75	7.18	9.54	-8.73	-12	-11.35	7.44	10.69
Murray	-4.1	-3.62	-0.09	9.56	8.81	-5.89	-5.85	-2.29	9.53	8.82	-8.24	-8.63	-5.36	9.57	8.84	-11.88	-14.11	-11.77	10.29	9.61
Ohrid	0.78	-1.25	-1.82	4.45	9.61	0.95	-2.21	-1.68	5.12	10.29	3.92	-2.79	-2.66	6.35	13	13.16	-6.31	-8.15	7.83	14.67
Okeechobee	-33.61	-20.5	-0.09	17.51	-5.18	-37.35	-27.49	-8.49	16.42	-5.63	-43.4	-33.52	-21.08	19.15	-5.17	-46.89	-39.71	-32.93	16.34	-7.31
Sakakawea	4.98	-0.2	-1.21	10.4	12.94	5.42	-0.89	-1.8	10.7	13.37	8.03	-1.45	-2.52	11.61	14.8	15.48	-2.23	-3.95	12.63	16.42
Salton	-9.07	-4.51	3.14	11.68	7.03	-11.22	-6.35	1.65	12.46	7.6	-13.56	-8.81	-0.09	13.97	8.82	-16.75	-11.73	-0.81	17.94	13.39
Sélingué	-3.92	-2.8	-0.58	7.5	6.07	-5.44	-4.22	-2.08	7.39	5.91	-8.1	-6.66	-4.13	7.28	5.73	-9.68	-8.22	-5.75	7.2	5.5
Tanganyika	-4.02	-4.53	-3.11	4.71	3.27	-4.88	-5.76	-4.26	4.9	3.53	-5.51	-7.55	-6.11	5.67	4.47	-8.22	-10.99	-10.06	5.75	4.35
Titicaca	-2.46	-2.56	-1.79	10.33	13.39	-4.48	-4.99	-4.29	9.73	13.75	-5.14	-6.67	-6.42	10.74	15.55	-7.63	-10.77	-11.26	11.11	18.37
Trichonida	-6	-3.61	1.33	4.4	1.33	-7.25	-4.32	0.39	4.6	1.56	-8.43	-6.47	-2.5	5.04	1.56	-8.93	-9.1	-6.03	4.57	1.77

ST4. Overall errors (%) of Landsat-8 OLI water/land classification results using the zero-water index threshold (H0) method

Lake	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s
Atitlan	3.39	8.94	37.71	3.58	5.04	2.69	5.07	28.08	2.72	4.07	2.45	3.52	19.64	2.34	3.15	4.45	2.65	7.69	3.95	2.67
Baikal	2.98	1.1	2.77	2.53	2.02	1.4	1.14	1.43	3.61	1.15	0.94	2.19	1.14	5.08	0.89	3.69	4.63	2.84	7.91	1.66
Balkhash	5.41	9.57	40.73	4.03	7.53	4.42	7.21	38.46	3.17	6.35	3.42	5.57	28.62	2.45	5.37	3.19	5.4	34.58	2.28	5.31
Bansagar	3.12	3.34	2.66	5.96	3.33	3.34	4.08	3.22	6.93	3.31	4.34	5.36	3.35	8.18	3.79	6.86	7.4	4.54	10.42	4.88
Beaver	3.59	3.48	7.79	2.92	3.79	2.83	2.93	5.06	3.42	3.14	2.77	3.09	3.41	4.74	2.85	4.56	4.34	3.02	7.59	2.88
Brantley	5.02	5.86	4.84	8.28	5.22	5.71	6.48	5.1	9.08	5.62	6.25	6.89	5.5	9.59	5.94	6.61	7.45	5.58	10.83	6.04
Brown	2.59	42.09	63.7	5.59	5.62	2.46	12.02	63.43	2.46	2.56	5.74	2.83	58.56	5.49	2.4	9.17	5.67	32.52	8.16	3.84
Buchanan	2.84	2.36	3.64	3.62	2.74	2.28	2.35	2.76	4.48	2.35	2.37	2.52	2.46	5.29	2.28	2.51	2.78	2.78	6.68	2.44
Burton	4.6	7.78	48.67	4.25	4.68	5.65	4.53	43.06	4.85	4.33	7.9	4.61	33.44	6.99	4.95	11.4	7.33	6.06	10.33	6.44
Caspian	3.18	3.18	7.26	1.58	3.85	2.46	2.52	6.37	1.79	3.25	2.62	2.57	7.9	2.11	3.4	2.85	2.59	11.01	3.31	3.61
Chao	5.21	36.19	49.32	3.26	27.42	3.63	23.76	49.23	2.64	20.77	3.29	21.48	49.02	2.44	10.85	1.52	4.94	43.8	1.89	5.19
Chelan	9.96	7.29	12.05	3.97	8.7	7.81	5.57	9.53	2.81	7.25	4.77	3.23	5.87	1.8	5.35	4.34	3.46	5.48	2.38	4.85
Chuzenji	5.39	4.54	43	4.6	4.69	6.28	4.25	37.54	5.28	4.84	8.08	4.7	29.84	6.33	5.26	25.7	6.13	4.33	8.7	6.35
Issykkul	1.94	1.48	2.2	4.82	1.74	1.99	1.85	1.71	5.51	1.71	2.32	2.32	1.54	6.43	1.83	3.36	3.79	1.99	8.87	2.22
Mohave	7.48	8.37	20.79	3.73	10.35	3.73	5.6	13.91	3.84	6.87	3.57	3.71	8.5	4.7	4.03	3.94	3.84	12.23	5.86	4.57
Murray	9.81	6.63	24.01	4.02	8.62	6.16	4.63	11.87	4.1	6.06	3.9	3.87	5.97	4.96	4.42	4.15	4.48	4.46	7.01	3.92
Ohrid	3.49	4.87	32.37	1.71	4.8	2.65	3.62	9.41	1.92	3.89	2.42	3.13	8.92	2.26	3.65	3.18	2.11	9.28	5	3.08
Okeechobee	12.42	18.84	53.51	5.45	5.69	14.5	7.66	53.42	9.69	7.11	19.41	7.2	40	14.97	12.89	23.4	14.33	29.12	18.21	14.47
Sakakawea	4.19	4.71	40.06	1.75	5.32	2.84	3.45	17.35	1.96	4.17	2.11	2.6	7.97	2.59	3.36	3.05	2.14	5.92	4.08	2.75
Salton	0.77	4.68	38.46	0.72	3.58	1.27	4.4	39.46	1.02	3.16	2.85	4.46	41.81	1.98	2.93	4.55	9.98	46.47	2.87	5.27
Sélingué	2.48	2.62	7.12	1.77	2.95	1.77	1.63	4.95	2.86	1.95	3.52	1.98	3.08	5.03	1.62	5.69	2.93	2.45	6.88	1.97
Tanganyika	3.83	2.8	7.8	2.8	3.36	2.72	2.38	4.5	3.48	2.64	2.89	2.61	2.56	5.13	2.34	5.23	3.84	2.19	7.53	2.38
Titicaca	1.48	1.81	4.2	1.57	2.12	0.8	0.95	3.06	2.56	1.38	1.18	0.9	3.06	3.59	1.18	3.18	1.56	4.88	5.8	1.29
Trichonida	3.5	5.77	43.93	3.55	3.8	3.87	4.28	36.58	3.31	3.5	5.44	3.46	27.84	3.66	3.5	7.39	3.62	9.47	5.95	3.92

ST5. Overall errors (%) of Landsat-8 OLI water/land classification results using the Otsu method

Lake	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI ₂	AWEI _n	AWEI _s	NDWI	MNDWI	MNDWI ₂	AWEI _n	AWEI _s	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s
Atitlan	2.17	2.3	2.72	5.55	4.96	2.22	2.25	2.59	5.42	5.08	2.51	2.51	2.47	5.62	5.32	3.78	3.52	3.02	5.56	6.06
Baikal	2.55	3.39	3.27	1.32	1.47	3.03	4.01	3.88	1.34	1.56	3.23	4.93	4.91	1.58	2.12	4.69	7.1	7.4	1.48	2.06
Balkhash	3.18	2.16	3.16	5.34	2.55	3.36	2.14	2.71	4.59	2.34	3.72	2.28	2.26	4.15	2.28	4.22	2.62	2.12	5.49	2.51
Bansagar	6.04	7.32	7.11	4.15	3.83	6.19	7.6	7.36	4.11	3.75	6.28	8.08	7.78	3.98	3.6	6.5	9.36	9.24	3.82	3.45
Beaver	2.83	3.35	3.23	3.77	3.75	3.06	3.68	3.53	3.81	3.82	3.59	4.45	4.26	3.99	4.05	4.6	6.49	6.63	3.96	4.06
Brantley	8.19	8.72	7.97	4.8	4.88	8.67	9.29	8.56	4.85	4.94	9.07	9.73	9.09	4.96	5.14	9.92	10.92	10.42	5	5.21
Brown	3.06	4.46	4.46	2.42	2.23	3.65	5.03	4.89	2.42	2.32	4.95	6.44	6.22	2.47	2.52	5.56	7.31	6.88	2.35	3.02
Buchanan	3.36	3.36	3.33	3.06	2.95	3.61	3.71	3.67	3.08	2.98	3.77	3.95	3.85	3.25	3.22	3.88	4.42	4.53	3.84	4.34
Burton	6.6	5.95	5.52	4.26	4.41	7.2	6.59	5.96	4.26	4.43	8.35	7.93	7.16	4.35	4.5	9.65	9.89	9.04	4.38	4.6
Caspian	1.88	1.67	2.03	4.08	3.91	1.88	1.68	2.07	4.24	4.13	2.25	1.99	2.94	4.95	5.16	3.71	2.74	5.2	5.62	6.35
Chao	4.22	2.68	2.48	3.43	5.75	4.25	2.7	2.47	3.5	5.87	4.66	2.85	2.59	3.69	6.19	5.28	3.08	2.78	4.03	11.11
Chelan	4.48	3.19	3.65	10.09	9.42	3.82	2.51	2.87	10.11	9.42	2.81	1.81	1.8	10.2	9.77	3.46	2.53	2.77	9.74	9.17
Chuzenji	5.28	5.34	5.22	4.21	6.17	5.42	5.46	5.31	4.21	6.68	5.75	5.95	5.81	4.17	7.47	11.48	6.16	5.82	4.19	9.93
Issykkul	4.85	5.79	5.86	1.66	1.62	5.21	6.2	6.24	1.68	1.7	5.64	6.9	7.04	1.48	1.99	5.02	8.31	8.82	1.45	3.47
Mohave	4.52	4.51	4.39	6.79	5.96	4.85	4.9	4.58	6.57	5.77	5.02	5.49	5.09	6.65	5.97	5.93	7.03	6.65	6.65	5.51
Murray	4.22	4.41	4.06	6.28	5.25	4.51	4.76	4.16	6.11	5.07	4.91	5.28	4.44	5.72	4.75	6.45	7.16	6.11	6.02	4.99
Ohrid	2.02	2.25	2.56	2.15	4.45	2.01	2.3	2.63	2.34	4.89	2.59	2.45	2.88	3.02	6.22	6.18	3.2	4.88	3.42	7.72
Okeechobee	17.17	14.63	12.15	6.78	12.34	18.86	15.31	13.54	8.3	12.38	20.37	17.62	14.94	6.65	12.38	21.75	19.23	17.38	8.57	12.68
Sakakawea	2.38	1.91	2.26	3.2	4.75	2.47	2.01	2.37	3.35	4.99	3.13	2.13	2.54	3.73	5.61	5.52	2.38	2.97	4.23	6.6
Salton	4.9	2.39	1.09	5.53	3.06	5.73	3.2	0.9	6.07	3.53	6.92	4.35	1.23	6.84	4.31	8.43	5.81	1.96	8.79	6.38
Sélingué	2.33	1.75	1.43	4.03	3.42	2.86	2.22	1.57	3.97	3.33	4.05	3.22	2.22	3.92	3.22	4.87	3.97	3.13	3.87	3.07
Tanganyika	3.51	3.55	2.97	2.61	2.55	3.72	3.95	3.21	2.62	2.53	3.8	4.65	3.7	2.68	2.53	5.42	6.57	5.61	2.56	2.36
Titicaca	2.02	1.82	1.45	4.79	5.03	2.82	2.59	2.21	4.91	5.18	3.58	3.41	3.12	5.45	6	5.38	5.55	5.53	5.95	7.03
Trichonida	4.37	3.43	3.21	3.81	3.59	4.72	3.7	3.33	3.81	3.59	5.44	4.46	3.6	4.26	3.92	5.91	5.77	4.13	4.03	3.84

ST6. Overall errors (%) of Landsat-8 OLI water/land classification results using the kNN method

Lake	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI	AWEL _{ns}	AWEL _s	NDWI	MNDWI	MNDWI	AWEL _{ns}	AWEL _s	NDWI	MNDWI	MNDWI	AWEL _{ns}	AWEL _s	NDWI	MNDWI	MNDWI ₂	AWEL _n	AWEL _s
Atitlan	2.28	2.66	2.94	5.29	6.54	2.27	2.47	3.06	5.47	6.72	2.44	2.36	2.71	5.73	7.22	4.1	3.07	2.63	6.22	8.07
Baikal	2.33	3.15	2.96	1.93	2.09	2.91	3.88	3.76	2.08	2.21	3.12	4.85	4.82	2.41	2.86	4.66	7.08	7.44	2.35	2.87
Balkhash	2.78	2.23	4.18	6.18	3.18	2.74	2.13	3.5	5.61	2.99	2.82	2.19	2.72	5.17	2.78	2.97	2.35	2.24	6.69	3.95
Bansagar	6.05	6.69	6.21	3.42	3.42	6.23	7.08	6.57	3.4	3.39	6.33	7.58	7.05	3.34	3.31	6.41	8.97	8.63	3.31	3.3
Beaver	2.75	3.15	3	3.79	3.93	2.91	3.42	3.22	3.85	4.01	3.31	4.07	3.8	3.97	4.29	3.94	6.01	6.02	3.96	4.27
Brantley	8.06	8.57	7.77	4.94	4.91	8.57	9.12	8.44	4.96	4.94	8.79	9.46	8.83	5.04	5.12	9.39	10.56	10.08	5.17	5.25
Brown	2.88	3.32	3.47	2.19	4.69	3.52	4.49	3.68	2.19	4.38	4.89	6.57	4.95	2.22	4.37	5.62	7.82	6.45	2.34	4.04
Buchanan	3.13	3.21	3	3.72	3.35	3.42	3.63	3.36	3.72	3.34	3.48	3.97	3.71	3.89	3.55	3.34	4.64	4.5	4.53	4.57
Burton	6.16	4.62	4.6	5.75	5.6	6.82	5.25	4.54	5.78	5.58	8.1	6.72	5.16	5.8	5.61	9.27	9.1	7.43	6.01	5.78
Caspian	1.86	1.78	2.49	5.23	4.77	1.91	1.76	2.42	5.36	4.94	2.52	2.14	3.4	6.16	6.05	5.14	3.11	6.02	6.99	7.34
Chao	2.5	6.26	12.22	6.39	2.32	1.81	5.55	10.01	4.26	1.71	1.74	2.64	4.73	2.17	1.73	2.53	2.33	4.47	2.34	1.78
Chelan	4.62	3.54	4.28	10.3	9.06	3.96	2.84	3.43	10.37	9.19	2.87	1.93	2.2	10.52	9.35	2.91	2.67	2.98	7.94	5.51
Chuzenji	5.28	5.29	4.65	4.16	6.03	5.42	5.41	4.82	4.16	6.51	5.74	5.79	5.29	4.14	6.99	10.9	6	5.73	4.23	7.9
Issykkul	3.87	5.45	5.39	1.48	1.73	4.49	6.22	6.21	1.83	1.86	4.44	6.83	7.04	1.83	2.67	3.88	7.57	8.39	2.15	6.76
Mohave	4.1	3.91	3.9	5.09	5.33	4.28	4.39	3.94	5.11	5.48	4.78	5.08	4.74	5.25	5.97	5.5	6.73	6.48	5.32	6.5
Murray	4.01	4.18	3.99	5.64	5.43	4.29	4.48	4.03	5.6	5.42	4.85	5.14	4.35	5.59	5.4	6.16	7.23	6.27	5.86	5.67
Ohrid	2.03	1.97	2.13	2.41	4.91	2.07	2.13	2.08	2.69	5.24	3	2.25	2.28	3.28	6.59	7.46	3.37	4.2	3.98	7.45
Okeechobee	15.64	9.92	6.01	9.99	5.93	17.37	12.87	6.41	10	6.02	20.18	15.6	10.31	10.97	5.97	21.8	18.46	15.34	10.13	6.44
Sakakawea	2.95	1.75	1.86	5.05	6.24	3.14	1.82	1.95	5.19	6.44	4.24	1.95	2.12	5.61	7.11	7.63	2.23	2.58	6.09	7.88
Salton	4.61	2.29	1.61	5.94	3.57	5.7	3.23	1.32	6.63	3.86	6.89	4.48	1.29	7.4	4.48	8.51	5.96	1.92	9.42	6.81
Sélingué	2.22	1.77	1.45	4.16	3.69	2.8	2.25	1.6	4.11	3.62	4	3.32	2.22	4.05	3.55	4.78	4.06	2.92	4.02	3.47
Tanganyika	2.98	2.99	2.71	3.04	2.76	3.15	3.34	2.95	3.07	2.78	3.26	4.07	3.48	3.3	2.91	4.43	5.85	5.36	3.32	2.84
Titicaca	1.34	1.36	1.08	5.24	6.8	2.31	2.54	2.2	5.66	6.98	2.64	3.39	3.26	6.17	7.89	3.92	5.47	5.72	6.36	9.32
Trichonida	3.96	3.28	3.59	4.08	3.8	4.5	3.44	3.61	4.16	3.92	5.06	4.29	3.44	4.35	3.92	5.33	5.37	4.14	4.34	3.92

ST7. Relative errors (%) of Landsat-8 OLI SR water classification results using the zero-water index threshold (H0) method

Lake	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s
Atitlan	-12.45	-10.44	-5.69	-14.99	-9.93	-10.32	-8.1	-2.59	-12.57	-8.36	-8.67	-5.7	3.24	-11.09	-6.86	-47.96	-20.33	-9.24	-66.39	-12.8
Baikal	-9.75	-12.62	-11.12	-17.53	-10.36	-9.28	-12.36	-10.72	-17.3	-10.1	-5.93	-10.07	-7.88	-15.96	-8.06	-14.58	-18.63	-16.74	-35.73	-12.71
Balkhash	-2.51	2.05	8.04	-2.65	1.26	-1.11	3.36	9.97	-1.52	2.28	1.31	6.37	18.25	0.4	4.31	1.27	7.4	25.26	0.13	4.68
Bansagar	-18.93	-20.59	-18	-25.56	-18.14	-16.15	-18.5	-15.64	-23.22	-16.47	-12.18	-15.39	-11.87	-20.42	-13.87	-17.63	-20.41	-16.55	-26.91	-17.32
Beaver	-18.78	-21.08	-18.39	-26.53	-17.9	-15.22	-17.68	-14.18	-23.32	-15.32	-10.39	-13.06	-8.18	-19.73	-11.72	-17.7	-21.23	-16.46	-33.3	-16.74
Brantley	-23.74	-25.48	-23.11	-31.09	-23.05	-21.39	-23.42	-20.63	-28.81	-21.43	-14.53	-18.05	-13.39	-23.9	-16.82	-14.32	-19.49	-12.38	-26.64	-17.45
Brown	-40.48	-35.97	-25.83	-47.58	-36.74	-46.36	-38.96	-27.98	-62.79	-38.85	-57.93	-40.09	-23.46	-99.54	-39.39	-100	-100	-51.11	-100	-85.91
Buchanan	-20.23	-21.94	-19.81	-42.13	-17.84	-14.38	-16.22	-13.93	-24.32	-14.09	-5.72	-8.33	-5.17	-15.77	-7.84	-3.6	-8.23	-3.21	-18.93	-7.57
Burton	-30.01	-26.77	-21.72	-30.33	-26.98	-28.02	-24.66	-18.94	-28.38	-25.48	-24.2	-19.93	-10.88	-24.75	-22.33	-31.47	-27.13	-19.02	-32.05	-27.28
Caspian	-7.45	-5.21	-0.93	-28.14	-3.81	-4.63	-3.12	1.4	-11.48	-2.21	1.74	1.77	9.51	-6.14	1.95	2.36	2.09	15.94	-100	2.35
Chao	-27.67	-2.03	4.61	-65.71	-2.61	-7.37	1.25	17	-15.39	0.21	4.11	8.8	74.89	-0.59	6.64	0.59	6.15	57.73	-4.08	4.37
Chelan	0.22	-3.84	-2.27	-9.02	-1.29	0.72	-3.58	-1.86	-8.87	-1	0.51	-4.4	-2.38	-11.23	-1.24	-13.17	-30.82	-28.27	-100	-6.94
Chuzenji	-100	-100	-100	-100	-100	-100	-30.49	-20.51	-100	-100	-100	-16	-6.59	-25.18	-24.36	-100	-100	-100	-100	-100
Issykkul	-11.89	-13.43	-12.18	-18.92	-11.1	-9.58	-11.44	-9.86	-17.45	-9.47	-5.31	-7.95	-5.53	-15.63	-6.42	-6.96	-11.53	-8.39	-21.81	-8.09
Mohave	-13.71	-13.89	-10.8	-20.64	-11.55	-11.14	-11.46	-7.53	-19.21	-9.52	-4.62	-5.07	1.73	-16.06	-4.4	-6.49	-7.79	5.45	-26.94	-5.43
Murray	-14.43	-16.34	-10.84	-21.97	-13.23	-11.28	-13.5	-7.48	-18.98	-11.04	-5.57	-8.42	-1.61	-14.26	-7.02	-9.46	-12.63	-4.66	-19.06	-9.97
Ohrid	-31.74	-27.81	-24.7	-45.39	-26.93	-27.66	-25.09	-21.52	-38.7	-24.87	-20.86	-19.03	-12.49	-27.43	-20.14	-100	-25.28	-14.31	-62.44	-24.59
Okeechobee	-62.66	-44.45	-31.78	-55.15	-52.38	-63.54	-44.77	-31.94	-55.86	-52.85	-61.33	-41.51	-16.31	-51.82	-49.69	-65.21	-43.21	-28.32	-55.59	-51.66
Sakakawea	-16.43	-9.35	-5.16	-15.58	-9.12	-11.58	-6.76	-2.09	-13.3	-6.85	-4.21	-1.86	4.8	-9.52	-2.47	-100	-4.2	3.44	-13.2	-4.56
Salton	-15.43	-7.75	49.74	-15.68	-10.3	-15.3	-5.38	64.74	-15.56	-9.24	-12.36	4.15	79.19	-11.85	-3.48	-14.04	17.32	89.38	-14.06	0.41
Sélingué	-56.7	-28.02	-14.31	-97.57	-25.22	-31.01	-19.3	-11.38	-62.01	-19.68	-16.88	-13.15	-5.75	-25.74	-14.11	-20.15	-13.54	-4.64	-48.39	-14.65
Tanganyika	-9.87	-9.96	-5.99	-15.04	-8.69	-9.84	-9.91	-5.84	-15.09	-8.62	-9.12	-9.31	-4.43	-15.24	-8.05	-15.04	-13.58	-6.88	-20.99	-10.65
Titicaca	-13.93	-12.8	-10.37	-19.43	-12.25	-13.19	-11.87	-9.04	-18.84	-11.55	-8.15	-6.05	-1.63	-14.5	-6.94	-12.54	-12.18	-1.69	-71.72	-10.41
Trichonida	-19.61	-14.28	-7.02	-18.14	-16.11	-18.94	-13.15	-4.9	-17.34	-15.5	-18.99	-10.98	6.33	-16.83	-14.81	-90.56	-19.47	-1.86	-30.07	-19.18

ST8. Relative errors (%) of Landsat-8 OLI SR water classification results using the Otsu method

Lake	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s
Atitlan	-10.51	-10.28	-8.2	11.06	8.92	-9.34	-8.9	-6.65	10.63	9.28	-8.9	-8.92	-7.1	11.09	10.21	-7.68	-14.95	-14.18	11.03	11.64
Baikal	-11.66	-14.41	-14.6	2.14	2.95	-11.58	-14.4	-14.63	2.25	3.15	-9.31	-13.19	-13.75	3.06	4.65	-13.47	-20.57	-23.67	2.72	4.43
Balkhash	-7.22	-3.1	0.25	8.99	1.05	-6.95	-2.69	0.62	7.58	-0.17	-7.09	-2.42	1.12	6.7	-1.38	-8.49	-3.83	-0.22	10.25	0.74
Bansagar	-18.09	-21.12	-20.78	-7.98	-7.18	-16.82	-19.88	-19.33	-7.85	-6.97	-15.31	-18.34	-17.76	-7.48	-6.45	-16.53	-21.59	-21.73	-6.97	-5.56
Beaver	-15.82	-18.84	-18.91	5.99	6.23	-14.29	-16.82	-16.76	6.13	6.47	-12.5	-14.87	-14.93	6.77	7.28	-15.64	-20.08	-22.13	6.59	7.27
Brantley	-24.69	-26.4	-25.58	-3.16	-3.6	-24.03	-25.52	-24.65	-2.43	-3.49	-22.03	-23.2	-22.07	-2.44	-3.44	-24.02	-25.47	-24.75	-1.45	-1.91
Brown	-26.1	-27.5	-25.85	-4.48	4.03	-25.59	-28.02	-27.32	-4.38	4.55	-22.91	-27.27	-29.84	-4.2	5.44	2.8	-18.58	-23.22	-2.96	7.28
Buchanan	-15.07	-15.81	-15.83	4.71	4.32	-13.13	-13.69	-13.5	4.71	4.45	-9.99	-10.22	-9.94	5.3	5.32	-10.12	-10.12	-10.55	7.02	8.51
Burton	-26.13	-25.63	-23.12	-2.94	-2.67	-24.98	-24.26	-21.63	-2.85	-2.57	-23.32	-22.62	-20.52	-2.45	-2.36	-26.51	-27.04	-25.65	-1.93	-1.66
Caspian	0.27	0.89	2.98	8.09	8.04	0.67	1.42	3.67	8.37	8.46	4.01	4.38	7.93	9.93	10.86	11.64	9.46	16.87	11.08	13.29
Chao	5.54	2.95	1.25	6.72	36.42	5.64	3.5	1.95	6.8	20.83	7.34	5.04	3.35	7.33	20.89	8.58	5.95	4.38	8.1	22.92
Chelan	-1.31	-4.81	-4.78	20.11	18.61	-1.44	-4.97	-5.07	20.13	18.65	-2.49	-6.46	-7.23	20.44	18.93	-8.37	-19.34	-32.47	20.23	18.56
Chuzenji	-20.76	-29.41	-49.69	0.1	5.44	-9.96	-17.03	-16.01	0.54	6.35	-3.86	-13.28	-12.95	1.29	9.89	15.28	17.99	16.87	2.03	14.66
Issykkul	-14.69	-16.68	-16.85	-2.19	-0.89	-14	-15.86	-16.14	-2.27	-0.85	-13.03	-15.36	-15.78	-1.37	0.94	-11.43	-17.65	-19.29	0.11	5.99
Mohave	-17.65	-17.95	-17.48	8.54	5.35	-16.73	-17.03	-16.51	9.26	6.28	-14.81	-15.22	-14.72	10.67	8.18	-17.49	-19.19	-21.02	11.05	8.92
Murray	-16.44	-18.01	-15.31	11.15	7.74	-14.75	-16.09	-13.4	10.59	7.08	-12.03	-12.84	-10.03	9.54	5.92	-16.76	-17.7	-15.63	10.63	6.89
Ohrid	-23.88	-27.57	-27.75	-15.04	-10.14	-21.87	-25.97	-26.31	-14.36	-8.98	-15.28	-23.13	-24.78	-12.45	-5.64	4.36	-23.74	-36.12	-11.85	-2.72
Okeechobee	-57.64	-48.59	-41.7	-15.62	-26.61	-58.65	-49.2	-42.69	-15.75	-26.65	-58.72	-48.49	-42.21	-10.53	-26.55	-61.66	-50.47	-45.26	-17.35	-27.21
Sakakawea	-1.44	-8.05	-8.96	6.04	9.79	0.27	-6.72	-7.64	6.47	10.35	4	-4.55	-5.93	7.5	12	13.1	-4.13	-6.57	8.71	14.28
Salton	-17.94	-14.11	-8.34	12.09	7.55	-18.62	-14.52	-7.28	13.21	8.85	-18.37	-12.98	-1.63	14.97	11.58	-20.56	-15.3	5.09	18.68	20.14
Sélingué	-14.75	-12.98	-11	7	5	-14.49	-12.6	-10.48	6.92	4.83	-13.9	-11.48	-9.32	6.86	4.59	-13.77	-10.67	-8.99	6.78	4.25
Tanganyika	-10.68	-11.88	-9.98	2.36	1.23	-10.53	-11.87	-9.95	2.53	1.44	-9.18	-11.3	-9.38	3.34	2.52	-13.18	-15.32	-14.05	3.09	1.89
Titicaca	-14.82	-13.56	-12.92	9.71	10.36	-14.88	-13.46	-12.87	9.88	10.63	-12.92	-10.54	-10.07	11.08	12.52	-15.46	-15.38	-22.78	11.97	14.58
Trichonida	-17.29	-15.28	-11.91	1.75	-0.23	-16.84	-14.8	-11.39	2.12	0	-16.1	-14.9	-11.37	3.83	0.96	-17.91	-19.18	-16.85	3.66	0.92

ST9. Relative errors (%) of Landsat-8 OLI SR water classification results using the kNN method

Lake	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s
Atitlan	-10.52	-10.34	-7.78	9.02	11.56	-8.89	-8.57	-5.72	9.78	12.32	-7.87	-8.04	-5.16	10.94	13.73	-4.78	-11.47	-10.77	12.07	15.54
Baikal	-11.52	-14.34	-14.62	3.81	4.35	-11.4	-14.32	-14.7	3.95	4.59	-9	-13.02	-13.83	4.77	6.35	-12.88	-20.49	-24.68	4.5	6.19
Balkhash	-3.86	-1.93	0.83	11.04	3.87	-3.26	-1.2	1.32	9.87	3.29	-3.31	-1.33	1.93	9.03	2.36	-3.94	-2.15	0.6	12.73	6.07
Bansagar	-18.28	-20.69	-20.09	-6.11	-6.03	-17	-19.39	-18.55	-5.84	-5.86	-15.19	-17.54	-16.64	-5.24	-5.06	-15.98	-20.88	-20.67	-4.83	-4.24
Beaver	-14.73	-17.92	-17.79	6.08	6.96	-13.33	-15.82	-15.54	6.26	7.23	-11.36	-13.62	-13.18	6.66	8.11	-13.16	-18.74	-20.44	6.52	7.95
Brantley	-24.41	-26.11	-25.42	0.5	-1.2	-23.46	-24.95	-24.15	0.53	-1.3	-21.32	-22.43	-21.38	0.28	-1.77	-22.97	-24.47	-23.86	1.23	-0.47
Brown	-26.39	-28.78	-26.95	0.09	11.85	-26.9	-30.59	-29.53	0.03	10.54	-25.19	-31.41	-32.2	-0.56	10.45	-36.59	-42.22	-37.19	1.2	9.39
Buchanan	-15.16	-16.27	-16.04	6.57	5.4	-13.06	-14.1	-13.64	6.56	5.34	-9.36	-10.59	-9.95	7.05	6.01	-8.72	-10.94	-10.87	8.69	8.81
Burton	-25.57	-24.86	-21.58	5.19	3.48	-24.39	-23.44	-20.02	5.55	3.61	-22.66	-21.13	-17.49	5.82	3.84	-25.48	-25.73	-23.05	6.65	4.1
Caspian	1.3	1.03	3.28	10.28	9.64	1.71	1.46	3.9	10.53	9.93	5.5	4.72	8.76	12.26	12.51	17.6	10.92	18.68	13.75	15.23
Chao	1.17	-5.67	-18.73	-8.65	-1.11	1.96	-4.48	-9.96	-6.48	-0.07	4.36	-1.75	-5.14	-1.94	3.05	5.77	-0.6	-4.39	-2.56	3.02
Chelan	-0.82	-3.2	-2.39	20.54	18.24	-1.03	-3.24	-2.45	20.75	18.37	-2.09	-4.19	-3.59	21.1	18.76	-6.82	-10.06	-10.58	21.11	18.55
Chuzenji	-49.32	-36.74	-36.87	2.44	5.32	-12.17	-17.46	-15.58	2.48	6.14	-6.29	-13.05	-12.12	2.71	9.39	-47.31	-4.68	-18.36	2.81	10.59
Issykkul	-12.89	-15.79	-16.31	-0.82	0.52	-11.92	-14.99	-15.5	-0.84	0.7	-9.97	-14.09	-14.99	0.18	3.74	0.78	-13.91	-16.26	1.76	15.61
Mohave	-17.1	-17.92	-17.38	8.62	11.28	-16.26	-16.89	-16.28	9.01	11.99	-14.12	-14.85	-14.36	9.93	14	-16.76	-19.79	-22.12	10.13	16.14
Murray	-16.44	-18.13	-15.55	9.75	9.12	-14.64	-16.19	-13.57	9.68	9.08	-11.62	-12.99	-10.29	9.67	8.84	-15.78	-17.82	-15.74	10.42	9.23
Ohrid	-22.94	-27.64	-27.64	-13.62	-8.9	-20.73	-26.03	-25.98	-12.86	-7.84	-12.44	-22.3	-22.55	-11.26	-4.17	3.72	-21.78	-31.54	-10.01	-2.67
Okeechobee	-55.87	-47.55	-39.45	17.44	-6.64	-56.78	-48.33	-40.44	17.26	-6.95	-57.11	-47.3	-39.44	20.57	-6.48	-60.48	-49.44	-42.79	17.38	-8.55
Sakakawea	0.74	-7.78	-8.83	9.71	11.93	3.23	-6.33	-7.21	10.33	12.7	7.71	-3.78	-4.88	11.61	14.68	18.68	-2.51	-5.58	12.69	16.53
Salton	-18.1	-14.21	-7.04	13.01	8.23	-18.83	-14.67	-5.81	14.09	9.58	-18.56	-13.49	-0.79	15.83	12.13	-20.88	-16.12	4.02	19.64	20.47
Sélingué	-14.92	-13.47	-11.61	7.26	5.6	-14.96	-13.2	-10.84	7.18	5.49	-14.11	-11.73	-8.96	7.15	5.39	-13.68	-10.5	-8.02	7.12	5.2
Tanganyika	-9.84	-11.08	-9.57	4.45	2.75	-9.66	-11.03	-9.56	4.74	3.17	-8.23	-10.47	-9.19	5.7	4.47	-11.59	-14.27	-13.84	5.76	4.26
Titicaca	-13.93	-13.13	-12.7	10.58	14.02	-13.67	-13.09	-12.81	10.73	14.31	-10.9	-9.94	-10.05	11.81	16.38	-12.87	-13.87	-24.06	12.1	19.42
Trichonida	-16.68	-15.01	-11.62	3.73	0.16	-16.16	-14.43	-10.79	4.21	0.49	-15.1	-14.54	-9.83	5.84	1.62	-15.87	-17.88	-15.29	5.51	2

ST10. Overall errors (%) of Landsat-8 OLI SR water/land classification results using the zero-water index threshold (H0) method

Lake	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI ₂	AWEI _n	AWEI _s	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s
Atitlan	6.24	5.37	3.42	7.43	5.11	5.28	4.34	2.74	6.32	4.42	4.56	3.49	3.4	5.65	3.84	23.56	10.1	6.32	32.62	6.48
Baikal	4.94	6.4	5.63	8.88	5.25	4.7	6.26	5.43	8.76	5.12	3.01	5.1	3.99	8.09	4.08	7.39	9.44	8.48	18.1	6.44
Balkhash	2.83	2.35	4.24	2.5	2.44	2.72	2.63	5.14	2.26	2.64	2.81	3.61	9.23	2.07	3.16	3.03	4.09	12.78	2.12	3.37
Bansagar	9.72	10.57	9.24	13.12	9.31	8.29	9.49	8.03	11.92	8.45	6.25	7.9	6.09	10.48	7.12	9.05	10.48	8.5	13.81	8.89
Beaver	8.96	10.06	8.78	12.66	8.54	7.3	8.44	6.78	11.13	7.31	5.08	6.26	4.33	9.41	5.63	8.46	10.15	7.9	15.89	8
Brantley	11.15	11.95	10.85	14.58	10.82	10.05	10.99	9.69	13.51	10.07	7.34	8.53	6.89	11.22	8.07	7.28	9.16	6.62	12.5	8.3
Brown	14.63	13	9.36	17.19	13.28	16.76	14.1	10.22	22.69	14.04	21	14.63	9.37	35.97	14.32	36.14	36.14	18.5	36.14	31.05
Buchanan	9.88	10.72	9.68	20.58	8.72	7.04	7.94	6.84	11.88	6.9	3.27	4.23	3.1	7.71	4.03	2.9	4.26	2.83	9.26	3.98
Burton	14.39	12.83	10.41	14.54	12.94	13.43	11.82	9.09	13.61	12.21	11.6	9.56	5.89	11.87	10.7	15.09	13.01	9.26	15.37	13.08
Caspian	4.18	3.17	1.58	14.72	2.64	3.04	2.35	1.62	6.09	2.13	2.3	1.91	4.96	3.62	1.97	2.93	2.18	8.3	52.04	2.21
Chao	14.02	2.16	3.1	33.3	1.94	3.75	2.04	8.82	7.84	1.66	2.29	4.47	37.95	1.82	3.42	1.33	3.23	29.26	2.63	2.41
Chelan	2.05	2.46	2.02	4.56	1.9	2.14	2.36	1.99	4.49	1.87	2.27	2.81	2.28	5.63	2.04	6.65	15.39	14.13	49.93	3.67
Chuzenji	51.31	51.31	51.31	51.31	51.31	51.31	15.67	10.65	51.31	51.31	51.31	8.74	5.15	12.94	12.57	51.31	51.31	51.31	51.31	51.31
Issykkul	6.08	6.87	6.23	9.68	5.68	4.91	5.86	5.04	8.93	4.85	2.97	4.07	2.93	8	3.34	3.99	5.9	4.32	11.16	4.16
Mohave	7.15	7.25	5.83	10.73	6.08	5.89	6.08	4.63	9.99	5.16	3.72	3.83	3.93	8.39	3.59	4.92	5.42	6	14.03	4.24
Murray	7.2	8.16	5.86	10.77	6.72	5.88	6.89	4.75	9.33	5.83	4.16	5.01	3.82	7.19	4.53	5.25	6.6	4.2	9.4	5.48
Ohrid	16.01	14.04	12.49	22.9	13.59	13.96	12.68	11.08	19.53	12.57	10.63	10.06	7.91	13.84	10.37	50.46	12.78	8.28	31.51	12.41
Okeechobee	29.13	20.66	14.8	25.64	24.35	29.54	20.81	14.86	25.97	24.57	28.52	19.3	9.89	24.09	23.1	30.32	20.09	13.51	25.85	24.02
Sakakawea	7.78	4.58	2.91	7.38	4.47	5.54	3.5	2.12	6.33	3.52	2.63	2.09	3	4.65	2.16	47.27	2.85	2.86	6.31	2.87
Salton	7.84	3.94	25.27	7.97	5.24	7.78	2.86	32.89	7.91	4.69	6.28	2.71	40.24	6.02	1.88	7.14	8.82	45.41	7.15	2.06
Sélingué	27.91	13.79	7.05	48.04	12.42	15.27	9.5	5.6	30.53	9.69	8.31	6.48	2.93	12.67	6.94	9.92	6.67	2.54	23.83	7.21
Tanganyika	5.28	5.31	3.51	8.01	4.66	5.26	5.28	3.43	8.03	4.62	4.88	4.96	2.87	8.11	4.32	8.01	7.23	3.79	11.18	5.67
Titicaca	7.07	6.5	5.27	9.87	6.22	6.7	6.03	4.59	9.56	5.86	4.15	3.09	1.42	7.36	3.52	6.37	6.28	4.19	36.41	5.29
Trichonida	10.45	7.61	3.84	9.67	8.59	10.09	7.04	2.98	9.24	8.28	10.13	6.01	4.79	8.97	7.95	48.26	10.4	3.6	16.02	10.22

ST11. Overall errors (%) of Landsat-8 OLI SR water/land classification results using the Otsu method

Lake	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI	AWEL _{ns}	AWEL _s	NDWI	MNDWI	MNDWI	AWEL _{ns}	AWEL _s	NDWI	MNDWI	MNDWI ₂	AWEL _{ns}	AWEL _s	NDWI	MNDWI	MNDWI ₂	AWEL _{ns}	AWEL _s
Atitlan	5.37	5.3	4.38	5.6	4.62	4.83	4.7	3.74	5.4	4.8	4.65	4.72	4.02	5.61	5.24	7.22	7.67	7.77	5.56	5.91
Baikal	5.91	7.3	7.4	1.33	1.6	5.87	7.29	7.41	1.36	1.7	4.72	6.68	6.97	1.67	2.39	6.82	10.42	11.99	1.52	2.29
Balkhash	4	2.66	2.03	4.71	2.41	3.88	2.52	2.02	4.08	2.33	3.91	2.45	2.03	3.71	2.36	4.52	2.87	2.09	5.3	2.44
Bansagar	9.29	10.84	10.67	4.18	3.85	8.63	10.21	9.92	4.12	3.76	7.86	9.41	9.12	3.96	3.57	8.48	11.08	11.15	3.77	3.39
Beaver	7.58	8.99	9.02	3.77	3.77	6.87	8.03	8	3.82	3.87	6.01	7.12	7.13	4.04	4.15	7.49	9.61	10.57	3.99	4.14
Brantley	11.59	12.38	12	4.92	5.07	11.28	11.97	11.56	4.92	5.11	10.35	10.89	10.37	5.02	5.32	11.27	11.95	11.61	5.03	5.38
Brown	9.55	9.99	9.37	2.42	2.37	10.05	10.54	9.99	2.43	2.48	9.75	11.06	11.22	2.46	2.72	9.28	10.58	11.06	2.36	3.19
Buchanan	7.38	7.74	7.75	3.1	2.99	6.45	6.71	6.63	3.11	3.04	4.96	5.06	4.94	3.32	3.39	5.07	5.07	5.29	3.97	4.67
Burton	12.53	12.29	11.09	4.21	4.4	11.97	11.63	10.37	4.23	4.41	11.18	10.84	9.84	4.37	4.51	12.71	12.97	12.3	4.37	4.63
Caspian	1.94	1.66	1.99	4.21	4.18	1.97	1.74	2.24	4.35	4.4	2.76	2.51	4.18	5.17	5.65	6.14	4.96	8.78	5.77	6.92
Chao	2.98	2.38	2.51	3.63	18.46	2.99	2.43	2.46	3.64	10.56	3.78	2.81	2.64	3.81	10.59	4.41	3.15	2.91	4.16	11.61
Chelan	2.02	2.76	2.8	10.04	9.29	2.04	2.82	2.9	10.05	9.31	2.4	3.52	3.89	10.21	9.45	4.57	9.68	16.22	10.1	9.27
Chuzenji	30.49	16.07	26.65	4.28	5.37	9.69	9.19	8.67	4.22	5.79	9.06	7.6	7.19	4.16	7.35	20.67	16.12	16.16	4.19	9.73
Issykkul	7.52	8.53	8.62	1.67	1.78	7.16	8.12	8.26	1.69	1.85	6.67	7.86	8.08	1.46	2.26	5.85	9.03	9.87	1.47	4.44
Mohave	9.18	9.34	9.1	5	3.63	8.7	8.86	8.61	5.26	3.94	7.73	7.96	7.78	5.85	4.81	9.16	10.06	11.08	6.03	5.15
Murray	8.11	8.91	7.72	6.2	5.12	7.34	8.02	6.86	5.98	4.93	6.16	6.59	5.51	5.57	4.6	8.26	8.78	7.87	5.98	4.88
Ohrid	12.05	13.91	14	8.79	7.04	11.08	13.12	13.29	8.61	6.73	8.47	11.78	12.55	7.99	5.89	6.96	12.05	18.23	7.79	5.41
Okeechobee	26.8	22.59	19.39	8.34	12.52	27.27	22.87	19.85	8.38	12.54	27.3	22.54	19.62	6.65	12.51	28.67	23.47	21.04	8.97	12.8
Sakakawea	2.35	4.01	4.39	3.2	4.85	2.3	3.48	3.83	3.38	5.11	3.04	2.71	3.16	3.81	5.86	6.78	2.84	3.56	4.34	6.92
Salton	9.11	7.17	4.26	6.14	3.84	9.46	7.38	3.89	6.71	4.5	9.33	6.59	2.4	7.6	5.88	10.45	7.78	4.57	9.49	10.23
Sélingué	7.26	6.39	5.42	3.94	3.22	7.13	6.21	5.16	3.91	3.16	6.84	5.65	4.59	3.87	3.06	6.78	5.25	4.45	3.85	2.96
Tanganyika	5.7	6.33	5.32	2.6	2.56	5.61	6.32	5.31	2.61	2.53	4.92	6.02	5.01	2.67	2.54	7.01	8.15	7.48	2.56	2.34
Titicaca	7.53	6.88	6.56	4.93	5.26	7.55	6.84	6.53	5.02	5.4	6.56	5.35	5.11	5.62	6.35	7.85	7.84	11.58	6.08	7.4
Trichonida	9.21	8.15	6.35	2.64	2.4	8.97	7.9	6.09	2.74	2.45	8.65	7.97	6.1	3.36	2.63	9.73	10.25	8.98	3.27	2.63

ST12. Overall errors (%) of Landsat-8 OLI SR water/land classification results using the kNN method

Lake	Ultra-blue band based					Blue band based					Green band based					Red band based				
	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI	AWEI _{ns}	AWEI _s	NDWI	MNDWI	MNDWI ₂	AWEI _{ns}	AWEI _s
Atitlan	5.37	5.33	4.21	4.7	5.78	4.64	4.55	3.4	5.03	6.14	4.24	4.36	3.39	5.54	6.82	7.29	6.7	6.71	6.04	7.71
Baikal	5.84	7.27	7.41	1.99	2.25	5.78	7.26	7.45	2.05	2.36	4.56	6.6	7.01	2.44	3.22	6.52	10.38	12.5	2.31	3.15
Balkhash	3.04	2.42	2.03	5.65	3.04	2.89	2.25	2.04	5.11	2.86	2.87	2.26	2.11	4.73	2.65	3.1	2.45	2.1	6.48	3.84
Bansagar	9.38	10.62	10.31	3.51	3.48	8.73	9.96	9.52	3.42	3.43	7.8	9	8.54	3.34	3.3	8.2	10.72	10.61	3.31	3.29
Beaver	7.07	8.55	8.49	3.8	3.99	6.43	7.55	7.41	3.87	4.09	5.5	6.52	6.32	4.01	4.42	6.36	8.97	9.77	3.97	4.36
Brantley	11.46	12.25	11.92	4.99	5.02	11.0	11.7	11.34	5.02	5.08	10.02	10.54	10.04	5.11	5.29	10.78	11.48	11.19	5.22	5.43
Brown	9.62	10.44	9.76	2.2	4.49	10.3	11.17	10.75	2.21	4.07	10.32	12.12	11.92	2.25	4.05	15.11	17.04	15.16	2.36	3.75
Buchanan	7.42	7.96	7.85	3.72	3.36	6.41	6.92	6.7	3.73	3.35	4.67	5.23	4.94	3.92	3.64	4.47	5.44	5.43	4.61	4.78
Burton	12.26	11.92	10.35	5.56	5.43	11.6	11.24	9.6	5.65	5.47	10.87	10.13	8.42	5.74	5.54	12.22	12.33	11.09	5.99	5.7
Caspian	1.97	1.68	2.08	5.35	5.02	2.04	1.74	2.32	5.48	5.17	3.22	2.65	4.58	6.38	6.51	9.16	5.7	9.72	7.16	7.93
Chao	1.65	3.30	9.72	4.62	1.74	1.63	2.71	5.34	3.56	1.64	2.39	1.85	3.08	1.88	2.01	3.06	1.84	2.95	2.13	2.00
Chelan	2.01	2.28	2.04	10.26	9.11	2.01	2.27	2.1	10.36	9.17	2.33	2.74	2.57	10.5	9.37	4.12	5.39	6.48	10.54	9.26
Chuzenji	39.16	19.15	20.8	4.15	5.35	9.55	9.4	8.48	4.14	5.71	8.26	7.51	6.86	4.13	7.21	48.26	17.2	19.44	4.19	8.08
Issykkul	6.6	8.08	8.35	1.47	1.93	6.	7.67	7.93	1.47	2.01	5.1	7.21	7.67	1.45	3.08	5.78	7.12	8.32	1.82	8.87
Mohave	8.89	9.32	9.04	5.03	6.17	8.46	8.79	8.49	5.16	6.	7.38	7.77	7.6	5.53	7.48	8.8	10.35	11.63	5.61	8.52
Murray	8.1	8.96	7.82	5.68	5.5	7.29	8.07	6.93	5.65	5.49	5.99	6.66	5.61	5.62	5.37	7.81	8.83	7.92	5.91	5.55
Ohrid	11.59	13.95	13.95	8.35	6.69	10.5	13.15	13.13	8.11	6.45	7.49	11.41	11.55	7.62	5.59	6.75	11.15	15.92	7.22	5.41
Okeechobee	25.98	22.11	18.34	9.95	6.21	26.4	22.47	18.8	9.91	6.28	26.55	21.99	18.34	11.0	6.21	28.12	22.98	19.89	10.12	6.7
Sakakawea	2.52	3.9	4.34	4.74	5.81	2.86	3.33	3.65	5.03	6.15	4.28	2.48	2.79	5.62	7.07	9.19	2.49	3.23	6.12	7.94
Salton	9.2	7.22	3.67	6.61	4.18	9.57	7.45	3.42	7.16	4.87	9.43	6.85	2.39	8.05	6.17	10.61	8.19	4.31	9.98	10.4
Sélingué	7.34	6.63	5.72	4.05	3.49	7.37	6.5	5.34	4.02	3.44	6.95	5.78	4.42	3.99	3.4	6.74	5.17	3.99	3.99	3.36
Tanganyika	5.26	5.9	5.11	2.97	2.72	5.17	5.87	5.1	3.02	2.75	4.44	5.58	4.91	3.31	2.92	6.17	7.6	7.37	3.33	2.85
Titicaca	7.07	6.66	6.45	5.37	7.12	6.94	6.64	6.5	5.45	7.27	5.53	5.05	5.1	5.99	8.32	6.53	7.08	12.23	6.14	9.86
Trichonida	8.89	8	6.2	3.23	2.45	8.62	7.7	5.78	3.41	2.49	8.15	7.78	5.31	4.11	2.78	8.91	9.58	8.17	3.93	2.0