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Supplement of

Analysis of water level variations in the Huangzhuang reach (Hanjiang River, China) during recent years

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Fig 2 Relationship between annual average daily water levels and corresponding discharge at the Huangzhuang station for the period 2000-2017

Year	Zmax (m)	O(m ³ /s)	Zmin (m)	O(m ³ /s)
2000	45,78	8340	39,96	189
2001	43,09	2020	41,12	688
2002	43,82	2920	40,51	381
2003	47,48	14600	40,4	339
2004	44,57	4620	40,99	830
2005	47,36	16900	41,26	920
2006	43,26	2550	40,29	535
2007	45,8	8410	40,04	425
2008	45,15	7580	40,02	340
2009	44,01	4460	40,45	623
2010	47,15	13500	40,48	720
2011	47,35	13900	39,9	451
2012	44,1	4970	40,17	540
2013	42,51	2030	40,09	370
2014	43,15	2400	39,73	295
2015	43,75	2910	39,98	503
2016	43,28	2380	39,94	501
2017	48,62	13700	39,97	507

Fig 3 Surface water fall in different reaches of the Hanjiang River for different discharge ranges and time periods in 2005-2017

(a) Zhuandouwan~Huangzhuang reach

time interval	Under 1000m ³ /s	1000~5000m ³ /s	5000~10000m ³ /s	Above 10000m ³ /s
2005~2008	4,77	4,83	4,95	4,85
2009~2013	4,84	4,88	4,98	4,77
2014~2015	4,36	4,35		
2016~2017	4,31	4,12	4,07	3,88

(b) Huangzhuang~Datong reach

time interval	Under 1000m ³ /s	1000~5000m ³ /s	5000~10000m ³ /s	Above 10000m ³ /s
2005~2008	3,13	3,02	2,72	2,38
2009~2013	2,84	2,82	2,49	2,22
2014~2015	2,01	2,57		
2016~2017	1,78	2,01	3,01	3,27

(c) Datong~Shayang reach

time interval	Under 1000m ³ /s	1000~5000m ³ /s	5000~10000m ³ /s	Above 10000m ³ /s
2005~2008	3,63	3,61	3,31	3,17
2009~2013	3,16	3,37	3,32	3,16
2014~2015	0,63	1,58		
2016~2017	0,84	1,69	3,25	3,14

Fig4 The cross section at the bridge in the Hanjiang River

2016		2012	
distance	elevation	distance	elevation
0	50	0	49,9
33,71708	43	26,17529	44,1
58,80697	43	92,11657	44
134,6988	44	263,9244	45
186,2724	44,9	505,9986	45,6
335,497	45	802,4054	45,5
467,1799	45,2	1008,964	45,6
663,2656	45,7	1132,846	45,1
844,1602	45,5	1243,699	46
998,04	48,3	1395,168	46
1033,511	46	1517,209	45
1130,874	45,5	1553,103	44
1297,667	45,5	1622,821	42
1486,847	45	1646,571	42
1528,545	44	1679,444	42,29
1588,499	43	1683,263	39,18
1675,54	42	1685,778	39
1685,417	39	1689,348	38
1690,214	39	1697,269	37
1698,318	39	1708,012	36
1704,112	39	1730,59	35
1718,455	39	1735,474	35
1749,88	39	1780,72	36
1783,232	39	1807,548	37
1813,317	39	1845,729	38
1834,661	39	1868,068	38
1941,036	38,1	1899,382	37
1945,981	38	1920,728	36
1951,357	37	1937,799	35
1959,601	36	1945,52	34
1967,136	35	1952,985	33
2018,313	35	1965,778	33
2040,235	36	1975	34
2062,478	37	1984,378	35
2101,361	37	1997,934	36
2111,084	36	2010,364	37
2120,019	35	2022,342	38
2133,082	34	2069,769	38,9
2140,541	33	2085,915	38
2150,744	32	2100,886	37
2158,266	31	2113,915	36

2166,146	30		2121,906	35
2181,532	30		2129,862	34
2196,795	31		2137,436	33
2210,376	32		2143,959	32
2214,032	33		2159,107	31
2217,74	34		2170,533	30
2221,063	35		2180,717	29
2223,373	36		2198,875	29
2225,761	37		2207,263	30
2227,127	38		2220,438	31
2229,296	38,2		2231,22	32
2233,969	45,32		2238,569	33
2271,372	43		2243,553	34
2298,455	44		2247,981	35
2358,188	45		2250,365	36
2371,886	50		2254,527	37
			2257,321	38
			2259,482	39
			2261,759	38,9
			2274,206	44,1
			2304,287	44,1
			2349,667	45
			2371,886	50

Fig5 Impact of construction work in 2016 on the stage-discharge relationship at the Road NO.2 road bridge over of the Hanjiang River in Zhongxiang

2016		2012	
Water level(m)	Flow(m ³ /s)	Water	Flow(m ³ /s)
30,5	1,13395431	29,5	1,267754
31	4,24205552	30	4,510693
31,5	9,72309949	30,5	9,737654
32	17,8426995	31	17,68249
32,5	29,5492319	31,5	28,68484
33	44,2146853	32	43,32965
33,5	62,4700092	32,5	63,80891
34	83,8413587	33	88,12488
34,5	106,8281	33,5	108,5483
35	133,431725	34	141,1119
35,5	137,127799	34,5	179,4488
36	179,939261	35	224,0425
36,5	230,198775	35,5	246,9226
37	289,126652	36	292,608
37,5	426,195318	36,5	361,3571
38	658,695004	37	445,5112
38,5	792,488025	37,5	658,2811
39	973,182391	38	961,2993
39,5	1150,89578	38,5	1229,705
40	1512,1985	39	1607,313
40,5	1960,50449	39,5	2132,452
41	2565,72056	40	2610,778
41,5	3332,88411	40,5	3204,519
42	4308,64246	41	4014,608
42,5	5403,82795	41,5	5032,332
43	6419,34752	42	6315,424
43,5	7283,18403	42,5	7539,992
44	8476,49409	43	9019,406
44,5	10786,2383	43,5	10846,31
45	12016,2554	44	13062,44
45,5	14243,82147	44,5	14812,772
46	17969,71219	45	16338,304
46,5	21376,02134	45,5	18439,404
47	23582,7585	46	21318,373
47,5	28298,60851	46,5	24284,782
48	33379,10459	47	26794,453
48,5	38965,34001	47,5	32128,9
49	45135,785	48	37845,977
49,5	51665,7595	48,5	43933,818
		49	50381,985
		49,5	57181,196