

## Supplementary Tables

Table S1. Accuracy verification results of water yield data from 2000 to 2020. The relative error is the ratio of the absolute error to the observed value.

Years	2000	2005	2010	2015	2020	Average
Observed value	771.8	748.8	794.4	827.1	664.8	761.38
Simulated value	714	632	818	741	740	729
Relative error	-7.49%	-15.60%	2.97%	-10.41%	11.31%	-4.25%

Table S2. Comparison results of annual water yield and water supply in the Xiangjiang River Basin from 2000 to 2020 and the proportion of ecological base flow.

Years	2000	2005	2010	2015	2020
Y(m <sup>3</sup> )	$7.14 \times 10^{10}$	$6.32 \times 10^{10}$	$8.18 \times 10^{10}$	$7.41 \times 10^{10}$	$7.40 \times 10^{10}$
S(m <sup>3</sup> )	$5.15 \times 10^{10}$	$4.56 \times 10^{10}$	$5.89 \times 10^{10}$	$5.34 \times 10^{10}$	$5.34 \times 10^{10}$
(Y-S)/Y×100%	27.9%	27.8%	28.0%	27.9%	27.8%

Table S3. In-degree, out-degree, and degree data, as well as the weights of each node in the ecosystem service flow network of the Xiangjiang River Basin from 2000 to 2020.

node	ID	OD	De	Weight( $10^8\text{m}^3$ )				
				2000	2005	2010	2015	2020
1	0	1	1	7.006	5.391	8.185	7.377	10.079
2	1	1	2	8.445	7.343	10.558	8.921	10.696
3	0	1	1	4.677	4.310	6.451	4.821	4.626
4	0	1	1	11.159	9.665	16.629	11.792	15.481
5	3	1	4	-6.109	-7.479	-3.934	-7.026	-3.681
6	2	1	3	-2.557	-3.869	-1.849	-2.773	-2.588
7	2	1	3	0.842	0.350	2.070	0.808	0.721
8	2	1	3	1.420	1.011	1.532	1.240	1.145
9	2	1	3	5.428	3.749	6.466	4.827	4.801
10	0	1	1	7.693	6.185	8.238	7.165	6.380
11	0	1	1	6.334	4.353	6.000	5.596	5.454
12	2	1	3	8.790	6.256	8.586	7.746	7.090
13	3	1	4	5.507	3.467	3.975	4.597	4.071
14	2	1	3	2.424	1.547	2.381	2.136	1.893
15	2	1	3	3.597	2.455	3.235	3.058	2.665
16	0	1	1	4.098	2.595	3.465	4.164	4.509
17	2	1	3	0.768	-0.273	0.794	0.335	0.085
18	0	1	1	5.908	3.606	4.268	5.408	5.644
19	2	1	3	2.342	1.506	1.953	1.971	1.810
20	2	1	3	0.798	0.548	0.707	0.802	0.829
21	0	1	1	4.101	2.616	3.289	3.640	3.441
22	2	1	3	2.905	1.990	2.274	3.038	3.277
23	2	1	3	0.624	0.285	0.695	0.756	0.858
24	2	1	3	6.362	4.001	4.987	5.679	5.508
25	2	1	3	11.896	7.388	10.011	9.534	8.263
26	0	1	1	13.270	10.004	12.449	11.529	11.089
27	0	1	1	25.944	20.345	24.628	23.013	21.083
28	0	1	1	8.926	6.592	7.953	8.830	9.030
29	3	1	4	11.850	8.448	10.370	12.026	12.178
30	0	1	1	6.912	5.163	6.599	6.736	6.891
31	0	1	1	6.040	3.693	5.125	4.555	5.166
32	0	1	1	35.565	27.674	33.360	30.202	31.660
33	2	1	3	13.710	9.663	12.381	12.092	12.182
34	0	1	1	12.062	9.953	11.983	12.917	13.201
35	0	1	1	15.739	10.690	12.622	17.832	18.860
36	0	1	1	13.014	9.819	11.433	14.774	15.173
37	0	1	1	7.258	6.108	7.163	7.227	7.697
38	0	1	1	12.165	10.082	11.318	13.791	13.983
39	0	1	1	21.169	22.047	23.027	24.230	25.405
40	3	0	3	1.851	1.224	2.308	1.825	3.055
41	0	1	1	11.608	7.703	9.915	11.137	14.058
42	0	1	1	12.119	6.976	9.673	10.007	9.680

43	0	1	1	6.380	4.187	4.937	5.751	6.983
44	0	1	1	3.835	3.722	5.605	4.070	3.226
45	0	1	1	6.679	5.287	6.323	6.001	5.323
46	2	1	3	16.241	10.317	12.906	17.165	18.235

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Supplementary Figures

Figure S1. Changes in freshwater supply and precipitation in the Xiangjiang River Basin from 2000 to 2020

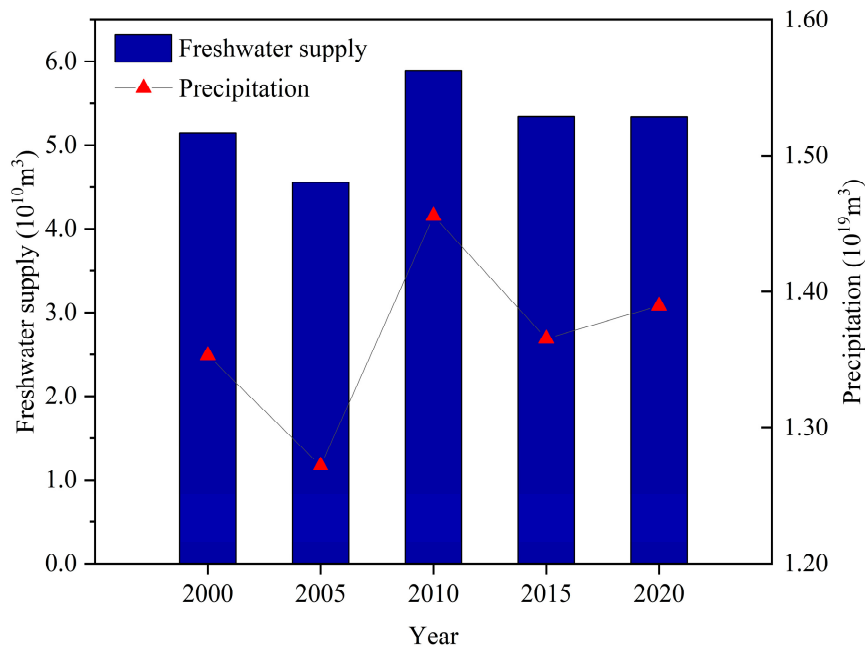


Figure S2 Changes in freshwater demand in the Xiangjiang River Basin from 2000 to 2020.

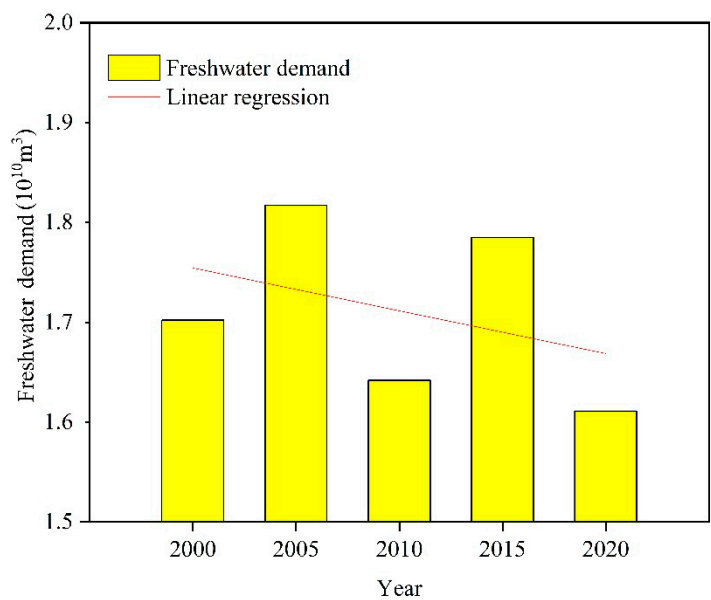


Figure S3 Changes in the number of sub-basins with different SDs in the Xiangjiang River Basin.

