

Table S1. pH, alkalinity, and $p\text{CO}_2$ in the Yangtze River network (median \pm standard deviation).

River name	Station name	Coordinates		pH	Alkalinity $\mu\text{eq L}^{-1}$	$p\text{CO}_2$ μatm
		Longitude (E)	Latitude (N)			
Yangtze mainstem	Benzilan	99.289	28.283	8.3 \pm 0.11	2352 \pm 435	681 \pm 156
Yangtze mainstem	Shigu	99.958	26.902	8.2 \pm 0.48	2544 \pm 438	846 \pm 263
Yangtze mainstem	Dukou	101.7167	26.591	8.3 \pm 0.12	2399 \pm 429	826 \pm 197
Chongjianghe	Laiyuanqiao	99.929	26.854	7.4 \pm 0.31	1410 \pm 334	3465 \pm 2003
Shuoduogang	Xiaqiaotou	100.05	27.18333	8.6 \pm 0.21	1963 \pm 214	249 \pm 183
Wulanghe	Zongguantian	100.5667	26.807	8.4 \pm 0.21	2525 \pm 603	598 \pm 293
Yanggongjiang	Mujiaqiao	100.2833	26.8	7.6 \pm 0.28	4296 \pm 406	5596 \pm 2377
Yanggongjiang	Heqing	100.2167	26.5	8.2 \pm 0.27	3135 \pm 235	1220 \pm 1212
Luolouhe	Huangping	100.3667	26.08333	8.2 \pm 0.27	3509 \pm 648	1303 \pm 1355
Sangyuanhe	Dahuizhuang	100.535	25.95	8.0 \pm 0.27	5580 \pm 1456	3500 \pm 3264
Shuoduogang	Xiaozhongxun	99.79649	27.55608	7.5 \pm 0.04	1533 \pm 244	2812 \pm 421
Chenghai	Hekoujie	100.654	26.477	9.0 \pm 0.25	12997 \pm 1471	740 \pm 784
Maguohe	Renli	100.983	26.507	7.9 \pm 0.42	3252 \pm 831	2675 \pm 2507
Xinzhuanghe	Shilongba	101.3615	26.59361	7.8 \pm 0.31	4467 \pm 723	3801 \pm 2903
Yalongjiang	Xiaodeshi	101.835	26.75	8.0 \pm 0.22	2576 \pm 465	1567 \pm 715
Ningbohe	Zhuangfang	100.8667	27.28333	7.6 \pm 0.32	2647 \pm 411	3103 \pm 2039
Yangtze mainstem	Jinjiangjie	100.55	26.224	8.1 \pm 0.12	1905 \pm 362	916 \pm 202
Anninghe	Manshuiwan	102.1667	28.23333	7.6 \pm 0.31	1169 \pm 353	1774 \pm 1354
Anninghe	Wantan	101.9333	26.738	7.5 \pm 0.14	1609 \pm 426	2944 \pm 746
Yangtze mainstem	Huadan	102.92	26.866	8.2 \pm 0.15	2237 \pm 418	882 \pm 287
Haihe	Yuanjiashan	102.2138	27.88866	8.0 \pm 0.21	2067 \pm 369	1327 \pm 833
Yangtze mainstem	Longjie	101.9167	25.985	8.2 \pm 0.17	2185 \pm 396	786 \pm 226
Haikouhe	Haikou	102.6	24.78333	8.1 \pm 0.50	2547 \pm 2370	3271 \pm 4570
Longchuanjiang	Xiaohekou	101.5667	25.05	7.8 \pm 0.34	3539 \pm 1038	3285 \pm 4346
Longchuanjiang	Huangguayuan	101.8667	25.83333	8.0 \pm 0.36	3854 \pm 1060	2771 \pm 3614
Jinglinghe	Duke	101.7667	25.85	8.3 \pm 0.36	2686 \pm 556	951 \pm 1930
Mengguohe	Gaoqiao	102.1667	25.64	8.0 \pm 0.36	2828 \pm 488	1499 \pm 2424
Tanglangchuan	Anning	102.4833	24.913	8.0 \pm 0.54	3473 \pm 688	1968 \pm 5001
Tanglangchuan	Caijiacun	102.4333	25.16667	8.3 \pm 0.36	3385 \pm 542	1062 \pm 2064
Panlongjiang	Kunming	102.723	25.06	7.6 \pm 0.38	3728 \pm 861	5112 \pm 6412
Xiaohe	Xiaohe	102.8333	25.203	7.5 \pm 0.26	3684 \pm 613	6807 \pm 4361
Dianweihe	Dianwei	102.8667	25.21667	7.5 \pm 0.27	3076 \pm 394	6224 \pm 4222
Dianchi	Zhongtan	102.662	24.797	8.2 \pm 0.37	2787 \pm 433	901 \pm 1509
Dianchi	Haigeng	102.655	24.96667	8.2 \pm 0.33	2963 \pm 521	981 \pm 1384
Heishuihe	Ningnan	102.7167	27.05	7.8 \pm 0.17	2490 \pm 592	2384 \pm 1290
Zhaojuehe	Zhaojue	102.85	28.01667	7.5 \pm 0.22	1511 \pm 266	2738 \pm 1642
Niulanjiang	Qixingqiao	103.3167	25.55	8.1 \pm 0.49	2764 \pm 417	1123 \pm 2010
Niulanjiang	Huanglishu	103.7333	26.5	8.2 \pm 0.41	2912 \pm 269	1074 \pm 1309
Chelongjiang	Siying	103.2251	25.34794	7.9 \pm 0.41	3016 \pm 438	2289 \pm 2433
Chelongjiang	Tangzi	103.252	27.136	7.8 \pm 0.23	3557 \pm 999	2704 \pm 1256
Meiguhe	Meigu	102.9833	28.21667	7.5 \pm 0.10	1555 \pm 259	2869 \pm 712
Baishuijiang	Niujie	104.4833	27.85	7.8 \pm 0.37	1961 \pm 462	2052 \pm 2494
Guanhe	Doushaguan	104.1333	28.03333	7.8 \pm 0.29	2040 \pm 444	1568 \pm 2254
Luozehe	Malucun	104.0333	27.65	7.7 \pm 0.27	2393 \pm 521	2740 \pm 2125
Sayuhe	Qingkoutang	103.65	27.46667	7.4 \pm 0.35	1057 \pm 715	2461 \pm 3300

Julehe	Yudong	103.552	27.4	7.1±0.34	636±233	3664±3073
Zhaoluda	Xinquan	103.65	27.388	7.8±0.34	2742±1620	2346±2854
Yangtze mainstem	Pingshan	104.3167	28.63333	8.2±0.10	2215±407	1000±235
Yangtze mainstem	Zhutuo	105.85	29.01667	7.8±0.19	2299±349	2405±781
Yangtze mainstem	Cuntan	106.6	29.61667	8.1±0.11	2173±312	1087±319
Nanguanghe	Fuxi	104.6833	28.66667	7.5±0.20	1927±286	3485±1990
Chishuihe	Maotai	106.35	27.85	7.8±0.19	2662±264	2936±1391
Chishuihe	Chishui	105.6833	28.58333	7.6±0.21	2314±336	3743±2008
Guanduhe	Tongzi	106.8167	28.11667	7.6±0.21	3037±383	4304±2648
Songkanhe	Songkan	106.862	28.545	7.7±0.16	2694±260	2938±1004
Xiangxi	Xingshan	110.75	31.23333	8.2±0.28	2484±331	868±784
Qijiang	Wucha	106.4667	29.11667	7.6±0.32	2495±191	3862±2042
Yangtze mainstem	Yichang	111.302	30.676	7.9±0.15	2343±300	1653±469
Yangtze mainstem	Luoshan	113.3667	29.66667	7.8±0.11	2280±248	2380±691
Yangtze mainstem	Wuhan	114.298	30.58333	7.9±0.11	2060±263	1521±497
Lushui	Chongyang	114.033	29.693	7.3±0.38	892±433	2658±1955
Xianninghe	Shihaoqiao	114.2833	29.85	7.7±0.29	2001±963	2448±1557
Dayehu	Weiyuankou	115.2333	30.15	7.8±0.35	1763±330	1513±2111
Jushui	Macheng	115.04	31.2	7.6±0.38	971±263	1405±2005
Bashui	Luotian	115.407	30.8	7.5±0.40	921±268	1523±2155
Lushui	Puqi	113.885	29.71667	7.4±0.47	1423±522	2827±3843
Xishui	Yingshan	115.697	30.75	7.5±0.39	780±218	1485±1708
Jianshui	Xiheyi	115.4333	30.26667	7.6±0.41	842±242	1381±2065
Huangbaihe	Xiaoxita	111.33	30.804	7.7±0.23	2726±389	3320±1193
Juhe	Houziyan	111.6667	30.98333	8.0±0.23	3089±584	1737±1328
Zhanghezong	Jishang	112.149	30.86	8.3±0.16	2560±176	792±394
Qingjiang	Lichuan	108.9329	30.29096	7.6±0.16	2278±404	3647±1172
Juzhanghe	Herong	111.96	30.68333	8.3±0.13	3041±361	901±335
Qingjiang	Enshi	109.4667	30.3	8.0±0.24	2323±417	1540±1129
Yuyanghe	Niejiahe	111.3	30.3	8.0±0.26	2627±374	1427±1138
Qingjiang	Banyuju	111.296	30.481	8.0±0.10	2325±180	1399±299
Lushui	Guijiaban	113.9333	29.69	7.7±0.28	1347±750	1379±1259
Gaodihe	Maojiagiao	114.15	29.495	7.8±0.12	2205±689	1894±660
Dashihe	Bainiqiao	114.168	29.535	7.9±0.13	3271±832	2546±726
Yangtze mainstem	Datong	117.6167	30.76667	7.8±0.14	1919±312	1641±806
Houhe	Dongzhi	117.0098	30.05211	7.0±0.29	760±162	4338±3045
Houhe	Zhide	117.169	30.022	7.1±0.32	791±953	4729±2554
Qiupuhe	Gaotan	117.431	30.365	7.5±0.22	1949±362	3622±2082
Wushanhu	Guanqiao	115.5462	29.97072	7.9±0.39	1765±536	1304±1946
Xiandahe	Susong	116.0724	30.21069	7.3±0.32	1415±480	4483±3104
Changhe	Hualiangting	116.278	30.43333	7.1±0.35	874±364	4407±3016
Qianshui	Qianshan	116.55	30.63333	7.2±0.36	1005±314	3572±4139
Wanshui	Yuexi	116.417	30.891	7.2±0.31	1036±353	4684±2912
Yuxihe	Chaoxian	117.886	31.55	7.3±0.33	1141±558	3617±2975
Chaohu	Zhongmiao	117.4667	31.58333	7.3±0.33	1067±352	3630±2659
Xihe	Liangjiaba	117.675	31.171	7.3±0.30	999±608	3712±2123
Qingyijiang	Dalongfang	118.449	31.335	7.4±0.31	1438±507	4015±2271
Shuiyangjiang	Xuancheng	118.796	30.95	7.4±0.23	1535±324	3732±2147
Guxihe	Dangtu	118.4833	31.55	7.3±0.17	1285±365	4312±1236

Chuhe	Chaheji	118.6	32.2	7.5±0.37	2117±579	3942±2776
Zhongdongjin	Helixi	119.003	30.638	7.5±0.19	2056±365	3604±2324
Wuyihe	Chuxian	118.372	32.27	7.3±0.28	1998±972	5522±5319
Xinanjiang	Tunxi	118.285	29.6998	7.7±0.30	1482±508	1972±1062
Zhongjianhe	Xuanen	109.4667	29.98333	8.1±0.05	2496±213	1206±174
Changhu	Xijiakou	112.482	30.416	8.1±0.40	1732±229	742±749
Honghu	Xindi	113.4333	29.767	8.0±0.51	1817±583	1047±1444
Minjiang	Pengshan	103.8833	30.2	7.5±0.14	2620±506	4472±2281
Minjiang	Wutongqiao	103.8167	29.35	7.5±0.23	2020±267	3660±2129
Minjiang	Gaochang	104.4167	28.8	8.0±0.15	1816±327	1020±525
Najiang	Wangmiaona	103.6069	31.00786	7.8±0.23	2120±410	2000±1641
Najiang	Miaowaijiang	103.6068	31.00213	8.0±0.15	2168±570	1367±415
Mabianhe	Qingshuixi	103.8833	29.15	7.7±0.23	1769±219	2306±2306
Daduhe	Luding	102.2333	29.91667	7.7±0.12	2162±403	2172±427
Daduhe	Shimian	102.3667	29.25	7.9±0.17	2036±1002	1729±1113
Daduhe	Fuluzhen	103.65	29.3	7.6±0.23	1909±289	2577±1620
Niurihe	Yanrun	102.7833	28.98333	7.6±0.15	1684±352	2614±776
Qingyijiang	Duoyingping	102.95	30	7.6±0.19	1819±239	2455±1525
Qingyijiang	Jiajiang	103.5333	29.75	7.5±0.20	1823±255	3056±2084
Mianyuanhe	Hanwangchang	104.15	31.46667	7.7±0.25	2326±296	2486±2127
Tuojiang	Sanhuangmiao	104.4833	30.8	7.6±0.21	3163±783	4216±2699
Tuojiang	Honglang	104.646	30.289	7.5±0.19	2874±602	4404±2345
Tuojiang	Dengyingyan	104.7333	29.9	7.7±0.24	2962±565	4077±3042
Tuojiang	Shipantan	105.0333	29.5	7.6±0.17	2752±509	4368±2432
Tuojiang	Lijiawan	104.9667	29.13333	8.0±0.11	2705±507	1504±572
Yanjinghe	Shawan	106.2214	29.663	7.7±0.29	2937±553	3282±3989
Jialingjiang	Dongpo	106.436	33.858	7.6±0.40	2247±554	2897±3473
Jialingjiang	Tanjiazhuang	106.2	33.7	8.1±0.36	2607±528	1084±1815
Jialingjiang	Lüeyang	106.124	33.34	8.0±0.25	3099±537	2054±2266
Jialingjiang	Xindianzi	105.85	32.58333	7.8±0.18	2465±650	2069±687
Jialingjiang	Tingzikou	105.8167	31.85	7.7±0.23	2869±567	3081±1732
Jialingjiang	Jinyintai	106.05	31.55	7.7±0.21	2590±604	2773±1529
Jialingjiang	Nanchong	106.0833	30.8	7.8±0.22	2793±504	2857±1713
Jialingjiang	Wusheng	106.2833	30.35	8.1±0.13	2401±464	1154±321
Hongyahe	Yangdian	106.4242	33.93103	8.1±0.34	2525±518	1087±861
Changfenghe	Chengxian	105.76	33.71667	7.7±0.35	2721±429	3255±3283
Jialingjiang	Beibei	106.4167	29.85	8.1±0.14	2289±509	1196±244
Xihanshui	Shunlixia	105.1167	34.1	7.7±0.44	2924±668	3248±3788
Xihanshui	Daqiao	105.2833	33.75	8.1±0.34	3049±546	1431±2044
Bailongjiang	Gengu	103.3833	34.01667	7.9±0.36	3394±426	2268±2195
Bailongjiang	Lijie	104.0667	33.9	7.8±0.43	3264±548	2508±3653
Bailongjiang	Diangasi	103.7167	33.95	7.5±0.25	2607±545	4504±1788
Bailongjiang	Wudou	104.92	33.39	7.8±0.40	3125±463	2564±3035
Bailongjiang	Bikou	105.25	32.745	7.8±0.37	2738±371	2350±3383
Bailongjiang	Qianfeng	104.897	33.042	7.9±0.20	2994±858	2360±1011
Bailongjiang	Sanleiba	105.6333	32.45	7.9±0.21	2954±730	2085±969
Minhe	Sanpanzi	104.55	33.88333	8.1±0.33	3358±399	1529±2598
Beiyuhe	Majie	104.95	33.46667	7.7±0.40	2541±785	2909±4473
Baishuijiang	Guyiba	104.6333	32.96667	8.0±0.29	3058±269	1503±1686

Baishuijiang	Jiaheba	105.0833	32.821	7.9±0.31	2777±319	2161±3012
Rangshuihe	Caoba	105.1372	32.73006	7.6±0.40	1020±448	1639±2069
Donghe	Qingquanxiang	106.0667	31.71667	7.6±0.15	2215±300	3501±1002
Qingjianghe	Qingjiang	105.4667	32.306	7.5±0.20	2027±408	2918±1618
Qingjianghe	Shangsi	105.267	31.35	7.6±0.21	2108±511	2698±1599
Xihe	Jianshexiang	106.039	31.295	7.4±0.21	2313±345	5079±3295
Bahe	Fengtang	107.1	31.5	8.0±0.22	2233±373	1474±1029
Qujiang	Goudukou	107	30.85	7.7±0.21	2114±351	2299±1018
Qujiang	Luoduxi	106.5833	30.33333	8.0±0.11	2077±953	1211±803
Zhouhe	Donglin	107.6833	31.28333	8.0±0.18	2193±459	1399±1324
Houhe	Maoba	107.75	31.61667	7.8±0.22	2215±456	2094±915
Liujianghe	Jingbian	106.8333	31.01667	8.1±0.21	2743±572	1367±1099
Fujiang	Fujiangqiao	104.7167	31.51667	7.7±0.20	2325±1169	2271±1722
Fujiang	Shehong	105.4	30.86667	7.7±0.18	2475±433	2479±1246
Fujiang	Xiaoheba	106.0167	30.06667	8.1±0.15	2262±419	1045±388
Wujiang	Wujiangdu	106.796	27.315	7.6±0.11	2279±268	3779±1236
Wujiang	Sinan	108.248	27.9	7.6±0.20	2893±342	4510±2190
Wujiang	Wulong	107.7167	29.28333	8.0±0.14	2420±279	1360±508
Sanchahe	Niuchishui	105.0833	26.649	7.6±0.04	2385±262	3443±558
Sanchahe	Sanchahe	105.744	26.391	7.9±0.45	2394±324	1835±1836
Liuchonghe	Qixingguan	104.9333	27.15	7.6±0.05	2344±224	3392±452
Liuchonghe	Hongjiadu	105.865	26.863	7.6±0.05	2338±287	3279±419
Daotianhe	Xuhuatun	105.25	27.346	7.6±0.10	2836±344	4174±951
Xingjiang	Pingzhai	106.15	26.254	7.8±0.33	3305±558	2922±2250
Yangchanghe	Huangmaocun	106.322	26.401	7.9±0.27	2894±560	2420±1844
Xiaoguankou	Qiyangqiao	106.2983	26.515	8.0±0.28	4389±2003	2251±2433
Xiangjiang	Hehuihe	106.926	27.73333	7.7±0.23	3324±583	3923±2761
Xiangjiang	Xiangjiang	107.314	27.659	7.6±0.27	3324±550	4940±2898
Xiangjiang	Liyutang	107.26	27.437	7.8±0.17	3434±209	3078±965
Luowanghe	Dongtou	106.941	26.954	7.9±0.10	3268±182	2337±492
Dacaohe	Longli	106.95	26.45	7.8±0.16	2734±296	2896±879
Nanminghe	Huaxi	106.673	26.46667	7.6±0.11	3693±186	5672±1548
Nanminghe	Guiyang	106.96	26.732	7.5±0.20	3707±287	7718±4086
Xiangjiang	Hongjunshan	106.914	27.71667	7.8±0.26	3262±523	3551±3548
Xiangjiang	Longxiqiao	106.9333	27.664	7.7±0.29	3150±512	3509±3855
Gaoqiaohe	Gaoqiao	106.89	27.673	7.7±0.16	3590±583	3531±2233
Yuqinghe	Yuqing	107.75	27.26667	7.7±0.24	2966±1017	3608±2628
Shiqianhe	Shiqian	108.3667	27.565	7.6±0.16	2637±795	4282±1689
Yinjiang	Yinjiang	108.3833	28	7.6±0.17	2425±495	4083±1704
Hongduhe	Jiangbin	107.9333	28.6	7.8±0.15	3305±199	3153±1092
Furongjiang	Changba	107.684	28.723	7.8±0.20	2882±126	2731±1567
Meijiang	Meitan	107.675	28.911	7.8±0.11	3402±408	3135±1198
Zitonghe	Tianxiansi	105.4	31.01667	7.9±0.24	3695±765	2462±1622
Xiangjiang	Quanzhou	111.1	25.98333	7.4±0.38	1800±318	3711±2611
Xiangjiang	Laobutou	111.6	26.26667	7.5±0.20	1737±303	3014±1506
Xiangjiang	Hengshan	112.8667	27.23333	7.5±0.25	1808±254	3438±2065
Xiangjiang	Zhuzhou	113.15	27.81667	7.7±0.24	1613±255	1724±1109
Xiangjiang	Xiangtan	112.9167	27.86667	7.8±0.44	1739±331	2349±2521
Xiaoshui	Daoxian	111.361	26.168	7.4±0.20	1475±301	3617±1751

Xiaoshui	Maojiangqiao	111.68	25.955	7.6±0.15	1574±201	2296±1266
Chonglingshui	Ouyanghai	112.6833	26.11667	7.6±0.18	2507±401	4071±1456
Chonglingshui	Baisha	112.6833	26.16667	7.8±0.29	2254±377	2129±1869
Leishui	Leiyang	112.8667	26.41667	7.3±0.21	1616±282	5069±2401
Leishui	Dongjiang	113.244	25.949	7.7±0.12	1231±310	1453±703
Leishui	Paishuipian	113.4667	25.7	7.5±0.35	1550±313	3068±2320
Chushui	Jiaoming	113.393	25.715	7.4±0.10	1554±338	3516±1408
Chenshui	Chenzhou	113.039	25.8	7.8±0.14	2585±386	2101±798
Mishui	Longjiashan	113.45	26.86667	7.1±0.26	930±254	4461±2597
Lushui	Daxitan	113.45	27.66667	7.6±0.27	2164±702	3754±2454
Lianshui	Loudi	111.9667	27.75	7.8±0.17	2947±347	2431±1272
Lianshui	Xiangxiang	112.5167	27.71667	7.6±0.23	2305±466	3878±1589
Zishui	Zhayangtan	111.4333	27.66667	7.6±0.25	1930±330	2757±1803
Zishui	Xinhua	111.3	27.73333	7.4±0.25	1660±201	4391±3021
Zishui	Taojiang	112.255	28.125	7.5±0.27	1488±316	2972±1619
Nanshui	Huangqiao	110.85	27.03333	7.8±0.23	1912±349	2247±1486
Yuanjiang	Qiancheng	109.8167	27.18333	7.7±0.34	2389±642	2977±2921
Yuanjiang	Anjiang	110.1333	27.31667	7.6±0.29	1431±440	2312±1518
Yuanjiang	Yuanling	110.4	28.45	7.9±0.27	2056±1048	1566±1803
Yuanjiang	Taoyuan	111.4833	28.9	7.6±0.25	1822±480	2801±2144
Qingshuijiang	Shidong	108.329	26.862	7.9±0.25	3230±514	2858±1755
Qingshuijiang	Jinping	109.208	26.7	7.7±0.29	1867±488	2509±1386
Maweihe	Wenfengta	107.509	26.26667	7.5±0.08	2775±477	4695±1199
Maweihe	Xiasi	107.8167	26.534	7.8±0.22	3133±538	3041±1731
Zhonganjiang	Wanshui	107.985	26.745	7.9±0.19	3415±458	2698±1778
Balahe	Nanhua	108.072	26.53333	6.8±0.23	398±72	3314±1566
Liudonghe	Liudongqiao	108.85	26.95	6.9±0.22	711±167	4652±1924
Qushui	Yantou	109.75	26.83333	7.0±0.31	608±141	4187±2211
Wushui	Dacaiyuan	108.4	27.043	7.9±0.17	4202±534	3079±1181
Wushui	Yuping	108.9333	27.26667	7.7±0.17	3013±736	3602±1319
Wushui	Zhijiang	109.6667	27.46667	8.1±0.30	2926±667	1435±1718
Chushui	Simeng	110.5	27.83333	7.4±0.26	1200±252	2711±2044
Chenshui	Taoyi	109.85	27.86667	7.7±0.28	2086±454	2511±2128
Jinjiang	Lujiadong	109.2333	27.71667	7.5±0.18	2006±567	3677±1260
Wushui	Jishou	109.7333	28.31667	8.0±0.09	2657±226	1812±357
Youshui	Laifeng	109.4	29.5	7.6±0.17	1857±278	2569±1113
Youshui	Baojing	109.65	28.71667	7.7±0.24	2461±578	2787±1576
Youshui	Shidi	109.2167	28.75	7.8±0.25	1981±349	2249±1451
Songtaohe	Songtao	109.2167	28.18333	7.5±0.18	2177±562	3839±1371
Ximenhe	Fuquan	109.1638	26.27517	8.0±0.14	3834±363	2423±710
Youshui	Gaoqitou	110.35	28.63333	7.5±0.02	1898±264	3645±474
Jiahe	Zhaojiahe	109.984	33.076	8.0±0.12	2736±389	1721±564
Baohe	Hedongdian	106.9667	33.2	7.7±0.12	5227±1851	5036±3002
Hanjiang	Wuhouzheng	106.6167	33.15	8.0±0.29	2423±807	1812±2870
Hanjiang	Yangxian	107.5	33.21667	7.9±0.23	2633±754	1984±1469
Hanjiang	Shiquan	108.2333	33.03333	7.8±0.33	2600±559	2305±2582
Hanjiang	Ankang	109	32.66667	7.8±0.32	2321±467	2022±2457
Qingshuihe	Shengxiancun	107.2667	33.26667	7.9±0.24	1854±589	1453±1097
Mumahe	Bailongtang	107.837	32.98	7.8±0.11	2707±387	2328±646

Mumahe	Xixiang	107.751	32.979	7.9±0.24	2617±398	1781±1591
Hanjiang	Baihe	110.1167	32.81667	8.0±0.17	2067±337	1309±900
Hanjiang	Longwangmiao	111.4333	32.572	8.1±0.27	2261±291	1019±944
Hanjiang	Yunxian	110.733	32.852	7.6±0.20	1986±358	2869±967
Hanjiang	Huangjiagang	111.51	32.597	8.0±0.16	2013±264	1241±781
Tianhe	Jiajiafang	110.4167	32.96667	8.1±0.20	3743±875	1855±828
Dongpaizi	Shiqiao	111.9803	32.3585	8.0±0.18	2552±591	1439±472
Hanjiang	Nianpanshan	112.458	31.284	7.8±0.18	2179±470	1892±1416
Duhe	Huanglongtan	110.55	32.68333	7.8±0.22	2087±292	1941±972
Duhe	Zhushan	110.2333	32.21667	8.0±0.18	1978±262	1174±593
Nanhe	Gucheng	111.553	32.252	8.1±0.16	2791±566	1379±431
Nanhe	Kaifengyu	111.25	32.03333	7.9±0.28	2515±911	1874±1144
Qinghe	Huangmaoshan	111.9667	32.2	7.8±0.34	2012±463	2219±1881
Qinghe	Huangmaoshan	112.015	32.201	7.4±0.21	2266±988	4708±3709
Manhe	Leihe	112.17	31.655	7.7±0.19	3411±957	3296±1849
Danjiang	Danfeng	110.3167	33.696	8.0±0.27	3093±612	2060±1629
Danjiang	Baidutan	111.473	33.012	7.9±0.21	2173±646	1636±923
Laoguanhe	Xixia	111.4833	33.26667	7.8±0.26	2351±639	2311±1748
Tuanhe	Yangzhai	111.854	33.05	7.8±0.28	3565±795	3385±2777
Tuanhe	Jitan	112.259	32.684	7.8±0.30	3004±797	3030±2453
Baihe	Xindianpu	112.31	32.417	7.8±0.18	2028±605	1765±589
Tanghe	Tanghe	112.822	32.697	7.7±0.29	2369±821	2509±2488
Tanghe	Guotan	112.598	32.521	7.6±0.25	1715±690	2599±1370
Hanjiang	Xiaoshicun	113.45	30.38333	7.9±0.13	2262±480	1715±536
Watanhe	Pijiaji	113.4312	30.29907	8.1±0.15	3403±375	1728±599
Hanjiang	Huangzhuang	112.561	31.176	7.9±0.17	2178±249	1475±851
Yunshui	Suixian	113.3667	31.7	7.8±0.28	1930±594	1994±1537
Yunshui	Geputan	113.704	30.95	7.8±0.31	2148±522	1920±1970
Huanshui	Huayuan	113.9667	31.25	7.4±0.29	1145±499	2751±1595
Tianmenhe	Huangtan	113.0833	30.66	7.9±0.21	2602±933	2298±1263
Dafushui	Yingcheng	113.55	30.95	8.0±0.26	3433±842	1964±1429
Bengzhanhe	Hanchuanbeng	113.85	30.65	7.9±0.24	2859±813	2120±2209
Ganjiang	Mianjin	114.8667	26.38333	7.3±0.32	832±233	2605±2642
Ganjiang	Jian	114.9833	27.1	7.3±0.34	830±221	2181±2853
Ganjiang	Xiajiang	115.15	27.55	7.3±0.30	820±276	2523±1884
Ganjiang	Waizhou	115.828	28.63333	7.4±0.44	880±236	2205±2048
Zhangshui	Bashang	114.95	25.81667	7.4±0.25	794±242	2150±1858
Pingjiang	Hanlinqiao	115.25	25.908	7.3±0.31	710±259	1900±2492
Pingjiang	Hongweiqiao	115.199	26.061	7.4±0.25	659±166	1754±1569
Heshui	Yongxin	114.25	26.95	7.5±0.31	1459±483	2866±3047
Heshui	Shangshalan	114.8	26.93333	7.4±0.35	1333±415	2825±2930
Lushui	Saitang	114.7667	27.18333	7.4±0.34	1226±440	3185±2955
Wujiang	Xintian	115.2833	27.2	7.3±0.33	979±294	3288±2889
Tongjiang	Hezhou	114.8167	27.45	7.2±0.41	839±294	3791±3690
Yuanshui	Jiangkou	114.8333	27.73333	7.6±0.31	1842±403	2985±2893
Ganjiang	Dingjiadu	115.8167	28.673	7.5±0.27	869±138	1627±2560
Jinjiang	Gaoan	115.3667	28.35	7.6±0.23	1299±220	2301±961
Jinjiang	Jiacun	115.3	28.36667	7.5±0.33	1436±326	2669±2889
Fuhe	Lijiadu	116.1667	28.21667	7.3±0.36	618±167	1975±2593

Litanhe	Shuixicun	116.9	27.3	7.1±0.32	541±426	2203±2263
Baotangshui	Wutou	115.8667	27.61667	7.3±0.40	578±212	1945±2305
Xinjiang	Yiyang	117.4667	28.38333	7.4±0.40	924±594	2395±3022
Xinjiang	Meigang	116.8167	28.43333	7.2±0.40	780±203	2729±2709
Yushanshui	Shangrao	117.978	28.45	7.5±0.40	1136±255	2173±2561
Changjiang	Dufengkeng	117.2	29.26667	7.3±0.52	711±207	2281±2531
Leanhe	Xiangtun	117.5333	29	7.3±0.42	691±198	1935±2173
Leanhe	Hushan	117.2667	28.91667	7.3±0.42	807±271	2723±3209
Xiushui	Gaoshan	114.5833	29.049	7.4±0.35	792±174	2050±2169
Xiushui	Qiujin	115.6833	29.163	7.4±0.29	817±107	2082±1642
Xiushui	Baimadian	114.599	29.06667	7.5±0.35	709±132	1431±1557
Xiushui	Tuolin	115.5	30.442	7.3±0.36	776±201	2311±2584
Liaoshui	Wanjiabu	115.647	28.857	7.3±0.42	605±234	1962±2722
Boyanghu	Kangshan	116.4167	28.88333	7.3±0.54	539±156	2378±1445
Boyanghu	Tangyin	116.37	29.115	7.2±0.28	720±256	2454±1838
Boyanghu	Douchang	116.1833	29.244	7.4±0.35	683±267	1733±2153
Ganjiangnan	Yelou	115.9667	28.73333	7.5±0.29	832±237	1394±1544
Hukoushui	Xingzi	116.05	29.429	7.4±0.32	772±297	1796±1841
Hukoushui	Hukou	116.2167	29.75	7.7±0.24	940±693	1338±707
Fengshui	Dayong	110.614	29.17	7.8±0.27	2323±395	2245±1763
Lishui	Shimen	111.378	29.95	7.5±0.19	2101±278	3673±1694
Fengshui	Sanjiangkou	111.307	29.578	7.9±0.26	2404±353	1710±2259
Loushui	Changtanhe	111.0167	29.46667	8.0±0.27	2309±389	1499±1228
Weishui	Dayanju	111.591	29.777	8.2±0.21	2393±311	881±420
Songzihe	Xinjiangkou	111.7833	30.18333	7.9±0.28	2422±406	1854±2138
Songlihe	Shiguishan	112	29.4	8.0±0.15	2353±161	1496±620
Songhuhe	Anxiang	112.1667	29.4	8.0±0.12	2646±367	1599±422
Yuanjiang	Jiegangkou	110.9838	28.79276	7.6±0.21	1999±309	3102±2350
Xidongting	Nanju	112.2833	29.06667	7.9±0.22	2291±345	1806±2259
Xidongting	Xiaoheju	112.3167	28.85	8.0±0.25	1744±249	1307±1127
Miluohe	Xinshi	112.883	28.827	7.3±0.28	659±193	2016±1406
Miluohe	Huangqiduan	113.3167	28.81667	6.9±0.24	524±167	4121±1976
Dongtinghu	Chenglingji	113.123	29.424	7.9±0.20	1895±248	1620±1811
Xishaoxi	Fanjiaocun	119.85	30.845	7.1±0.31	961±241	5314±3058
Longxi	Wuxing	120.089	30.896	7.0±0.23	1225±277	7261±2656
Nancanghe	Yixing	119.8333	31.358	7.5±0.26	1558±428	3052±2446
Shaheshui	Shahe	119.438	31.31667	7.5±0.16	1007±272	2240±1232
Qinhuaihe	Daluocun	118.8667	31.86667	7.4±0.21	1545±662	4078±2287
Liuhe	Liuhezha	121.2667	31.5	7.5±0.28	2407±508	5669±3363
Guajinggang	Guajingkou	120.65	31.188	7.3±0.25	1199±291	3074±2643
Hangjiaping	Jiaying	120.687	30.883	7.4±0.42	2088±410	4792±6599
Wusongjiang	Huangdu	121.2333	31.253	7.6±0.19	3607±659	6064±2801
Haiyanghe	Xianrenzhang	110.7	25.58333	7.4±0.18	2296±575	4688±2209
Xinqianghe	Taolin	113.4167	29.35	7.3±0.22	657±308	2152±1744
Xinkaihe	Suzhou	120.6052	31.371	7.4±0.35	1676±191	4325±3373
Yuechenghe	Wangting	120.4333	31.45	7.5±0.29	1425±184	2748±2393
Baimaotang	Changshu	120.737	31.615	7.5±0.17	2773±366	5150±2376
Yangchenghu	Xiangcheng	120.782	31.48333	7.4±0.23	2189±227	4493±3339
Taipuhe	Pingwang	120.6333	31	7.4±0.25	1292±195	3322±2761

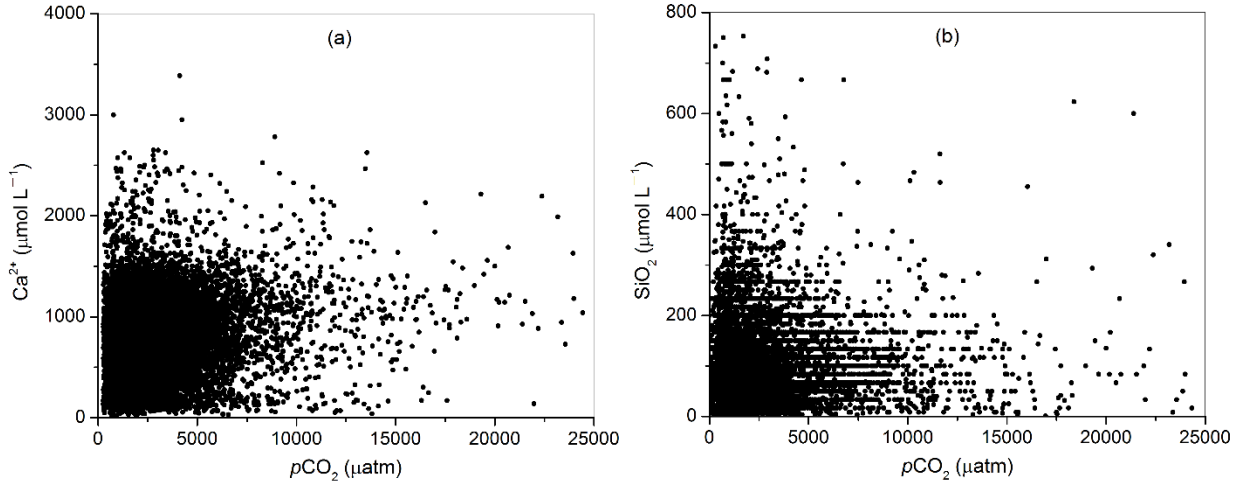


Figure S1. Relationship between (a) $p\text{CO}_2$ and Ca^{2+} and (b) $p\text{CO}_2$ and dissolved SiO_2 in the Yangtze River basin using all available data pairs.

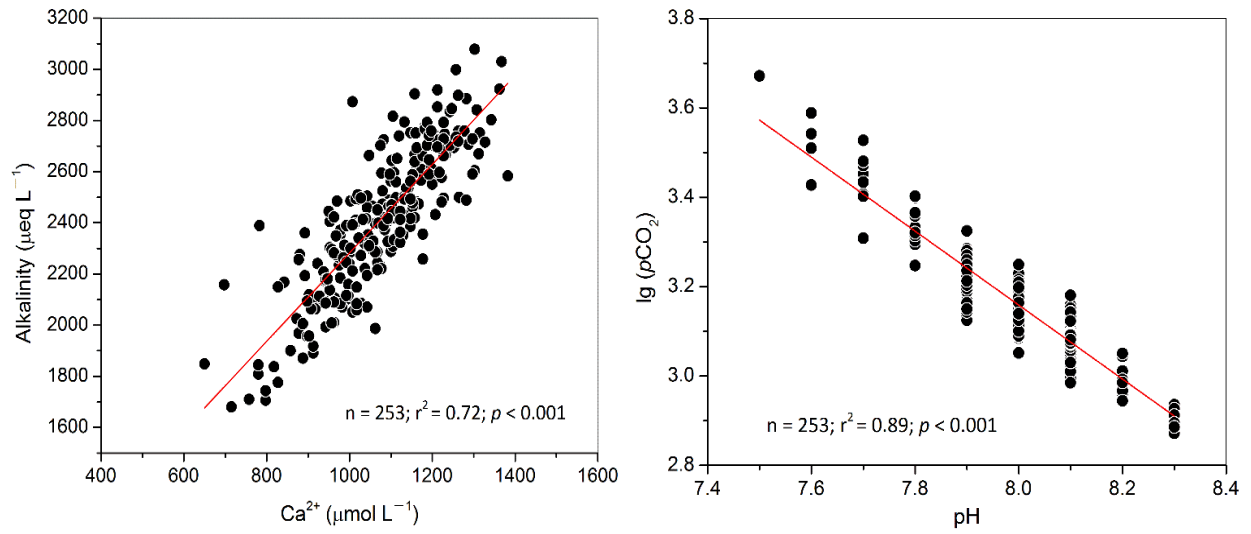


Figure S2. Relationship between (a) Ca^{2+} and alkalinity and (b) pH and $p\text{CO}_2$ in Wujiang catchment (at Wulong station)

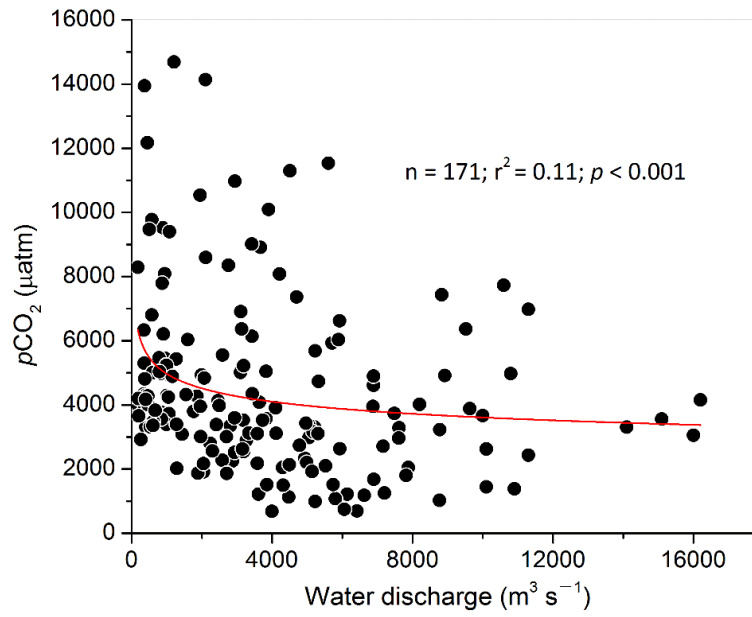


Figure S3. The negative relationship between water discharge and $p\text{CO}_2$ at Xiajiang station (Ganjiang catchment).