

Tables

Table 1. The characteristics of cascade dams in Wujiang catchment

Label	Name of reservoir	Flood control level (m)	Normal water level (m)	Maximum flood level (m)	Storage capacity (m ³)	Catchment area (km ²)	Installed capacity/MW	Opening year
HJD	Hongjiadu	1138	1140	1145	4.9×10 ⁹	9598	600	2005
PD	Puding	1142	1145	1148	4.2×10 ⁸	3462	75	1995
YZD	Yinzidu	1065	1086	1091	5.31×10 ⁸	4103	36	2003
DF	Dongfeng	968	970	978	1.02×10 ⁹	15468	570	1995
SFY	Suofengying	835	837	842	2.01×10 ⁸	19339	600	2006
WJD	Wujiangdu	755	760	763	2.3×10 ⁹	25407	1130	1982
DHS	Dahuashui	845	868	870	2.76×10 ⁸	4347	200	2006
GLQ	Geliqiao	717	719	723	7.74×10 ⁷	4761	120	2011
GPT	Goupitan	626	630	638	6.4×10 ⁹	39063	3000	2009
SL	Silin	435	440	449	1.2×10 ⁹	46006	1080	2008
ST	Shatuo	357	365	369	6.3×10 ⁸	52149	1120	2009
PS	Pengshui	287	293	299	5.18×10 ⁸	65842	1750	2008
YP	Yinpan	214	215	225	3.2×10 ⁸	72587	600	2011

Table 2. Comparison of annual NPP_T pre- and post-dam construction in the Wujiang catchment. N is the number of years in each period, pre/post. Mean-difference is the change in mean NPP_T between pre-dam and post-dam period. P-value gives the significance of the mean difference, testing using a T-test. (DHS-Dahuashui, GLQ-Geliqiao, GPT-Goupitan, HJD-Hongjiadu, PS-Pengshui, ST-Shatuo, SL-Silin, SFY-Suofengying, YP-Yinpan, YZD-Yinzidu)

Reservoir	Pre-dam NPP gC/m^2	N(pre)	Post-dam NPP gC/m^2	N(post)	Mean-difference gC/m^2	p-value
DHS	632.5	8	596.3	7	36.1	0.22
GLQ	628.1	11	581.1	4	47.0	0.29
GPT	594.7	9	562.0	6	32.8	0.23
HJD	556.2	5	591.3	10	-35.2	0.17
PS	597.6	8	572.0	7	25.6	0.34
ST	583.8	9	560.8	6	23.1	0.41
SL	597.4	8	571.9	7	25.5	0.33
SFY	558.7	6	575.8	9	-17.0	0.44
YP	594.4	11	564.1	4	30.3	0.47
YZD	566.0	3	584.4	12	-18.3	0.59

Table 3. ANOVA results indicating significance of the change of NPP_T across different buffer strips (distance of 0-1, 1-3, 3-5, 5-7, 7-10 km from the water edge) before and after dam construction. The numbers in bold indicates the ANOVA results are non-significant for the reservoir. (DHS-Dahuashui, GLQ-Geliqiao, GPT-Goupitan, HJD-Hongjiadu, PS-Pengshui, ST-Shatuo, SL-Silin, SFY-Suofengying, YP-Yinpan, YZD-Yinzidu)

Reservoirs	Pre-dam			Post-dam		
	Df	F-value	p-value	Df	F-value	p-value
DHS	4	100.3	<2e-16 ***	4	31.0	2.91e-10 ***
GLQ	4	68.1	<2e-16 ***	4	12.1	0.000135 ***
GPT	4	10.8	4.91e-06 ***	4	2.31	0.086.
HJD	4	0.46	0.765	4	20.0	1.59e-09 ***
PS	4	5.38	0.00174 **	4	15.8	4.67e-07 ***
ST	4	0.39	0.818	4	2.64	0.058.
SL	4	5.72	0.00119 **	4	4.74	0.00437 **
SFY	4	6.03	0.0013 **	4	11.6	2.41e-06 ***
YP	4	3.60	0.0118 *	4	3.20	0.0434 *
YZD	4	47.7	1.76e-6 ***	4	10.6	1.95e-06 ***

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Table 4. The change of area and NPP_T across different land use classes within 1 km reservoir buffers of four investigated reservoirs (GPT – Goupitan, HJD – Hongjiadu, SL – Silin, YZD – Yinzidu).

Reservoir	Categories	Pre-dam				Post-dam				Change in NPP_T (%)	Change in contribution (%)
		Area (km ²)	Mean NPP_T (gC/m ²)	Total NPP_T (10 ⁹ gC/m ²)	Contribution (%)	Area (km ²)	Mean NPP_T (gC/m ²)	Total NPP_T (10 ⁹ gC/m ²)	Contribution (%)		
GPT	Cropland	73.6	618	45.5	17.0	72.2	600	43.3	16.7	-2.89	-0.25
	Forest	301.8	657	198.3	74.1	293.7	640	188.0	72.7	-2.57	-1.38
	Grassland	31.4	635	20.0	7.45	32.2	610	19.6	7.59	-3.93	0.14
	Water	6.19	-	-	-	14.9	-	-	-	-	-
	Urban	0.0885	-	-	-	0.192	-	-	-	-	-
HJD	Cropland	120.8	481	58.1	44.1	120.7	412	49.7	43.8	-14.36	-0.22
	Forest	85.2	482	41.1	31.1	84.3	419	35.3	31.1	-13.01	0.002
	Grassland	65.6	482	31.6	24.0	65.3	383	25.0	22.0	-20.64	-1.94
	Water	4.60	-	-	-	7.40	-	-	-	-	-
	Urban	0.481	-	-	-	1.70	-	-	-	-	-
SL	Cropland	64.7	568	36.7	29.9	65.3	487	31.8	29.6	-14.26	-0.31
	Forest	125.5	604	75.8	61.7	124.5	551	68.6	63.8	-8.81	2.05
	Grassland	12.4	507	6.30	5.12	11.1	418	4.65	4.33	-17.45	-0.80
	Water	3.78	-	-	-	3.96	-	-	-	-	-
	Urban	0.861	-	-	-	2.60	-	-	-	-	-
YZD	Cropland	10.8	541	5.83	17.6	9.98	518	5.17	17.1	-4.13	-0.50
	Forest	20.9	561	11.8	35.6	19.9	516	10.1	33.4	-10.17	-2.21
	Grassland	31.1	512	15.9	48.0	30.0	453	13.5	44.7	-11.8	-3.23
	Water	0.421	-	-	-	2.98	-	-	-	-	-
	Urban	0.0331	-	-	-	0.362	-	-	-	-	-

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Table 5. The change in the coverage of different land categories and relevant NPP_T for the whole Wujiang catchment in the years 2000, 2005, 2010 and 2014

Year	Classes	Unit	Land use categories					
			Cropland	Woodland	Grassland	Water	Urban	barren land
2000	Area	(km ²)	25584	43011	14092	278.9	343.8	9.95
	Total NPP _T	(Gg/a ⁻¹)	13355	24258	7469	-	-	-
	Contribution	(%)	29.44	53.47	16.46	-	-	-
2005	Area	(km ²)	25617	43517	13524	290.8	362.2	9.07
	Total NPP _T	(Gg/a ⁻¹)	14320	25327	7641	-	-	-
	Contribution	(%)	30.08	53.19	16.05	-	-	-
2010	Area	(km ²)	25517	43569	13502	299.5	421.7	9.07
	Total NPP _T	(Gg/a ⁻¹)	13243	24355	7196	-	-	-
	Contribution	(%)	29.35	53.98	15.95	-	-	-
2014	Area	(km ²)	25294	43417	13327	327.1	953.7	8.35
	Total NPP _T	(Gg/a ⁻¹)	14392	26354	7703	-	-	-
	Contribution	(%)	29.34	53.72	15.70	-	-	-

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