



Supplement of

GeoDAR: georeferenced global dams and reservoirs dataset for bridging attributes and geolocations

Jida Wang et al.

Correspondence to: Jida Wang (jidawang@ksu.edu)

The copyright of individual parts of the supplement might differ from the article licence.

Supplementary Text

Formatting input addresses for geocoding

5 For each WRD record, we arranged the available values of attributes “dam name”, “reservoir name”, “state/province”, and “country”, to form a list of address strings which were used as potential inputs for geocoding. Supplementary Table S2 lists the address arrangements and their preference order. As discussed in Section 2.3 of the main paper, “nearest town” was excluded from address formatting because it is not always the township that administrates the dam and including it might lead to misplaced or void coordinates from geocoding.

10 To comply with the address standard in Google Maps, the attributes were arranged from the most specific to general components, i.e., starting with the dam/reservoir name followed by increasing levels of political divisions. Variations among the formats were then introduced by a) iterating “dam”, “reservoir”, and “lake” as the title of the dam or reservoir name and b) including or excluding each of the division levels. Through experimentation, we observed that these variations could indeed make a difference for the output coordinates. Although the most effective format often varied case by case, higher preferences were given to those where the dam or reservoir name was followed by the matching title (for instance, Hoover Dam, not Hoover Reservoir or Lake) and where the political divisions were more detailed (more in Supplementary Table S2). We assumed that for any WRD record, following the input address order as in Supplementary Table S2 was an effective way to reach the best QA rank (Supplementary Table S3).

Supplementary Figure S1

20

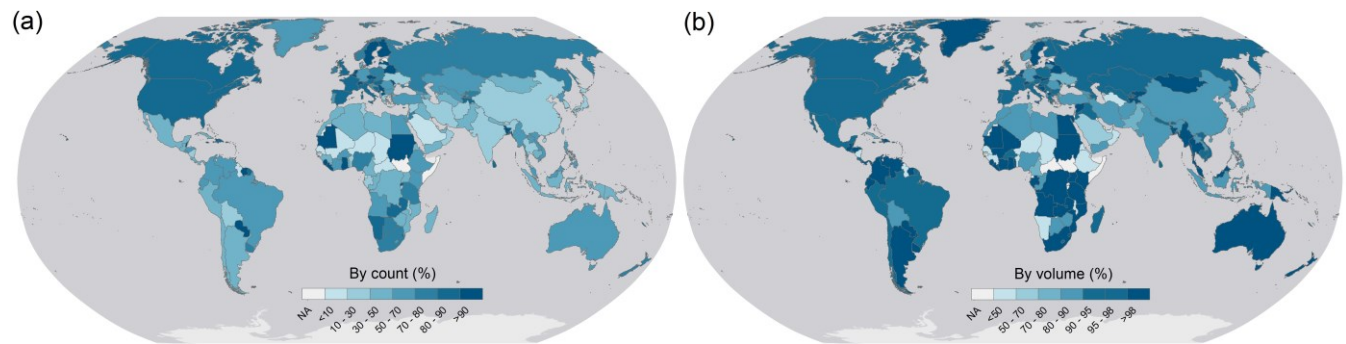


Figure S1. Coverage of the WRD subset in GeoDAR v1.1 as proportion of the entire WRD for each country or territory. (a) By dam count and (b) by reservoir storage capacity. Statistics for Taiwan and Greenland were computed separately from those of mainland China and Denmark. The source data are given in Table S6. Color bars are consistent with those in Fig. 10 of the main paper.

25

Supplementary Table S1. Quality Assurance and Quality Control (QA/QC) for geo-matching (13,190 final dams in total).

Quality rank	Name	Country	State/Province	Town/City	Year	River
M1 3,238 dams	Y	Y	Y/na	Y	Y	Y
	Y	Y	Y/na	Y	Y	N/na
	Y	Y	Y/na	Y	N/na	Y
M2 6,987 dams	Y	Y	Y	Y	na	na
	Y	Y	Y	N/na	Y	Y
M3 2,965 dams	Y	Y	na	Y	na	na
	Y	Y	na	N/na	Y	Y
	Y	Y	Y/na	N/na	Y	N/na
	Y	Y	Y/na	N/na	N/na	Y

Note: In column “Quality rank”, the initial letter “M” symbolizes QA ranks for geo-matching (as opposed to “C” for geocoding in Supplementary Table S3). “Y” indicates that attribute values in WRD and the regional register agree with each other, “N” represents disagreement, and “na” indicates attribute values are not available in either or both datasets. Scenarios with “River” values as “Y” do not apply to Cambodia as river names are missing in the regional register/inventory. The reason why M2 dominates the total quantity is that the values of attribute “nearest town” in WRD are largely missing for US dams. This situation explains 74% of the 6,987 M2 records.

35 **Supplementary Table S2.** Arrangements of the geocoding input address in descending order of preference.

Iteration level 2	Iteration level 3 or 1	Iteration level 1 or 3
Dam name “Dam”		
Reservoir name “Reservoir”		
Dam name “Reservoir”	+/- state or province name	+/- country name:
Reservoir name “Dam”		
Reservoir name “Lake”		
Dam name “Lake”		

Note: A full address was formatted by the components of dam/reservoir name, state/province, and country. “+/-” notates the iteration of first including and then excluding this component. A lower iteration level indicates that the options in this address component were iterated sooner or more frequently (conceptually, corresponding to a more inner loop). Levels 1 to 3 are the highest to lowest levels. As the most effective address structure may vary case by case, we in practice allowed more flexibility for the iteration levels of the two administrative divisions. See our geocoding scripts (e.g., Geocoding_ICOLD.py and Geocoding_QA.py at <https://github.com/surf-hydro/georeferencing-ICOLD-dams-and-reservoirs>) for more details.

Supplementary Table S3. QA/QC for geocoding (9,338 final dams in total).

Quality rank	Dam count	Dam/Reservoir name	Administrative divisions		
			Country	State/Province	Town/City
C1	6,277 (6,909)	Y	Y	Y	Y
C2	2,396 (6,511)	Y	Y	Y	N/na
	C2: “Nearest town” in WRD null or likely not the township administrating the dam/reservoir				
C3	212 (251)	Y	Y	N/na	Y
C4	429 (2,327)	Y	Y	N/na	N/na
	C3 and C4: “State/province” in WRD null or dam/reservoir likely on state or provincial borders.				
C5	24 (85)	Y	N/na		
	C5: dam/reservoir likely on international borders or in disputed regions (e.g., Kashmir).				

45 Note: In column “Quality rank”, the initial letter “C” symbolizes QA ranks for geocoding (as opposed to “M” for geo-matching in Supplementary Table S1). In column “Dam count”, the first value reports the dam quantities after QA/QC whereas the second (parenthesized) value reports the quantity after QA but before QC. “Y” means that component values in WRD and the output address from geocoding agree with each other, “N” means that values disagree, and “na” means values unavailable/invalid in either WRD or the output address.

Supplementary Table S4. Identified issues in the large reservoirs from Wada et al. (2017) and revision/correction for harmonization. The full Excel spreadsheet can be accessed at <https://doi.org/10.5281/zenodo.6163413>.

Country	Reservoir	Original cap. (km ³)	Original latitude	Original longitude	Revised cap. (km ³)	Revised latitude	Revised longitude	Verification and other notes
Zimbabwe; Zambia	KARIBA	180.6	-16.523194	28.761542	180.6	-16.522325	28.761439	
Russia	BRATSK	169.0	56.286111	101.786111	169	56.285299	101.779488	
Egypt	HIGH ASWAN DAM	162.0	23.970556	32.877778	162	23.967733	32.878075	
Ghana	LAKE VOLTA	150.0	6.299722	0.059444	150	6.299722	0.059444	
Canada	MANICOUAGAN	141.9	50.646667	-68.724444	141.85135	50.647559	-68.724601	
Venezuela	GURI	135.0	7.764444	-63.000000	135	7.764444	-63.000000	
Canada	BENNETT W.A.C.	74.3	56.016667	-122.200556	74.3	56.016667	-122.200556	
Russia	KRASNOYARSK	73.3	55.934722	92.293611	73.3	55.933862	92.293682	
Russia	ZEYA	68.4	53.769167	127.306389	68.4	53.770888	127.306389	
Canada	LA GRANDE - 2	62.7	53.779444	-77.548333	62.6619	53.779444	-77.548333	
Canada	LA GRANDE-3	60.0	53.729722	-75.968333	60.02	53.727123	-75.974450	
Russia	UST-ILIM	59.3	57.967778	102.693611	59.3	57.966921	102.692081	
Canada	CUTARM CREEK	58.6	50.516700	-101.667600	58.595982	50.676330	-101.831296	The original coordinates in Wada et al. (2017) appear to be inaccurate (there is no reservoir or dam). We corrected the coordinates based on http://www.environment.gov.sk.ca/2008-078EISAppendixDHydrologyAssessment . The scale of the storage capacity in Wada et al. (2017) seems suspiciously large (larger than the Three Gorges Reservoir) and is much larger than the record in ICOLD as well. However, the storage capacity in Wada et al. (2017) is consistent with the record in the Inventory of Large Dams in Canada (2019; CDA; ISBN 978-1-9990772-1-1). So despite suspicion, we still kept the original storage capacity in Wada et al. (2017).
Russia	BOGUCHANY	58.2	58.694722	99.148889	58.2	58.694722	99.148889	
Russia	KUIBYSHEV	58.0	53.777222	48.929444	58	53.443175	49.475796	
Brazil	SERRA DA MESA	54.4	-13.834167	-48.304444	54.4	-13.835005	-48.305493	
Canada	CANIAPISCAU	53.8	54.157500	-69.845556	53.79	54.157500	-69.845556	

Mozambique	CAHORA BASSA	52.0	-15.585833	32.704722	52	-15.585962	32.704183	
India	Upper Wainganga	50.7	22.375314	79.664264	0.507	22.375716	79.662490	The original storage capacity in Wada et al. (2017) is 100 times of that in ICOLD. We verified the value in ICOLD to be consistent with the Indian National Register of Large Dams (2019; http://cwc.gov.in/sites/default/files/nrld06042019.pdf) as well as with GranD v1.3. So we corrected the storage value in Wada et al. (2017).
Kazakhstan	BUKHTARMA	49.8	49.661111	83.347778	49.8	49.657613	83.346341	
Turkey	ATATURK	48.7	37.481667	38.321667	48.7	37.481803	38.322770	The storage capacity in Wada et al. (2017) is much larger than that in ICOLD but is consistent with the record in Wikipedia (https://en.wikipedia.org/wiki/Atat%C3%BCrk_Dam). So we kept the original storage capacity in Wada et al. (2017).
Russia	IRKUTSK	46.0	52.242778	104.328611	46	52.242778	104.328611	
Brazil	TUCURUI	45.5	-3.831667	-49.646667	45.5	-3.833819	-49.642366	
Russia	Lower Kama	45.0	55.699444	52.278333		55.699444	52.278333	Lower Kama Reservoir is the also called "Nizhnekamsk Reservoir", which was already documented by the record of "NIZHNE - KAMSKAYA" here (both coordinates point to the same reservoir as well). However, the storage capacity values of the two records are different (the value here is about 3 times of that of the other). We verified the value of the other record is more consistent with ICOLD and GRanD. So we consider this record as a duplicate and thus excluded it from harmonization.
Malaysia	BAKUN DAM	43.8	2.756389	114.063056	43.8	2.756389	114.063056	
Argentina	Cerros Colorados	43.5	-38.500000	-68.833333	27.77	-38.543716	-68.614771	As noted by Dr. Yuwen Li in the original spreadsheet, the storage capacity of Cerros Colorados in Wada et al. (2017) combines those of two adjacent reservoirs Los Barreales and Mari Menuco, which are impoundments of Loma de la Lata and Planicie Banderita dams, respectively. We further confirmed so from GRanD, ICOLD, and DDSA. So there is nothing wrong here. But since we georeferenced both dams separately in GeoDAR (as two reservoirs), to avoid double counting we changed the storage capacity value of this record in Wada et al. (2017) to be that of Loma de la Lata only. As a side note, the storage capacity values of both reservoirs in GRanD are 10% of the actual

								values and therefore are probably wrong (unit errors; in GeoDAR v1.1 we corrected some of the location errors but not storage capacity errors in GRanD v1.3).
Iraq	Thartar	43.5	33.753056	43.526667		33.753056	43.526667	We could not find the corresponding record for this dam in ICOLD WRD, so we excluded it from harmonization.
China	Sanxia	39.3	30.830000	111.010000	39.3	30.824285	111.002394	
United States	HOOVER	37.3	36.015556	-114.737778	37.296795	36.016775	-114.736018	
Russia	VILYUI	35.9	63.031944	112.471944	35.9	63.033458	112.470052	
United States	GLEN CANYON	35.6	36.937500	-111.484444	35.550185	36.938586	-111.484463	
Brazil	SOBRADINHO	34.1	-9.431667	-40.827778	34.116	-9.431667	-40.827778	
China	Danjiangkou	33.9	32.556111	111.488056	33.91	32.556111	111.488056	
Canada	JENPEG	31.8	54.543333	-98.026667	31.79	54.543503	-98.026554	
Russia	VOLGOGRAD	31.5	48.828750	44.679583	31.5	48.828750	44.679583	
Russia	SAYANO - SHUSHENSKA YA	31.3	52.825000	91.370900	31.3	52.825060	91.368391	
Turkey	KEBAN	31.0	38.806944	38.756944	31	38.806944	38.756944	
United States	GARRISON DAM	30.2	47.498611	-101.411944	30.220309	47.498611	-101.411944	
Finland	TAINIONKOSKI	30.0	61.210491	28.783547	30	61.224331	28.793125	
Canada	IROQUOIS CONTROL	30.0	44.836111	-75.308333	29.959005	44.833773	-75.303614	
China	Longtan	29.9	25.027222	107.047500	29.92	25.027960	107.041350	
United States	OAHE DAM	29.1	44.451944	-100.399167	29.110175	44.451944	-100.399167	
Paraguay; Brazil	ITAIPU	29.0	-25.408056	-54.588889	29	-25.404943	-54.590003	
Canada	Smallwood Reservoir	29.0	54.100000	-64.416667	28.97	54.125603	-64.388170	ICOLD does not document a storage capacity value for this reservoir, so we used the value in Wada et al. (2017).
Canada	MISSI FALLS CONTROL	28.4	57.323100	-98.136200	28.3705	57.323126	-98.138024	
Kazakhstan	KAPCHAGAY	28.1	43.866667	77.500000	28.1	43.921288	77.105122	
Ivory Coast	KOSSOU	27.7	7.031269	-5.473100	27.6754	7.031269	-5.473100	
China	Longyangxia	27.6	36.122222	100.918333	27.63	36.122222	100.918333	
Canada	Ear Falls Dam	26.4	50.638750	-93.200417		50.638750	-93.200417	We could not find the corresponding record for this dam in ICOLD WRD, so we excluded it from harmonization.

Iraq	Razza Dyke	26.0	32.698333	43.894444	26	32.692133	43.880726	The storage capacity in Wada et al. (2017) is much larger than that in ICOLD but is consistent with that in GRanD v1.3. So we kept the value in Wada et al. (2017).
Russia	RYBINSK	25.4	58.366667	38.433333	25.4	58.098973	38.693445	
Brazil	LIMOEIRO	25.2	-21.622130	-47.012130	25.16	-21.623972	-47.009677	
Canada	MICA	25.0	52.077778	-118.566389	25	52.077778	-118.566389	
Canada	OUTARDES-4	24.4	49.705556	-68.905833	24.352	49.705847	-68.908097	
Turkey	GÖLKÖY	24.1	40.701766	31.525022	24.073	40.701766	31.525022	
Russia	TSIMLIANSK	24.0	47.612083	42.108750	24	47.612083	42.108750	The original name of this reservoir in Wada et al. (2017) was mistakenly switched with VAN BLOMMENSTEIN. This has been corrected in this file.
Suriname	VAN BLOMMENSTEIN	24.0	4.800000	-55.066667	24	4.980493	-54.994107	The original name of this reservoir in Wada et al. (2017) was mistakenly switched with TSIMLIANSK. This has been corrected in this file.
Canada	KENNEY	23.8	53.579167	-124.950000	23.8	53.579167	-124.950000	
China	Nuozhadu	23.7	22.656111	100.418333	23.703	22.639672	100.429216	
United States	FORT PECK DAM	23.6	48.002778	-106.416111	23.559506	48.002778	-106.416111	
Russia	UST-KHANTAIKA	23.5	68.162083	87.812917	23.5	68.080811	87.797240	
China	Shuikou	23.4	26.303056	118.811944	2.34	26.303553	118.811309	The original storage capacity in Wada et al. (2017) is 10 times of that in ICOLD. The latter is consistent with the records in GRanD and Wikipedia (https://en.wikipedia.org/wiki/Shuikou_Dam). So we corrected the value in Wada et al. (2017).
Brazil	FURNAS	23.0	-20.669722	-46.318056	22.95	-20.668745	-46.314164	
China	Xin'anjiang	21.6	29.483610	119.213330	21.626	29.484682	119.213816	
Brazil	ILHA SOLTEIRA	21.2	-20.382778	-51.362222	21.166	-20.382778	-51.362222	The storage capacity in Wada et al. (2017) is larger than that in ICOLD. We verified that the value in Wada et al. (2017) is consistent with the records in GRanD and Wikipedia (https://en.wikipedia.org/wiki/Ilha_Solteira_Dam). So we kept the original value in Wada et al. (2017).
Paraguay; Argentina	YACYRETA	21.0	-27.482689	-56.724986	21	-27.482689	-56.724986	
Russia	BUREYA	20.9	50.269167	130.313333	20.9	50.271570	130.314570	
Argentina	RAMOS MEXÍA	20.2	-39.265833	-68.756389	20.2	-39.265833	-68.756389	

Brazil	PORTO PRIMAVERA	20.0	-22.475278	-52.958333	20	-22.476462	-52.956365	
Canada	DENIS-PERRON	19.6	50.790278	-66.791944	19.6075	50.791270	-66.791335	
Canada	LA GRANDE - 4	19.5	53.886111	-73.462500	19.53	53.886111	-73.462500	
Brazil	TRES MARIAS	19.5	-18.214167	-45.262778	19.528	-18.214992	-45.269162	
Kyrgyzstan	TOKTOGUL	19.5	41.657070	72.636110	19.5	41.658127	72.635917	
Ukraine	Kakhovskaya	18.2	46.776144	33.371511	18.2	46.776144	33.371511	ICOLD does not document a storage capacity value for this reservoir, so we used the value in Wada et al. (2017).
Canada	WHITESAND RAPIDS	17.9	56.234075	-103.147657	17.9	56.234053	-103.149023	The storage capacity in Wada et al (2017) is larger than that in ICOLD but is consistent with the record in GRand. So we kept the original value in Wada et al. (2017).
Thailand	SRINAGARIND	17.7	14.408611	99.128333	17.745	14.408611	99.128333	
Brazil	EMBORCAÇÃ O	17.6	-18.446944	-47.986389	17.588	-18.444003	-47.986638	
Brazil	BALBINA	17.5	-1.917222	-59.473611	17.537	-1.914595	-59.473822	The storage capacity in Wada et al (2017) is larger than that in ICOLD but is consistent with the record in GRand. So we kept the original value in Wada et al. (2017).
Russia	VERKHNE-SVIRSKAYA	17.5	60.922083	34.191250	17.5	60.919603	34.192606	
Brazil	ITUMBIARA	17.0	-18.407778	-49.098333	17.027	-18.407778	-49.098333	
Canada	Gabbro Control Dam	16.0	53.448750	-64.766250		53.448750	-64.766250	We could not find the corresponding record for this dam in ICOLD WRD, so we excluded it from harmonization.
Azerbaijan	MINGECHAUR	16.0	40.791389	47.025000	16	40.794176	47.025002	
China	Xiaowan	15.0	24.703056	100.091944	15.043	24.705095	100.091462	
Argentina	POTRERILLOS	15.0	-32.995000	-69.125833	15	-32.994087	-69.127246	The original name of this reservoir in Wada et al. (2017) was mistakenly swithced with KAINJI. This has been corrected in this file.
Nigeria	KAINJI	15.0	9.862500	4.613333	15	9.863721	4.608618	The original name of this reservoir in Wada et al. (2017) was mistakenly swithced with POTRERILLOS. This has been corrected in this file.
Ethiopia	GILGEL GIBE III	14.7	6.847222	37.301389	14.69	6.849228	37.302399	
North Korea; China	SUPUNG	14.7	40.461944	124.962500	14.666	40.462523	124.965591	
Russia	Kolyma	14.6	62.055467	150.408286	14.6	62.055805	150.404505	The storage capacity in Wada et al (2017) is larger than that in ICOLD but is overall consistent with the record in Wikipedia (https://en.wikipedia.org/wiki/Kolyma_Hydro_electric_Station). So we kept the original value in Wada et al. (2017). Note the scale of

								the storage capacity of this dam in GRanD is probably also wrong.
Syria	Tabqa	14.0	35.872222	38.566667	14	35.875840	38.558403	The storage capacity in Wada et al. (2017) is much larger than that in ICOLD, but is overall consistent with the records in GRanD and Wikipedia (https://en.wikipedia.org/wiki/Tabqa_Dam). So we kept the original value in Wada et al. (2017).
China	Jinshuitan	13.9	28.212500	119.536389	13.93	28.213427	119.536096	
Canada	PIPMUACAN	13.9	49.661667	-70.271667	13.9	49.357211	-69.775825	
Pakistan	TARBELA	13.9	35.516667	73.791944	13.9	34.089757	72.701635	The original coordinates in Wada et al. (2017) were misplaced, and we have corrected them using Google Maps.
China	Xinfengjiang	13.9	23.726389	114.647500	13.896	23.727624	114.648245	
Brazil	TRÊS IRMÃOS	13.8	-20.665636	-51.301442	13.8	-20.669243	-51.298506	
Russia	NIZHNE - KAMSKAYA	13.8	55.703750	52.279583	13.8	55.703750	52.279583	
United States	LOCK & DAM #3	13.7	44.610000	-92.610278	13.69165	44.611431	-92.610563	
Malaysia	KENYIR	13.6	5.023675	102.909967	13.6	5.019348	102.909421	
Ukraine	OLEKSANDRI V	13.5	47.702970	31.254462	13.52	47.703518	31.254176	The storage capacity in Wada et al. (2017) is much larger than that in ICOLD WRD. The scale in Wada et al. (2017) appears to be suspiciously large (given the reservoir surface area in comparison with nearby reservoirs), but we were unable to find another reference source to confidently oppose the value in Wada et al. (2017). Despite suspicion, we still kept the value in Wada et al. (2017).
Ukraine	KREMENCHU G	13.5	49.077536	33.250603	13.52	49.078139	33.248831	ICOLD does not document a storage value for this reservoir (ICOLD name: Kremenchuk), so we used the value in Wada et al. (2017).
China	Sanhezha	13.5	33.091111	118.725278		33.091111	118.725278	We could not find the corresponding record for this dam in ICOLD WRD, so we excluded it from harmonization.
Thailand	BHUMIBOL	13.5	17.242500	98.972222	13.462	17.242394	98.971196	
Russia	Kuma	13.3	66.360830	31.091390		66.360333	31.094558	We could not find the corresponding record for this dam in ICOLD, so we excluded it from harmonization.
China	Xiluodu	12.9	28.259850	103.649500	12.914	28.259850	103.649500	
Russia	SARATOV	12.9	52.053056	47.755000	12.9	52.050804	47.761887	
Russia	CHEBOKSARY	12.8	56.138056	47.465556	12.8	56.142156	47.457396	
Brazil	NOVA PONTE	12.8	-23.583333	-45.866667	12.792	-23.581391	-45.971028	

China	Xiaolangdi	12.7	34.924636	112.377297	12.65	34.924761	112.361776	
Ghana	BUI	12.6	8.278333	-2.235833	12.57	8.279620	-2.237052	
Brazil	SÃO SIMÃO	12.5	-19.019167	-50.500278	12.54	-19.019167	-50.500278	
Sudan	MEROWE	12.5	18.668889	32.050278	12.5	18.670290	32.051980	The storage capacity in Wada et al. (2017) is larger than that in ICOLD. ICOLD's record is overall consistent with GRandD but Wada's record is consistent with Wikipedia (https://en.wikipedia.org/wiki/Merowe_Dam). Although indecisive, we chose to respect the original value in Wada et al. (2017).
Argentina	PIEDRA DEL AGUILA	12.4	-40.190278	-69.991389	12.4	-40.191234	-69.992007	
Canada	PINE PORTAGE MAIN	12.4	49.307091	-88.309396	12.36263	49.308015	-88.309920	
Australia	LAKE GORDON	12.4	-42.730556	145.976389	12.35904	-42.730556	145.976389	
Canada	Des Roches	12.3	48.310000	-71.211575	0.694638	48.309876	-71.212933	The original storage capacity in Wada et al. (2017) is more than 30 times larger than that in ICOLD. The value in ICOLD is consistent with that in GRandD (0.374 cubic km) but is only about half of that in CanVec (NRC, 2017). So we made a compromise and used the value in CanVec which is between Wada et al. (2017) and (much close to) ICOLD/GRandD.
Russia	KAMA	12.2	58.983333	56.166667	12.2	58.117814	56.334115	
Malaysia	MURUM	12.0	2.646667	114.365833	12.043	2.653046	114.369467	
United States	GRAND COULEE	11.8	47.955833	-118.981667	11.794555	47.955833	-118.981667	
United States	Franklin	11.7	43.468889	-71.658961	0.2738326	43.471007	-71.661525	The original storage capacity in Wada et al. (2017) is about 40 times of that in ICOLD. The value in GRandD (0.2 cubic km) is overall at the same scale of the ICOLD value. We also verified using the USNID (2018; https://nid.usace.army.mil ; 222,000 acre-feet = cubic 0.2738 km) and found ICOLD's value to be probably more reliable. So we corrected the value in Wada et al. (2017).
India	NAGARJUNA SAGAR PROJECT	11.6	16.575556	79.311667	11.561	16.575898	79.310980	
Russia	VERKHNE-TULOMSKAYA	11.5	68.603750	31.758750	11.52	68.608244	31.750622	
Mali	MANANTALI	11.3	13.195556	-10.428889	11.27	13.195556	-10.428889	
Iraq	Mosul	11.1	36.630278	42.823056	11.1	36.632387	42.824851	

Brazil	ÁGUA VERMELHA	11.0	-19.865278	-50.346667	11.025	-19.865278	-50.346667	
Russia	ONDA	10.9	63.892083	33.308750	10.9	63.892083	33.308750	
China	Fengman	10.8	43.719444	126.688611	10.8	43.719444	126.688611	
Russia	KUMSKAYA	10.8	67.407917	32.550417	10.8	67.401005	32.575721	
China	LAXIWA	10.8	36.071667	101.187222	1.079	36.070659	101.184021	The original storage capacity in Wada et al. (2017) is 10 times of that in ICOLD. The latter is consistent with the records in GRanD and Wikipedia (https://en.wikipedia.org/wiki/Laxiwa_Dam). So we corrected the value in Wada et al. (2017).
Brazil	ITAPARICA	10.8	-9.143889	-38.313333	10.782	-9.143889	-38.313333	
Australia	LAKE ARGYLE	10.8	-16.188889	128.907500	10.76	-16.122398	128.739805	
India	RIHAND	10.6	24.202500	83.008056	10.6	24.202500	83.008056	The storage capacity in Wada et al. (2017) is larger than that in ICOLD, but it is consistent with the records in GRanD and Wikipedia (https://en.wikipedia.org/wiki/Rihand_Dam). So we kept the original value in Wada et al. (2017).
Mexico	NEZAHUALCÓ YOTL	10.6	17.178611	-93.598333	10.596	17.178225	-93.599301	
Brazil	CAPIVARA	10.5	-22.660092	-51.357978	10.54	-22.660092	-51.357978	
United States	STRUCTURE 308B & 308	10.5	26.984893	-80.621418	10.508033	26.984893	-80.621418	
Tajikistan	NUREK	10.5	38.371667	69.348056	10.5	38.371667	69.348056	
Canada	MANICOUAGA N 3	10.4	49.740488	-68.593062	10.422991	49.741982	-68.592813	The storage capacity in Wada et al. (2017) is larger than that in ICOLD but is consistent with GRanD and CanVec (NRC, 2017). So we kept the original value in Wada et al. (2017).
Indonesia	GAPIT	10.4	-8.794400	117.934000	10.36	-8.794400	117.934000	The storage capacity in Wada et al. (2017) is much larger than that in ICOLD WRD. The scale in Wada et al. (2017) appears to be suspiciously large (given the reservoir surface area in comparison with nearby reservoirs), but we were unable to find another reference source to confidently oppose the value in Wada et al. (2017). Despite suspicion we chose to respect the original value in Wada et al. (2017).
Canada	KEENLEYSIDE	10.3	49.339444	-117.771944	10.3	49.339056	-117.774305	
China	Tianshengqiao 1	10.3	24.941389	105.106944	10.257	24.941517	105.104156	
Thailand	MAE TEEB	10.0	17.861900	98.654400	10	18.583774	99.154917	The original coordinates in Wada et al. (2017) are probably wrong. We adjusted them based

Note: A small proportion of the revised coordinate values were further adjusted during data validation (by MD; Section 4 in the main paper) and thus are not identical to the coordinate values as in the product GeoDAR v1.0.

Supplementary Table S5. Identified issues in GRanD (v1.3) and suggested corrections. The full Excel spreadsheet can be accessed at <https://doi.org/10.5281/zenodo.6163413>.

GRanD ID	Issue	Description	Corrected latitude	Corrected longitude	Correction source	Harmonization with GeoDAR
274	Misplaced	Original GRanD location is actually Peachland Lake. Not sure about where the correct location of Brenda Dam should be.			CanVec; Google Maps	No, unable to locate
294	Misplaced	Original GRanD location is Conconully Dam/Reservoir (not Spectacle Lake), and some of the attribute values in GRanD (such as year, dam height, and river) seem to be mixed up with those of Conconully Dam as well.	48.814534	-119.523232	NID; Google Maps	Yes, with corrected coordinates
343	Misplaced	Original GRanD location is Warm Springs Tailing Dam #3, which is slightly eastern to Opportunity Tailings Ponds.	46.145259	-112.801936	NID	Yes, with corrected coordinates
628	Misplaced	Original GRanD location is Los Angeles Reservoir, which is slightly north to Lower San Fernando Dam or Lower Van Norman I Dam (Lower Van Normal Lake).	34.285300	-118.481200	NID; Google Maps	Yes, with corrected coordinates
718	Misplaced	Original GRanD location is Pointe du Bois Dam, downstream from WhiteDog Dam.	50.114681	-94.868304	CanVec; Google Maps	Yes, with corrected coordinates
731	Misplaced	Original GRanD location is Rainy Lake regulated by the International Falls Dam, north west (downstream) to Kettle Falls Dam.	48.499690	-92.638800	NID; Google Maps	Yes, with corrected coordinates
739	Misplaced	Original GRanD location has no visible dam feature. The suggested/corrected coordinates are based on NID (2018 version) record "MN00607" (Winton Dam), which has the same storage capacity as that in this GRanD record. However, the corrected location conflicts with another Winton Dam in GRanD (GRanD ID 6865, Garden Lake Reservoir) with a much larger storage capacity. GeoDAR considered these two records as duplicates and only kept the one with a larger capacity.	47.932504	-91.763742	NID; Google Maps	No, possible duplicate
1059	Misplaced	Original GRanD location intrudes to a downstream reservoir (Webbers Falls Lock and Dam).	35.617186	-95.167690	NID; Google Maps	Yes, with corrected coordinates
1163	Misplaced	Original GRanD location is Fort Sherman Dam. Monticello Dam impounds the northern portion of this reservoir system.	33.081290	-95.039231	NID; Google Maps	Yes, with corrected coordinates
1204	Misplaced	Original GRanD location is Flag Lake.	31.253087	-91.957307	NID; Google Maps	Yes, with corrected coordinates
1333	Misplaced	No visible dam structure is observed on Pueblo Viejo Lake. Animas Dam/Reservoir (Presa Las Ánimas) is located to the northwest.	22.631630	-98.737104	Google Maps	Yes, with corrected coordinates
1407	Misplaced	Original GRanD location is another White Lake (in Ontario, Canada), not White Lake near Uranium City in Saskatchewan (as specified in the GRanD attributes).	59.627516	-109.006954	CanVec; Google Maps	Yes, with corrected coordinates
1757	Misplaced	Original GRanD location is Western Branch Dam. Lake Prince Dam is slightly upstream.	36.807372	-76.622453	NID; Google Maps	Yes, with corrected coordinates
1850	Misplaced	Original GRanD location is Rocky Mtn Dam D (Auxiliary Pool I - Dam D). Lower Reservoir is immediately downstream.	34.368200	-85.270400	NID	Yes, with corrected coordinates
1940	Misplaced	Original GRanD dam location is Clear Springs N-12A, which is north to Clear Springs N-12.	27.850000	-81.839996	NID	Yes, with corrected coordinates
2006	Subsumed	As noted in GRanD Comments			CanVec; Google Maps	No, subsumed
2027	Misplaced	Original GRanD location is La Tuque Dam, immediately	47.556786	-72.836244	CanVec; Google	Yes, with corrected

		downstream from Beaumont Dam. GRanD storage capacity is different from the record of Beaumont Dam in ICOLD but is consistent with that in CanVec.			Maps	coordinates
2033	Misplaced	Original GRanD location is South Gisborne Lake, west to Wreck Cove Dam.	46.550358	-60.491874	NID; Google Maps	Yes, with corrected coordinates
2113	Misplaced	Original GRanD location intrudes to a downstream dam/reservoir (Piercefield).	44.234218	-74.529151	NID; Google Maps	Yes, with corrected coordinates
2121	Misplaced	Original GRanD location is for Bog River Dam or Lows Lower Dam, which is downstream to Lows Lake Dam.	44.109875	-74.670905	NID; Google Maps	Yes, with corrected coordinates
2149	Misplaced	Original GRanD location intrudes to a downstream dam/reservoir (Eastman Falls). The storage capacity value in GRanD is 30% less than that in ICOLD or NID.	43.471007	-71.661525	NID; Google Maps	Yes, with corrected coordinates
2183	Misplaced	Original GRanD location is Chestnut Hill Reservoir. GRanD storage capacity is larger than the record of Cambridge Reservoir in NID (12.8 mcm) but is more similar to that in ICOLD.	42.398945	-71.273310	NID; Google Maps	Yes, with corrected coordinates
2193	Misplaced	Original GRanD location is Goodwin/Hogsback Dam, which is immediately downstream from the Colebrook River Dam.	42.006841	-73.038154	NID; Google Maps	Yes, with corrected coordinates
2296	Misplaced	Original GRanD location is Playas Dam (mentioned in "ALT_NAME" but mixed with Guillermo Cano Jaguas). Dam Guillermo Cano (Jaguas) or San Lorenzo is upstream to Playas, and has been correctly documented by another GRanD record (GRanD ID 2295). Playas Reservoir has a capacity of 76.35 mcm (based on DDSA), smaller than the storage capacity value (CAP_MCM) in this GRanD record (which actually documents the capacity of Guillermo Cano (Jaguas) or San Lorenzo upstream).	6.388308	-74.994514	DDSA; Google Maps	No, possible duplicate
2524	Misplaced	Original GRanD location is Joanes II Dam, southwest to Santa Helena Dam.	-12.562314	-38.159978	RSB; Google Maps	Yes, with corrected coordinates
2525	Misplaced	Original GRanD location is Joanes I Dam.	-12.674444	-38.378611	RSB	Yes, with corrected coordinates
2606	Misplaced	Original GRanD location is Cathaleen's Fall, which is immediately downstream Cliff Dam. GRanD attribute information is for Cliff Dam.	54.487333	-8.101676	MARS; Google Maps	Yes, with corrected coordinates
2844	Replaced	As noted in GRanD Comments			MARS; Google Maps	No, replaced
2882	Replaced	As noted in GRanD Comments			MARS; Google Maps	No, replaced
2928	Misplaced	Original GRanD location is Smir Dam. Not sure about where the correct location should be.			Google Maps	No, unable to locate
2931	Misplaced	Original GRanD location is Ennakhla Dam, south to Nakhla Dam. GRanD storage capacity is about twice as large as the record of Nakhla Dam is ICOLD or wikipedia, but other GRanD attributes seem to be right. Despite this uncertainty, this GRanD record was still harmonized in GeoDAR v1.1.	35.700381	-5.503850	Google Maps; Wikipedia (https://en.wikipedia.org/wiki/Nakhla_Dam)	Yes, with corrected coordinates
2944	Misplaced	Original GRanD location is likely Bouhouda Dam, which is west to Asfalou Dam.	34.633207	-4.190306	Google Maps; ICOLD	Yes, with corrected coordinates
3070	Misplaced	Original GRanD location is Järpströmmens Dam (also see GRanD ID 3071). The reservoir of Järpströmmens Dam is indeed called Kallsjön, but the attribute information in this GRanD record does not seem to agree with that of Järpströmmens Dam in MARS or ICOLD. So not sure about			MARS; Google Maps	No, unable to locate

		where the correct location should be.				
3071	Misplaced	Correct location should be at the coordinates of the original GRanD ID 3070 ("Kallsjon Lake").	63.390486	13.383670	MARS; Google Maps	Yes, with corrected coordinates
3186	Misplaced	The correct location should probably be upstream.	58.574392	7.353074	Google Maps	Yes, with corrected coordinates
3215	Misplaced	Original GRanD location is Neyetalsperre, south to Ennepetalsperre (Ennepe Dam).	51.241369	7.409081	MARS; Google Maps	Yes, with corrected coordinates
3312	Misplaced	Original GRanD location is San Valentino Dam.	46.516945	10.318611	MARS; Google Maps	Yes, with corrected coordinates
3334	Misplaced	Original GRanD location is Canano Dam, immediately downstream from San Giacomo di Fraele.	46.535276	10.278052	MARS; Google Maps	Yes, with corrected coordinates
3395	Misplaced	Original GRanD location is Panperduto Dam, which is downstream from Miorina Dam and then Porto Della Torre Dam.	45.705490	8.654524	MARS; Google Maps	Yes, with corrected coordinates
3561	Misplaced	Original GRanD location is Zardezas Dam, southeast to Guenitra Dam.	36.714918	6.635656	Google Maps	Yes, with corrected coordinates
3564	Misplaced	Original GRanD location is El Masri Dam, southeast to Tahouna Dam (coordinates estimated based on "Correction source").	36.550248	10.434810	Google Maps; ICOLD; https://tunisie.co/article/740/culture/itineraires/masri-242915 ; https://www.fao.org/3/q2659f/Q2659F17.htm	Yes, with corrected coordinates
3596	Misplaced	Original GRanD location (reservoir name unknown) is east to Sarno Dam.	35.298446	-0.581649	Google Maps	Yes, with corrected coordinates
3597	Misplaced	Original GRanD location is Babar Dam (south to Foum el Gueiss Dam). GRanD storage capacity appears too large but the other attributes seem to be overall right.	35.474511	6.937114	Google Maps	Yes, with corrected coordinates
3714	Misplaced	Original GRanD polygon includes the reservoirs of both Slagnäs Dam and Storavatn Bergnas Dam, but the GRanD dam point is at the Slagnäs Dam (downstream from Storavatn Bergnas Dam).	65.673691	18.144613	MARS; Google Maps	Yes, with corrected coordinates
3722	Misplaced	Original GRanD polygon includes the reservoir of Dabbsjo Dam, the reservoir of St Raijan Dam, and another lake downstream, but the GRanD dam point is downstream from both Dabbsjo and St. Raijan.	64.651311	15.334890	MARS; Google Maps	Yes, with corrected coordinates
3734	Misplaced	No full river obstruction is observed at this GRanD location. The coordinate point was moved further upstream.	58.546960	15.071523	MARS; Google Maps	Yes, with corrected coordinates
3749	Misplaced	Original GRanD location is Tama w Brodach Dam, north to Wiory Dam.	50.958150	21.193662	Google Maps	Yes, with corrected coordinates
3784	Misplaced	Original GRanD location is Hričov Dam/Reservoir, downstream from Žilina Dam.	49.215169	18.777712	Google Maps	Yes, with corrected coordinates
4016	Misplaced	Original GRanD location is Lake Ioanninon Pamvotida, southwest to Pigae Aaos Dam. The GRanD storage capacity is greater than the record of Piges Aouu Dam in ICOLD.	39.835805	21.067548	Google Maps	Yes, with corrected coordinates
4104	Misplaced	Original GRanD location is a reservoir (name unknown) west to Thornville Reservoir.	-21.028808	28.245573	Google Maps	Yes, with corrected coordinates
4109	Misplaced	Original GRanD location is a reservoir (name unknown) southeast to Ripple Creek Reservoir.	-21.242900	29.801222	Google Maps	Yes, with corrected coordinates

4119	Misplaced	Original GRanD location is Goreangab Dam, west to Avis Dam.	-22.573878	17.129016	Google Maps	Yes, with corrected coordinates
4178	Misplaced	Original GRanD location is Leeupan Dam, northeast to Douglas Weir.	-29.043611	23.835000	LRD; Google Maps	Yes, with corrected coordinates
4197	Misplaced	Original GRanD location is Bloemhoek Dam, north to Grobler Dam.	-27.662833	27.276750	LRD; Google Maps	Yes, with corrected coordinates
4215	Misplaced	Original GRanD location is a reservoir (name unknown) southeast to Qedusizi Dam. GRanD storage capacity is much larger than the record of Qedusizi Dam in LRD (only 0.051 mcm) but is more consistent with that in ICOLD. The dam body exists but reservoir is not inundated.	-28.541944	29.744722	LRD; Google Maps	Yes, with corrected coordinates
4225	Misplaced	Original GRanD location is Moperi Dam, downstream from Lucretia Dam (based on LRD). The Google Maps label here is probably wrong.	-28.890803	27.545641	LRD	Yes, with corrected coordinates
4309	Misplaced	Original GRanD location is Kaalpan Reservoir.	-33.391667	20.339722	LRD; Google Maps	Yes, with corrected coordinates
4322	Misplaced	Original GRanD location is Knipe's Hope Dam, slightly northeastern to the Montagu Bottom dam (which is what the GRanD attributes depict).	-33.795889	20.129000	LRD; https://yymaps.com/ZA/Knipe-S-Hope-Dam-T10512882/	Yes, with corrected coordinates
4340	Misplaced	Original GRanD location is Grootvlei Dam. Not sure about where the correct location should be.			LRD; Google Maps	No, unable to locate
4342	Misplaced	Original GRanD location is Rockview Dam, southwest to Grootvlei Dam.	-34.180000	18.975000	LRD; Google Maps	Yes, with corrected coordinates
4343	Misplaced	Original GRanD location is Applethwaite Dam, upstream to Kogelberg Dam.	-34.215833	18.972500	LRD; Google Maps	Yes, with corrected coordinates
4344	Misplaced	Original GRanD location is Kogelberg Dam. Not sure about where the correct location should be.			LRD; Google Maps	No, unable to locate
4510	Misplaced	Original GRanD location (reservoir name unknown) is northwest to Arcadia Dam.	-17.387107	31.423065	Google Maps	Yes, with corrected coordinates
4531	Misplaced	Original GRanD location is Wenimbe Dam. Not sure about where the correct location should be.			Google Maps	No, unable to locate
4534	Misplaced	Original GRanD location is Osborne Dam, which is west to Smallbridge Dam.	-18.763390	32.742047	Google Maps	Yes, with corrected coordinates
4542	Misplaced	Original GRanD location is Muzhwi Dam. Name and storage capacity of this GRanD record are similar to those of Mushandike Dam (GRanD ID 4543), so they were probably duplicates.	-20.148653	30.625002	Google Maps	No, possible duplicate
4727	Misplaced	Original GRanD location is Som Kamla Dam, which is southwest to Jakham Main Dam.	24.169739	74.591117	NRLD; Google Maps	Yes, with corrected coordinates
4741	Misplaced	Original GRanD location is Eklahare Dam, which is northwest to Karanjikhed Reservoir.	18.050397	76.264661	NRLD; Google Maps	Yes, with corrected coordinates
4759	Attributes mixed with another dam	Original GRanD location is Thokarwadi Dam, not Thakurwadi (as GRanD "DAM_NAME" records). Thakurwadi is a different dam at 19.229722, 73.42028 according to NRLD. The attributes in GRanD is overall consistent with those of Thokarwadi (so this GRanD location was considered correct), but values of some of the attributes in GRanD (such as alternative year, alternative dam length, and nearest city) appear to be mixed up with those of Thakurwadi.			NRLD; Google Maps	Yes, with original coordinates
4762	Misplaced	Original GRanD location is Tanajisagar (Panshet), which is just	18.387085	73.612361	NRLD;	Yes, with corrected

		south to Vir Baji Pasalkar. GRanD's storage capacity is 10% of that in ICOLD or NRLD, so the capacity in GRanD may have a unit error.			https://en.wikipedia.org/wiki/Varasgaon_Dam ; Google Maps	coordinates
4774	Misplaced	Original GRanD location is Patgaon Dam (storage capacity 105.2 mcm), 550-600 km southwest to Pedgaon Dam according to NRLD.	19.282219	76.662665	NRLD; Google Maps	Yes, with corrected coordinates
4810	Misplaced	Original GRanD location is Pagara Reservoir, northeast to Aoda Reservoir.	25.513191	76.785246	NRLD; Google Maps	Yes, with corrected coordinates
4819	Misplaced	Original GRanD location is Dongari Dam, southwest to Sijar Reservoir according to NRLD.	25.427541	78.506238	NRLD; Google Maps	Yes, with corrected coordinates
4825	Misplaced	Original GRanD location is Kharagpur Lake. The coordinates for Sindhwarni Dam are 25.131, 86.625 according to NRLD, but no dam/reservoir feature was observed there. The construction year is also missing (in GRanD, ICOLD, and NRLD). So not sure where the correction location should be.			Google Maps; NRLD	No, unable to locate
4911	Misplaced	Original GRanD location is Maroda-1 Tank (BSP) in Chhattisgarh, which is about 100 km northwest to Maroda Reservoir or Tank. Reservoir capacity of Maroda Tank in GRanD is consistent with the record in ICOLD, but the capacity record in NRLD is 100 times larger (there may be some unit error). Other attributes are overall consistent across the three sources (ICOLD, GRanD, and NRLD).	20.599325	82.043625	NRLD; Google Maps	Yes, with corrected coordinates
4920	Misplaced; Attributes mixed up with another dam	Original GRanD location is Lower Wunna Dam (Wadgaon), about 570 km northeast to Wadgaon Dam according to NRLD. Most attributes in GRanD are consistent with those of Wadgaon Dam in ICOLD or NRLD (confirming this GRanD location was misplaced). However, the storage capacity in GRanD is similar to that of Lower Wunna Dam (much larger) and is therefore likely overestimated.	18.777926	75.270254	NRLD; Google Maps	Yes, with corrected coordinates
4921	Misplaced	Original GRanD location is Itiadhoh Dam (southwest to Pujaritola Reservoir). GRanD storage capacity is much larger than that of either reservoir (as in NRLD and ICOLD). NRLD capacity for Pujaritola is 58.45 mcm.	21.238179	80.437588	NRLD; Google Maps	Yes, with corrected coordinates
4922	Misplaced	Original GRanD location is Gondli Tank in Chhattisgarh. The storage capacity of this GRanD record is a lot larger than that of Kharkhara Tank in ICOLD but is similar to the effective storage in NRLD (smaller than the gross storage in NRLD). So there is likely a unit error for this capacity value in ICOLD. In addition, the year and storage capacity in GRanD seems to be mixed up with those of Kharkhara Dam at 20.832, 80.987 (based on NRLD and ICOLD). So attributes of this GRanD record may require further verification.	20.788913	82.176264	NRLD; Google Maps	Yes, with corrected coordinates
4928	Misplaced	Original GRanD location is Katepurna Dam or Mahan Dam (Katepurna) in Maharashtra, more than 750 km southwest to Mahan (Gulab Sagar) Dam in Madhya Pradesh.	24.224662	81.541030	NRLD; Google Maps	Yes, with corrected coordinates
4948	Misplaced	Original GRanD location is Manar Dam (in Maharashtra), which is about 1000 km north to Manimuthar Dam in the state of Tamil Nadu.	8.653493	77.413436	NRLD; Google Maps	Yes, with corrected coordinates
4962	Misplaced	Original GRanD location is Hingani Dam (Pangaon), where the GRanD attributes seem to depict Hingani Dam (K) which is more than 100 km west to Hingani Dam (Pangaon). Storage	18.313766	74.937270	NRLD; Google Maps	Yes, with corrected coordinates

		capacity in this GRanD record is about 10 times of the storage capacity of Hingani Dam (K) in ICOLD and NRLD.				
4978	Misplaced	Original GRanD location is Yeleru Reservoir (east to Jalleru Reservoir). GRanD storage capacity is much larger than that of either reservoir (based on NLRD and ICOLD), and the NLRD capacity for Jalleru is 15.317 mcm. GRanD's storage capacity is likely wrong.	17.286059	81.348020	NRLD; Google Maps	Yes, with corrected coordinates
5037	Misplaced	Original GRanD location is Sholayar (Main) Dam or Lower Sholayar Dam. Sholayar or Upper Sholayar Dam is immediately upstream.	10.298372	76.881135	NRLD; Google Maps	Yes, with corrected coordinates
5313	Misplaced	Original GRanD location is Wangtang Reservoir, which is southeast to Wangtun Reservoir.	34.303365	113.152810	Google Maps	Yes, with corrected coordinates
5392	Misplaced	Original GRanD location is Yuanjisi Reservoir, which is south to Meidian Reservoir.	31.176145	114.326344	Google Maps	Yes, with corrected coordinates
5449	Misplaced	Original GRanD location is Gujiao Reservoir, east to Longping Reservoir.	30.173592	115.916230	Google Maps	Yes, with corrected coordinates
5465	Misplaced	Original GRanD location is Chonghu Lake.	26.611390	111.387711	Google Maps	Yes, with corrected coordinates
5783	Misplaced	Original GRanD location is another "Hexi" Reservoir (in Xuwen County, Guangdong Province), which is more than 700 km southwest to Hexi Reservoir in Chaoyang, Guangdong (attributes for this GRanD record).	23.330015	116.537675	Google Maps	Yes, with corrected coordinates
6021	Misplaced	Original GRanD location is Samheung Reservoir (not Samjung Reservoir) in Jeollanam-do, South Korea. This location is about 250 km southwest to Pohang (on the east coast), "NEAR_CITY" in this GRanD record. Not sure of where the correct location of Samjung Reservoir should be. We also noticed for several other GRanD records in South Korea, reservoir name seems to match Google Maps information, but "NEAR_CITY" is very distant (we did not consider these GRanD records to be wrong in this GeoDAR version).			Google Maps	No, unable to locate
6188	Misplaced	Original GRanD locataion is Tienlun Dam, slightly downstream from Kukuan (Guguan) Dam. GRanD storage capacity is a little greater than that in ICOLD.	24.233823	121.076339	Google Maps	Yes, with corrected coordinates
6285	Replaced	As noted in GRanD Comments			JDF; Google Maps	No, replaced
6315	Subsumed	As noted in GRanD Comments			JDF; Google Maps	No, subsumed
6674	Misplaced	Original GRanD location is Eel Hole Creek Dam. Not sure about where the correct location should be.			Google Maps	No, unable to locate
6754	Misplaced	Original GRanD location is Lake Owhareiti, which is south to Lake Waingaro.	-35.261288	173.882671	Google Maps	Yes, with corrected coordinates

Note: See the main paper for data acronyms. In addition, we also referred to the Dataset of Georeferenced Dams in South America (DDSA; Paredes-Beltran et al., 2021, doi:10.5194/essd-13-213-2021) for verifying a few dams in GRanD for South America.

Supplementary Table S6. Summative statistics (dam count and total reservoir storage capacities) for ICOLD WRD (accessed on March 13, 2019), GRand v1.3, and GeoDAR v1.1 in 165 countries/territories with at least one dam record in any of the three datasets. Countries are listed in a descending order of the dam count in WRD.

Country / territory	Dam count				Reservoir storage capacity (million cubic meters)			
	WRD	GRanD	WRD in GeoDAR	All GeoDAR	WRD	GRanD	WRD in GeoDAR	All GeoDAR
China	23749	918	5108	5270	813993.0	668598.3	675127.2	712614.3
United States	8862	1921	7650	7960	861394.9	745963.5	842100.5	868569.8
India	5074	332	1278	1295	295754.0	266470.8	257167.5	299602.4
Japan	3089	546	583	628	23270.4	19994.5	17826.0	20829.6
Brazil	1345	203	767	767	673473.6	549914.9	616251.5	616251.5
South Korea	1334	57	230	240	20847.4	16896.9	17073.4	17480.8
South Africa	1105	269	874	936	32859.3	30808.1	32215.1	33138.8
Spain	1024	262	835	837	61592.4	56417.1	59191.3	59222.3
Turkey	966	142	526	526	197678.2	165242.0	173343.6	173343.6
France	673	114	540	541	16207.7	13459.5	15591.6	15615.1
Canada	648	234	541	561	951073.9	894891.4	909533.7	968383.8
United Kingdom	578	89	514	515	6357.4	5271.5	6134.0	6434.0
Australia	553	190	346	352	85475.1	78978.7	84651.4	85478.3
Mexico	550	106	218	218	137897.6	119888.1	125168.0	125168.0
Italy	522	87	445	447	13275.0	7594.9	13006.6	13168.6
Iran	517	60	92	98	60451.5	45704.3	51422.3	52695.0
Germany	370	60	258	259	4439.2	3192.9	3908.9	4090.9
Albania	307	6	136	136	5467.8	4230.0	4499.5	4499.5
Norway	297	125	218	225	36717.8	33445.9	32611.6	35257.3
Zimbabwe	252	104	97	119	9110.2	7380.6	7977.9	8189.6
Romania	240	79	148	149	12786.6	10077.4	11268.5	11336.5
Thailand	217	34	49	52	78733.0	75929.7	77260.4	86240.4
Portugal	215	56	110	110	13773.0	12990.7	13321.1	13321.1
Sweden	173	49	171	174	36652.0	36459.0	36638.9	37338.9
Bulgaria	172	46	102	102	7574.5	6518.4	7175.8	7175.8

Austria	166	22	133	133	3258.4	2127.7	3080.0	3080.0
Pakistan	156	30	53	64	53301.4	31650.3	38917.8	42145.8
Greece	155	20	35	36	14437.8	12842.0	13300.3	13349.3
Switzerland	154	39	146	146	3655.4	3364.1	3654.4	3654.4
Morocco	148	39	51	52	20071.4	16690.6	17860.9	17903.9
Algeria	143	49	59	60	9346.1	7293.7	7888.4	7902.4
Indonesia	135	20	54	54	26597.2	12076.0	23266.8	23266.8
Tunisia	123	26	29	30	2997.7	2424.4	2378.7	2435.7
Saudi Arabia	120	3	9	9	1473.7	663.0	813.4	813.4
Czechia	117	35	107	107	3454.5	3184.3	3431.3	3431.3
Argentina	112	37	52	53	94653.9	92345.2	93170.9	93206.9
Mali	111	3	4	4	13624.9	13615.0	13615.0	13615.0
New Zealand	95	65	69	71	17100.4	16913.3	17076.1	17085.2
Chile	93	10	44	44	13987.4	5537.0	12748.8	12748.8
Sri Lanka	88	11	73	74	5862.5	4301.2	5288.3	5884.9
Vietnam	80	40	55	57	51556.7	46261.4	49392.6	50559.6
Cuba	78	3	25	25	4683.8	1786.0	3655.8	3655.8
Venezuela	74	36	48	48	162866.3	160907.6	161064.7	161064.7
North Korea	73	38	39	39	37297.3	32767.5	32944.5	32944.5
Poland	67	29	48	48	3585.9	2955.9	3294.2	3294.2
Russia	67	52	52	53	917787.1	895811.1	895150.1	895850.1
Peru	63	15	25	25	5539.1	4888.7	5159.8	5159.8
Serbia	61	19	55	55	2773.6	2269.9	2533.1	2533.1
Cyprus	57	4	47	47	313.1	204.6	299.9	299.9
Colombia	56	24	34	34	19038.1	18787.3	18967.8	18967.8
Finland	56	19	52	52	19958.7	18603.0	19294.9	19294.9
Nigeria	52	54	39	55	40831.8	36238.8	35134.9	36261.5
Slovakia	50	16	36	36	1841.3	1726.7	1806.4	1806.4
Malaysia	43	12	26	26	80669.3	79828.7	80194.5	80194.5
Syria	41	2	7	7	12267.0	11800.0	12189.4	12189.4
Armenia	38	5	14	14	1410.6	1059.0	1157.9	1157.9

Slovenia	36	2	23	23	215.8	33.5	139.0	139.0
Taiwan	34	5	13	14	2688.9	1199.8	1351.5	1369.2
Bolivia	33	4	6	6	566.9	489.8	495.4	495.4
Myanmar	33	19	18	31	24718.0	14690.5	24641.8	28034.3
Ivory Coast	32	18	18	18	38031.3	37882.5	37882.5	37882.5
Iraq	30	7	11	12	81367.6	103430.0	77035.5	120535.5
North Macedonia	27	9	27	27	2470.8	2289.9	2470.8	2470.8
Croatia	26	8	16	16	1018.7	962.0	1000.3	1000.3
Kenya	26	8	16	16	4087.0	4061.9	4071.0	4071.0
Ukraine	24	9	5	10	60959.1	47200.0	47716.0	60720.0
Bosnia and Herzegovina	23	9	19	19	3147.0	2912.4	3114.2	3114.2
Iceland	23	7	15	15	5038.6	4378.8	4896.7	4896.7
Panama	22	5	10	10	5862.4	5705.0	5800.6	5800.6
Afghanistan	21	5	6	7	4682.3	4343.1	4102.1	4602.1
Azerbaijan	21	7	10	10	22834.7	21956.0	22017.0	22017.0
Laos	21	9	11	11	22987.6	19463.0	19463.0	19463.0
Philippines	21	8	12	12	7734.0	5712.0	6760.0	6760.0
Burkina Faso	19	58	11	59	5863.0	5687.7	5530.1	5714.7
Mozambique	19	8	7	8	68773.5	68860.4	68458.4	68860.4
Namibia	19	12	16	16	1608.6	694.7	709.8	709.8
Angola	18	10	12	12	19961.3	14382.8	19867.0	19867.0
Dominican Republic	18	11	15	16	2788.7	3106.5	2780.4	3150.4
Ethiopia	18	12	12	14	147942.3	30957.4	28575.3	30972.7
Georgia	17	6	11	11	2894.0	2362.0	2483.1	2483.1
Lithuania	17	2	4	4	617.1	495.2	531.9	531.9
Ecuador	16	6	10	10	7484.3	7290.0	7432.8	7432.8
Hungary	16	4	14	14	290.3	256.4	280.0	280.0
Ireland	16	4	12	12	993.1	869.0	983.7	983.7
Lebanon	16	1	2	2	341.8	160.0	169.0	169.0
Uzbekistan	16	9	10	10	7111.4	6713.4	6740.6	6740.6
Cameroon	14	6	6	7	21750.4	15755.8	15715.8	15765.8

Jordan	14	1	10	10	354.7	115.0	340.3	340.3
Kazakhstan	14	10	9	10	90890.4	90630.5	88876.5	90630.5
Congo (Dem. Rep. of)	13	5	6	6	5698.6	4091.5	5691.5	5691.5
Costa Rica	13	2	5	5	2459.9	2271.0	2323.0	2323.0
Libya	13	4	6	6	385.1	203.2	317.9	317.9
United Arab Emirates	13	0	4	4	30.3	0.0	6.4	6.4
Kyrgyzstan	12	8	9	9	23422.5	22933.0	23303.0	23303.0
Belgium	11	5	11	11	171.0	144.3	171.0	171.0
Mauritius	11	0	7	7	101.4	0.0	70.9	70.9
Netherlands	11	8	10	10	9279.0	9234.0	9254.0	9254.0
Botswana	10	7	8	9	909.5	848.5	779.5	874.5
Eswatini	10	9	9	9	700.0	699.7	699.7	699.7
Lesotho	10	6	6	6	2981.8	2909.7	2909.7	2909.7
Tajikistan	9	7	8	8	28440.1	28398.1	28398.1	28398.1
Bhutan	8	0	2	2	10.8	0.0	9.8	9.8
Gabon	8	1	2	2	220.0	220.0	220.0	220.0
Guatemala	8	1	4	4	461.4	460.0	460.4	460.4
Madagascar	8	6	3	6	469.6	508.9	450.0	508.9
Niger	8	0	0	0	1675.0	0.0	0.0	0.0
Oman	8	1	1	1	343.5	100.0	100.0	100.0
Cape Verde	7	0	2	2	6.2	0.0	1.2	1.2
Cambodia	7	2	3	3	2745.0	2508.0	2508.0	2508.0
Denmark	7	0	3	3	28.6	0.0	21.0	21.0
Ghana	7	12	7	12	161025.2	161109.3	161025.2	161109.3
Guinea	7	3	3	3	8174.0	1837.0	1837.0	1837.0
Honduras	7	2	4	4	9116.5	9016.0	9025.5	9025.5
Malawi	7	0	2	2	16.5	0.0	2.6	2.6
Tanzania	7	3	5	5	4501.0	4500.0	4501.0	4501.0
Uruguay	7	3	5	5	14723.5	14504.0	14596.5	14596.5
Congo	6	1	2	2	679.8	584.0	584.0	584.0
Egypt	6	6	4	6	162200.0	164804.4	162200.0	164804.4

El Salvador	6	3	4	4	3544.0	2710.0	3355.0	3355.0
Montenegro	6	3	6	6	1051.3	1028.0	1051.3	1051.3
Nepal	6	1	3	3	155.1	85.3	140.0	140.0
Sudan	6	6	6	6	13360.0	13360.0	13360.0	13360.0
Uganda	6	1	2	2	204857.9	204800.0	204812.8	204812.8
Zambia	6	5	5	5	193124.9	193044.9	193044.9	193044.9
Brunei Darussalam	5	0	3	3	165.0	0.0	54.3	54.3
Nicaragua	5	1	1	1	1461.4	434.9	434.9	434.9
Benin	4	1	1	1	703.5	23.5	23.5	23.5
Burundi	4	0	1	1	0.0	0.0	0.0	0.0
Eritrea	4	1	2	2	95.7	19.7	33.7	33.7
Fiji	4	0	1	1	159.3	0.0	1.0	1.0
Papua New Guinea	4	2	2	2	665.5	665.0	665.0	665.0
Trinidad and Tobago	4	0	4	4	65.7	0.0	65.7	65.7
Belize	3	1	3	3	121.7	120.0	121.7	121.7
Central African Republic	3	0	0	0	0.0	0.0	0.0	0.0
Greenland	3	1	2	2	2008.1	108.0	2008.0	2008.0
Latvia	3	3	3	3	1007.0	1007.0	1007.0	1007.0
Luxembourg	3	1	1	1	79.2	62.0	62.0	62.0
Mongolia	3	1	1	1	930.0	930.0	930.0	930.0
Paraguay	3	3	3	3	41690.0	41690.0	41690.0	41690.0
Senegal	3	0	0	0	144.0	0.0	0.0	0.0
Singapore	3	3	3	3	74.9	74.9	74.9	74.9
Yemen	3	0	1	1	463.5	0.0	398.0	398.0
Belarus	2	1	2	2	1336.6	1336.6	1336.6	1336.6
Israel	2	0	0	0	0.0	0.0	0.0	0.0
Jamaica	2	0	2	2	220.0	0.0	220.0	220.0
Mauritania	2	2	2	2	800.0	800.0	800.0	800.0
Moldova (Rep. of)	2	2	2	2	4290.0	4290.0	4290.0	4290.0
Seychelles	2	0	2	2	1.0	0.0	1.0	1.0
Sierra Leone	2	2	2	2	648.0	648.0	648.0	648.0

Togo	2	2	1	2	1710.9	1715.9	1710.0	1715.9
Turkmenistan	2	3	1	3	3550.0	6704.0	1250.0	6704.0
Antigua and Barbuda	1	0	0	0	4.5	0.0	0.0	0.0
Bangladesh	1	2	1	2	6477.0	8262.9	6477.0	8262.9
Chad	1	0	0	0	0.6	0.0	0.0	0.0
Dominica	1	0	1	1	0.0	0.0	0.0	0.0
Equatorial Guinea	1	0	0	0	0.0	0.0	0.0	0.0
Guyana	1	0	0	0	40.0	0.0	0.0	0.0
Haiti	1	0	1	1	62.0	0.0	62.0	62.0
Liberia	1	1	1	1	229.6	229.6	229.6	229.6
Palau	1	0	0	0	0.1	0.0	0.0	0.0
Rwanda	1	0	1	1	0.0	0.0	0.0	0.0
Santa Lucia	1	0	1	1	2.6	0.0	2.6	2.6
Samoa	1	0	1	1	10.0	0.0	10.0	10.0
São Tomé and Príncipe	1	0	0	0	0.0	0.0	0.0	0.0
Suriname	1	1	1	1	22700.0	22700.0	22700.0	22700.0