



Supplement of

High-resolution water level and storage variation datasets for 338 reservoirs in China during 2010–2021

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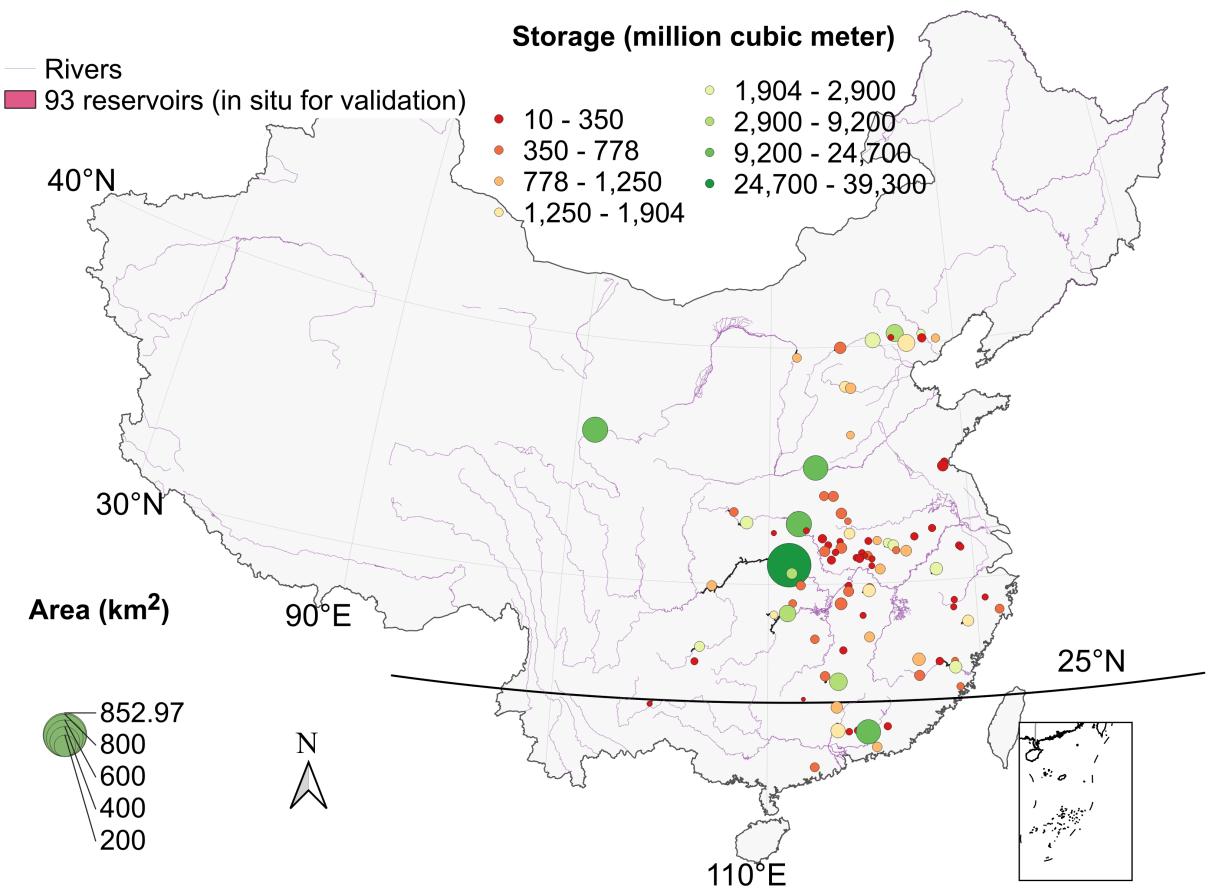
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3 Content of this file:

4 Figure S1 and Table S1 describe the information of our 93 reservoirs with in situ data.

5 Table S2. Performance of the enhanced measurement products in terms of RMSE of 74 reservoirs.

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8 **Figure S1. The distribution of the validated 93 reservoirs with in situ data.**
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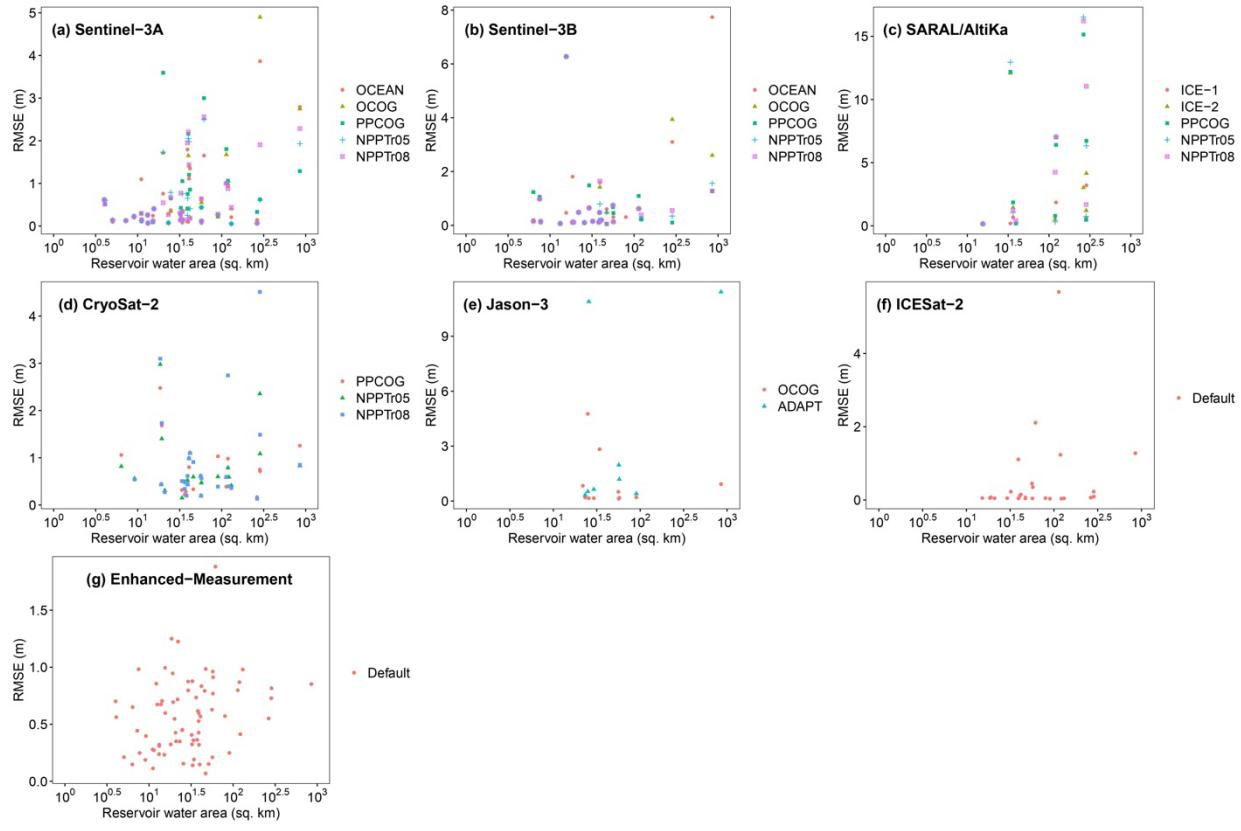


Figure S2. Comparison of the performance of altimetric water level against reservoir water area. Logarithmic scales are used for X-axis. Please note we have five retracking algorithms for Sentinel-3A, Sentinel-3B and SARAL/AltiKA, and three retracking algorithms for Cryosat-2, two retracking algorithms Jason-3, and one for ICESat-2, and one for our enhanced-measurements.

Table S1. Information of the validated 93 reservoirs with in situ data.

GRAND_ID	DAM_NAME	YEAR	DAM_HGT_M	AREA_SKM	CAP_REP	MAIN_USE
5062	Longyangxia	1986	172	284.65	24700	
5115	Lubuge	1990	101	4.08	110	Hydroelectricity
5189	Miyun	1960	66	121.66	4375	Irrigation
5192	Panjiakou	1979	108	17.96	2900	Water supply
5193	Huairou	1958	21	6.37	115	Flood control
5196	Guanting	1954	46	90.08	2270	Flood control
5197	Daheiding	1986	53	19.34	337	
5199	Taolinkou	1998	75	18.54	860	Water supply
5201	Yuqiao	1960	23	118.62	1559	Flood control
5204	Cetian	1960	42	47.09	580	Flood control
5205	Wanjiazhai	1999	92	22.11	900	Water supply
5215	Gangnan	1969	63	39.15	1571	Flood control
5216	Huangbizhuang	1968	31	36.31	1210	Flood control
5238	Yuecheng	1970	53	15.19	1090	Flood control
5266	Xiaotashan	1959	23	13.32	300	Flood control
5267	Xiaolangdi	2002	154	272	12650	Flood control
5270	Shilianghe	1962	22	38.93	300	Flood control
5287	Zhaopingtai	1960	36	25.26	713	Irrigation
5288	Baiguishan	1959	24	33.72	731	Irrigation
5296	Shiquan	1973	65	21.88	412	Hydroelectricity
5298	Banqiao	1993	51	37.48	675	Flood control
5304	Boshan	1954	49	9.2	620	Flood control
5305	Ankang	1993	120	57.35	2580	Hydroelectricity
5306	Danjiangkou	1973	112	286.45	13240	Hydroelectricity
5316	Hongshuihe	1968	52	6.73	200	Flood control
5318	Huanglishu	1979	32	12.8	299.3	Irrigation
5319	Huohe	1983	67	4.01	109.1	Flood control
5323	Nanwan	1959	38	39.36	1630	Flood control
5336	Xionghe	1954	32	20.13	254	Flood control
5340	Dongpu	1958	36	13.88	200	Water supply
5348	Xianjuemiao	1960	31	8.03	274.8	Irrigation
5349	Nianyushan	1976	39	19.1	916	Flood control
5351	Pohe	1971	28	11.43	214	Irrigation
5355	Meishan	1956	88	24.95	2275	Flood control
5356	Dahongshan	1967	43	11.05	126.4	Flood control
5360	Xianghongdian	1958	84	38.14	2632	Flood control
5362	Xujiahe	1958	35	40.06	778	Flood control
5367	Wenxiakou	1970	51	34.07	549	Flood control
5368	Daxi	-99	-99	11.13	10	
5371	Foziling	1954	75	12.2	496	Flood control
5372	Zhengjiahe	1970	31	9.02	193	Irrigation

5376	Shahe	-99	-99	9.05	10	
5378	Longhekou	1970	34	39.03	848	Flood control
5379	Jinshahe	1965	29	10.48	179	Irrigation
5386	Fuqiaohe	1960	30	20.67	580	Irrigation
5387	Weidoushan	1961	29	5.04	111	Irrigation
5392	Meidian	1969	31	9.8	200	Irrigation
5395	Xiajiasi	1963	31	18.15	300	Irrigation
5397	Mingshan	1959	36	7.74	169	Irrigation
5399	Huiting	1966	32	18.14	314	Irrigation
5410	Three Gorges Dam	2003	175	852.97	39300	Hydroelectricity
5419	Niuchehe	1958	28	6.34	102.3	Irrigation
5428	Bailianhe	1960	55	32.75	1250	Hydroelectricity
5435	Chencun	1971	76	57.55	2641	Flood control
5437	Geheyan	1994	151	40.9	3400	Hydroelectricity
5459	Weishui	1970	42	24.8	576	
5461	Sanhulanjiang	1959	31	10.98	104.7	Irrigation
5463	Shizitan	1957	51	29.23	1027	Hydroelectricity
5469	Wangying	1972	54	25.68	600	Flood control
5477	Fushui	1966	45	56.81	1730	Flood control
5478	Lushui	1974	50	33.02	706	Hydroelectricity
5505	Huangshi	1968	39	15.53	612	Irrigation
5506	Tieshan	1982	45	51.16	635	Hydroelectricity
5509	Tongshanyuan	1974	49	8.08	171	
5523	Huangtankou	1958	44	7.47	104	
5526	Wuqiangxi	1996	88	113.79	4200	Hydroelectricity
5528	Fengtan	1979	113	15.61	1544	Hydroelectricity
5535	Daduan	1998	43	7.25	115	Hydroelectricity
5566	Jinshuitan	1989	102	42	1393	
5590	Jiangkou	1960	33	32.49	890	Irrigation
5593	Shuifumiao	1960	35	21.03	560	Hydroelectricity
5604	Wujiangdu	1983	165	32.26	2300	Hydroelectricity
5610	Jiufujiang	1960	48	13.15	300	Irrigation
5629	Chitan	1980	78	57.93	870	Hydroelectricity
5630	Baihua	1966	49	11.81	220.8	
5634	Shaxikou	1990	40	14.33	164	Hydroelectricity
5636	Gutian	1959	71	10.77	641	
5648	Shuikou	1995	101	56.2	2600	Hydroelectricity
5654	Ouyanghai	1970	58	28.18	424	Irrigation
5656	Ansha	1975	92	34.32	740	Hydroelectricity
5660	Dongjiang	1992	157	130.58	9200	Hydroelectricity
5671	Dongzhen	1960	59	12.56	435	Irrigation
5685	Centianhe	1970	46	2.2	105	Irrigation
5697	Nanshui	1973	81	47.36	1243	

5722	Yitang	1984	42	13.27	160.2	
5729	Feilaixia	1999	52	80.19	1904	
5730	Tiantangshan	1992	70	13.25	243	Flood control
5734	Liuxihe	1958	78	9.45	350	Hydroelectricity
5736	Xinfengjiang	1960	105	264.53	13896	Hydroelectricity
5758	Baipenzzhu	1987	68	29.33	1220	
5770	Jinjiang	1972	63	24	480	Hydroelectricity
6161	Nanjiang	1995	50	7.52	116.8	Irrigation
6169	Changtan	1961	36	23.27	691	Irrigation

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Table S2. Performance of the enhanced measurement products in terms of RMSE of 74 reservoirs.

ID	GRAND ID	rmse	ID	GRAND ID	rmse
1	5062	0.72833006	38	5387	0.21153561
2	5115	0.56228121	39	5397	0.24788235
3	5189	0.41273945	40	5399	0.32325436
4	5192	0.79259675	41	5410	0.85233882
5	5193	0.64980874	42	5419	0.14773831
6	5196	0.24888959	43	5428	0.87749325
7	5197	0.69410321	44	5435	0.76921104
8	5199	1.25023764	45	5437	0.56819921
9	5201	0.86861921	46	5459	0.44833772
10	5204	0.0690373	47	5463	0.87393659
11	5205	1.22532177	48	5469	0.15441889
12	5215	0.59736833	49	5477	0.21008826
13	5216	0.73435681	50	5478	0.13999926
14	5238	0.23294273	51	5505	0.99467003
15	5267	1.88151139	52	5506	0.15114621
16	5270	0.52716152	53	5526	0.79853931
17	5288	0.35984901	54	5528	0.59849799
18	5296	0.71761989	55	5535	0.44345064
19	5298	0.36307857	56	5566	0.83332494
20	5304	0.39686058	57	5590	0.32413929
21	5305	0.96220978	58	5593	0.35084753
22	5306	0.81545103	59	5604	0.40645547
23	5319	0.70080859	60	5610	0.23842305
24	5323	0.31982716	61	5629	0.91201647
25	5336	0.54736706	62	5634	0.70447443
26	5340	0.67387466	63	5648	0.62754565
27	5349	0.94572324	64	5656	0.19101963
28	5351	0.27228381	65	5660	0.97990235
29	5355	0.45150626	66	5671	0.67341186
30	5356	0.27850101	67	5697	0.98433768
31	5360	0.61677405	68	5722	0.32110871
32	5362	0.14755948	69	5729	0.57151066
33	5368	0.11301707	70	5730	0.30952567
34	5371	0.85581282	71	5736	0.55089239
35	5376	0.18774492	72	5758	0.79686553
36	5378	0.4266916	73	6161	0.98258392
37	5386	0.42556425	74	6169	0.349047