

Supplementary Table 1. Chemical composition of groundwater and surface water in Leizhou Peninsula

Sample	Water type	Na <sup>+</sup> (mg/l)	K <sup>+</sup> (mg/l)	Ca <sup>2+</sup> (mg/l)	Mg <sup>2+</sup> (mg/l)	Cl <sup>-</sup> (mg/l)	SO <sub>4</sub> <sup>2-</sup> (mg/l)	HCO <sub>3</sub> <sup>-</sup> (mg/l)	NO <sub>3</sub> <sup>-</sup> (mg/l)	NH <sub>4</sub> <sup>+</sup> (mg/l)	TDS (mg/l)	EC (μS/cm)	δ <sup>18</sup> O ‰	δD ‰
D1	Lake	5.24	2.56	6.52	3.68	11.4	5.14	30.4	n.d.	0.12	65.1	95.4	-2.55	-30
D2	Lake	4.15	1.82	4.30	2.29	9.82	3.28	15.5	2.19	0.09	44.0	59.0	-5.42	-45
D3	Lake	9.38	3.08	5.02	3.73	15.6	5.78	30.6	2.01	0.9	76.1	102	n.d.	n.d.
D4	Lake	8.89	1.09	2.54	1.59	19.4	0.68	n.d.	9.56	0.19	44.4	76.0	-3.85	-37
D5	Lake	7.79	2.00	6.95	5.30	12.8	4.4	44.0	n.d.	n.d.	83.2	113	-7.19	-59
D6	Lake	9.26	2.85	7.99	4.91	16.4	6.87	39.2	1.85	n.d.	89.4	123	n.d.	n.d.
G1	Groundwater	6.06	2.94	8.24	1.79	11.9	3.35	12.6	17.7	n.d.	64.6	87.0	-7.81	-48
G2	Groundwater	8.09	2.11	5.62	1.59	10.8	1.56	5.23	24.4	n.d.	59.4	90.0	-7.24	-52
G3	Groundwater	16.4	4.36	15.26	3.13	23.8	5.08	n.d.	71.5	n.d.	140	220	n.d.	n.d.
G4	Groundwater	7.45	1.41	2.96	1.16	10.9	n.d.	0.49	17.8	n.d.	42.2	74.0	n.d.	n.d.
G5	Groundwater	3.65	3.19	7.32	1.95	6.98	7.38	20.6	4.82	n.d.	55.9	72.0	-7.14	-49
G6	Groundwater	5.71	3.48	13.5	0.57	4.91	0.41	46.0	9.69	n.d.	84.3	100	n.d.	n.d.

G7	Groundwater	1.16	2.19	1.23	0.53	2.26	0.45	6.76	1.70	n.d.	16.3	24.0	-4.85	-36
G8	Groundwater	37.9	27.2	32.5	10.7	87.2	10.3	n.d.	161	n.d.	367	540	-8.25	-60
G9	Groundwater	5.34	1.00	11.9	3.21	13.2	n.d.	9.69	36.2	n.d.	80.5	125	n.d.	n.d.
G10	Groundwater	1.05	5.33	2.51	0.98	3.30	7.96	6.11	1.81	n.d.	29.1	320	-6.81	-53
G11	Groundwater	3.25	3.71	6.17	1.25	4.90	11.4	15.8	3.35	0.75	50.5	69.0	n.d.	n.d.
G12	Groundwater	36.1	7.68	13.1	8.67	66.1	22.7	n.d.	64.3	2.73	221	360	-6.78	-52
G13	Groundwater	5.52	9.31	3.43	2.61	3.89	6.93	38.2	n.d.	0.29	70.2	84.4	n.d.	n.d.
G14	Groundwater	84.7	9.93	37.7	8.46	159	0.69	23.6	115	3.87	442	650	-7.31	-56
G15	Groundwater	1.89	5.94	1.14	1.39	3.44	7.15	9.75	n.d.	n.d.	30.7	41.0	-6.67	-51
G16	Groundwater	4.92	10.3	18.6	5.12	9.09	20.7	74.0	1.77	1.83	146	167	n.d.	n.d.
G17	Groundwater	2.09	2.78	0.25	0.72	3.71	3.71	1.11	2.03	n.d.	16.4	30.0	n.d.	n.d.
G18	Groundwater	119.1	56.0	59.4	17.5	254	63.4	19.3	176	11.3	776	990	-5.53	-48
G19	Groundwater	14.0	n.d.	8.23	2.54	23.4	0.06	21.6	15.5	0.65	85.8	120	-6.63	-49
G20	Groundwater	24.0	3.27	21.4	13.5	23.4	6.27	152	5.36	1.25	251	290	-5.32	-53
G21	Groundwater	14.7	1.19	3.24	5.27	21.9	n.d.	n.d.	40.8	n.d.	87.1	137	n.d.	n.d.

G22	Groundwater	0.59	1.95	0.60	0.81	2.62	0.68	5.64	1.03	0.45	14.4	22.0	-6.55	-50
G23	Groundwater	4.17	6.66	2.14	2.00	6.77	5.84	18.9	n.d.	n.d.	46.5	70.0	-7.45	-57.5
G24	Groundwater	6.63	5.67	3.41	3.05	3.04	4.53	45.2	n.d.	1.20	72.7	80.0	n.d.	n.d.
G25	Groundwater	14.4	6.87	12.6	7.95	12.2	19.5	82.6	n.d.	0.36	156	207	n.d.	n.d.
G26	Groundwater	9.31	3.91	34.7	10.5	3.78	5.99	174	n.d.	n.d.	243	260	-7.70	-58
G27	Groundwater	9.82	7.62	1.63	2.98	27.7	n.d.	1.12	9.32	n.d.	60.1	108	-5.36	-46
G28	Groundwater	45.4	3.68	11.4	10.1	85.9	n.d.	n.d.	85.5	1.78	244	370	-6.37	-49
G29	Groundwater	12.8	4.79	44.7	14.3	12.1	3.56	223	n.d.	n.d.	316	310	-4.54	-33
G30	Groundwater	17.7	3.12	31.1	11.8	6.37	1.60	194	n.d.	0.47	267	282	-6.50	-51
G31	Groundwater	45.9	4.49	23.5	8.03	3.14	1.70	232	n.d.	n.d.	320	310	-5.45	-36
G32	Groundwater	10.3	2.57	25.0	9.66	7.74	4.85	136.38	n.d.	n.d.	196	230	-2.57	-25
G33	Groundwater	5.37	3.42	32.2	10.4	5.31	6.15	153	n.d.	0.18	216	233	-7.65	-57
G34	Groundwater	9.78	4.60	12.0	3.99	20.2	0.72	43.3	10.9	n.d.	105	144	n.d.	n.d.
G35	Groundwater	21.0	3.60	21.5	10.3	10.5	0.26	160	4.75	1.47	234	290	-7.55	-54
G36	Groundwater	13.6	2.14	19.2	14.1	10.1	4.51	145	n.d.	n.d.	209	240	-5.37	-42

G37	Groundwater	23.4	3.66	25.0	9.10	8.48	0.11	174	n.d.	n.d.	245	250	-3.05	-30
G38	Groundwater	18.2	3.08	27.1	8.95	8.47	0.24	167	n.d.	0.50	234	257	n.d.	n.d.
G39	Groundwater	55.0	4.35	26.5	10.7	7.64	0.09	284	n.d.	3.21	392	350	-6.45	-48
G40	Groundwater	17.3	3.03	17.4	15.5	12.9	2.35	159	n.d.	0.96	229	270	-7.51	-60
G41	Groundwater	9.94	1.51	9.33	7.15	16.7	n.d.	64.2	1.92	0.55	111	134	n.d.	n.d.
G42	Groundwater	24.5	3.66	23.4	18.1	66.7	n.d.	54.6	66.2	0.58	258	354	-6.55	-45
G43	Groundwater	n.d.	3.30	10.5	5.72	3.82	0.14	57.2	1.79	n.d.	82.4	450	-6.02	-45
G44	Groundwater	21.4	2.07	38.8	18.8	37.1	20.4	163	19.2	n.d.	321	370	-5.98	-43
G45	Groundwater	16.7	2.88	27.6	10.2	34.1	4.97	97.9	21.5	n.d.	216	290	-6.50	-45
G46	Groundwater	13.6	2.81	14.7	14.9	21.3	0.01	110	16.1	1.00	195	250	-5.9	-46
G47	Groundwater	14.6	8.58	19.2	15.6	34.8	n.d.	88.7	42.2	0.34	224	303	n.d.	n.d.
G48	Groundwater	105.2	6.40	6.31	4.78	5.79	4.30	494	3.37	53.7	685	694	-6.20	-50
G49	Groundwater	n.d.	4.76	45.6	32.5	442	48.8	n.d.	118.3	3.41	696	1320	-6.35	-50
R1	River	2.85	3.57	9.23	1.28	5.10	13.2	22.5	2.15	0.75	60.6	65.0	n.d.	n.d.
R2	River	5.43	4.48	9.19	2.10	12.6	12.7	15.8	6.97	0.15	69.4	105	-7.03	-53

R3	River	5.34	4.93	8.93	3.10	12.5	10.7	24.7	5.48	0.15	75.7	107	n.d.	n.d.
R4	River	5.80	4.16	7.49	2.03	15.8	7.90	9.01	9.28	0.16	61.7	93.2	-6.05	-49
R5	River	4.61	3.25	9.12	1.70	10.4	9.75	19.7	6.36	0.75	65.6	77.0	-6.04	-46
R6	River	4.01	5.58	14.1	1.71	14.5	19.3	17.6	4.29	0.17	81.2	122	n.d.	n.d.
R7	River	9.26	2.44	5.69	4.34	15.4	2.87	38.1	1.93	0.79	80.8	109	-4.41	-36
R8	River	4.88	3.16	6.12	1.46	12.7	6.92	9.71	3.61	n.d.	48.5	78.0	n.d.	n.d.
R9	River	4.23	3.31	7.51	2.41	9.02	9.84	18.4	5.48	0.11	60.3	98.3	n.d.	n.d.
R10	River	1.11	6.12	0.06	0.77	2.69	5.79	4.57	n.d.	n.d.	21.1	33.0	-6.15	-50
R11	River	8.21	2.80	22.6	19.9	14.5	n.d.	151.2	19.1	n.d.	238	280	n.d.	n.d.
R12	River	3.60	4.07	6.84	1.77	11.0	10.7	8.23	5.23	0.09	52.1	79.0	n.d.	n.d.
R13	River	3.98	3.91	4.28	2.00	11.1	4.96	12.5	4.70	0.83	48.3	70.0	n.d.	n.d.
R14	River	5.50	4.06	4.23	7.52	10.1	5.45	45.3	2.00	n.d.	84.2	96.0	n.d.	n.d.
R15	River	6.58	1.42	4.24	3.24	10.9	1.38	27.4	2.89	0.55	58.6	85.0	n.d.	n.d.

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\* n.d. denotes “not determined” because of low concentrations or insufficient material.