

Supplementary Materials:

Flood Season Staging and Adjustment of Limited Water Level for a Multi-purpose Reservoir

Chongxun Mo ^{1,2,3,4}, Juan Deng ^{1,2,3,4}, Xingbi Lei ^{1,2,3,4,*}, Yuli Ruan ^{1,2,3,4}, Shufeng Lai ^{1,2,3,4}, Guikai Sun ^{1,2,3,4} and Zhenxiang Xing ⁵

Table S1. Peak discharge series in flood season of Longtan Reservoir.

Unit: m³/s

Year	1891	1915	1926	1929	1931	1960	1961	1962	1963	1964	1965	1966
Pre-flood season	/	/	/	/	/	1530	4510	1920	1220	3080	3110	4670
Main flood season	21500	19500	19100	18200	19500	10080	8170	8690	5510	10400	10100	12500
Post-flood season	/	/	/	/	/	3480	8980	2810	2280	4260	3860	5690
Year	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Pre-flood season	3930	4510	3450	2260	3980	4620	3670	2990	3100	5200	2180	4840
Main flood season	8670	15800	13600	12800	11200	5100	8140	12800	4390	12000	8680	8570
Post-flood season	3350	6280	4990	3690	9940	7520	7140	6290	3640	5760	2390	4090
Year	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Pre-flood season	3150	3380	4480	2460	9560	8580	4460	1870	1810	619	1300	5280
Main flood season	13400	9500	7800	10400	13500	9520	13800	12000	11000	16900	5270	14300
Post-flood season	6680	3670	4090	4380	8960	3610	5620	12000	5950	12000	2290	2390
Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Pre-flood season	1160	3000	1230	4460	1630	3980	4170	2550	1850	4620	1410	5340
Main flood season	11000	10300	10200	11600	11400	11800	13500	8970	13300	11600	15000	15200
Post-flood season	3520	1370	7680	8670	6220	2990	4960	2020	8390	2800	3140	3410
Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012		
Pre-flood season	4080	3270	2460	1400	1572	10351	3847	1837	3478	4483		
Main flood season	7440	9720	8090	7610	15342	10351	8699	10276	4862	6038		
Post-flood season	1940	3600	3820	1560	9351	5313	1556	5401	711	3253		

Table S2. The routing of flood control in the main flood season.

Frequency of flood	Starting level (m)	Starting capacity (billion m ³)	Max. discharge flow (m ³ /s)	Max. water level (m)
500-year flood	375.00	162.1000	23665	375.64
	375.50	163.9139	23940	375.94
	376.00	165.7278	24226	376.26
	376.50	167.5711	24530	376.62
	377.00	169.4144	24907	377.05
	377.23	170.2760	25087	377.26

	377.50	171.2876	25296	377.51
	378.00	173.1607	25462	378.00
	378.50	175.0642	25462	378.50
	379.00	176.9676	25462	379.00
	379.50	178.9018	25462	379.50
	380.00	180.8360	25462	380.00
	380.50	182.8014	25462	380.50
	381.00	184.7668	25462	381.00
	381.50	186.7639	25462	381.50
	381.84	188.1218	25462	381.84
10,000-year flood	375.00	162.1000	25694	381.21
	375.50	163.9139	25795	381.36
	376.00	165.7278	25910	381.51
	376.50	167.5711	26030	381.66
	377.00	169.4144	26151	381.82
	377.05	169.6017	26163	381.84

Table S3. The routing of flood control in the post-flood season.

Frequency of flood	Starting level (m)	Starting capacity (billion m ³)	Max. discharge flow (m ³ /s)	Max. water level (m)
500-year flood	375	162.1000	20750	375
	375.5	163.9139	20750	375.5
	376	165.7278	20750	376
	376.5	167.5711	20750	376.5
	377	169.4144	20750	377
	377.26	170.3884	20750	377.26
	377.50	171.2876	20750	377.50
	378.00	173.1607	20750	378.00
	378.50	175.0642	20750	378.50
	379.00	176.9676	20750	379.00
	379.50	178.9018	20750	379.50
	380.00	180.8360	20750	380.00
	380.50	182.8014	20750	380.50
	381.00	184.7668	20750	381.00
	381.50	186.7639	20750	381.50
	381.84	188.1218	20750	381.84
10,000-year flood	375.00	162.1000	25665	381.18
	375.50	163.9139	25725	381.26
	376.00	165.7278	25788	381.34
	376.50	167.5711	25853	381.42
	377.00	169.4144	25925	381.51
	377.50	171.2876	26000	381.61
	378.00	173.1607	26083	381.72
	378.45	174.8738	26181	381.84
	378.50	175.0642	26185	381.85