



# The geo-referenced database on dams in Central America and the Caribbean

## Notes and References

### General notes

#### A. Quality of data

The references used for the database were: i) National Reports; ii) Information obtained from national experts through AQUASTAT national surveys; iii) April 2010 version of Global Reservoir and Dam (GRanD) Database; iv) The Internet.

The database, in its present format, is neither complete nor can be considered error-free. It corresponds to the best available information at the time of the study.

#### B. Coordinates

Coordinates are given in decimal degrees. Location was obtained through FAO AQUASTAT country profile surveys and geographical information as detailed in the national and other references columns in the database.

#### C. Large dam

According to ICOLD, a large dam is a dam with a height of 15 metres or more from the foundation. If dams are between 5-15 metres high and have a reservoir capacity of more than 3 million m<sup>3</sup>, they are also classified as large by ICOLD.

While the database concentrates on large dams, in some cases if information on other dams was available, it has also been, since AQUASTAT considers this additional information to be valuable.

#### D. Dam height

All heights are given in metres, with a precision of two decimals (cm), although most of the available figures are given with a precision of 1 metre.

#### E. Reservoir capacity and sedimentation rate

The reservoir capacity refers to the initial capacity, not taking into consideration the reduction in volume due to sedimentation. The level of sedimentation refers to the percentage of initial capacity lost due to sedimentation. This should be linked to a year, but not always the year is available.

#### F. Shared dams

Paraguay shares dams with Argentina and Brazil, the Yacyreta and Itaipu, respectively. Argentina and Uruguay share the Salto Grande Dam. In order to account for these fairly, these dam capacities and the evaporation from their corresponding reservoirs have been shared amongst the countries in the AQUASTAT database. Therefore, the following numbers apply: Itaipu dam: Total Capacity = 29 km<sup>3</sup> (14.5 km<sup>3</sup> in Paraguay, 14.5 km<sup>3</sup> in Brasil). Yacyreta dam: 21 km<sup>3</sup> (10.5 km<sup>3</sup> for Paraguay, 10.5 km<sup>3</sup> for Argentina). Salto Grande dam: Total capacity = 5.50 km<sup>3</sup> (2.75 km<sup>3</sup> for Argentina and 2.75 km<sup>3</sup> for Uruguay)

**Figure 1:**  
Major rivers and dams



## Explanation of the fields of the dams database in Excel

Column Title	Explanation
Name of dam	The name of the dam
Country	The name of the country in which the dam is located
ISO alpha-3	Country codes used by United Nations
Administrative unit	The name of the sub-national administrative unit in which the dam is located. Was often determined using the GAUL dataset
Nearest city	The name of the city closest to where the dam is located
River	The name of the river on which the dam is located
Major basin	The name of the major river basin in which the dam is located.
Sub-basin	The name of the sub-basin in which the dam is located
Completed/operational since	Year in which the dam was completed, operational or improved
Dam height	Height of dam in metres. The precision given is two decimals (cm), although most of the available figures are given with a precision of 1 metre
Reservoir capacity	Capacity of reservoir in million (1 000 000) cubic metres (this is equivalent to hm <sup>3</sup> ). It refers to the initial capacity, not taking into consideration the reduction in volume due to sedimentation
Sedimentation rate	Percentage of initial capacity lost to sedimentation (%). This information is updated to be latest known.
Reservoir area	Surface area of the reservoir in square kilometres
Irrigation	An "x" here denotes the dam is used for this purpose. Check the comment for potential additional details.
Water supply	An "x" here denotes the dam is used for this purpose. Check the comment for potential additional details.
Flood control	An "x" here denotes the dam is used for this purpose. Check the comment for potential additional details.
Hydroelectricity	An "x" here denotes the dam is used for this purpose. Check the comment for potential additional details.
Navigation	An "x" here denotes the dam is used for this purpose. Check the comment for potential additional details.
Recreation	An "x" here denotes the dam is used for this purpose. Check the comment for potential additional details.
Pollution control	An "x" here denotes the dam is used for this purpose. Check the comment for potential additional details.
Livestock rearing	An "x" here denotes the dam is used for this purpose. Check the comment for potential additional details.
Other	Purpose of the dam other than the 8 above. Check the comment for potential additional details.
Decimal Degree Latitude	Latitudinal coordinate of the dam, expressed in decimal degrees.
Decimal Degree Longitude	Longitudinal coordinate of the dam, expressed in decimal degrees.
National Reference(s)	Number of reference providing information on the dam, coming from a national source. The references are given in Notes and References of the regional file.
Other Reference(s)	Number of reference providing information on the dam, coming from a global or general source (for example ICOLD). The references are given in Notes and References of the regional file
Notes	In this column specific comments of importance to the dam are given

## References and notes by country

Note: the reference numbers below correspond to the numbers in the columns "National Reference(s)" and "Other reference(s)" of the database

### General

1. Information provided by national experts through the AQUASTAT survey.
2. Lehner, B; Reidy Liermann, C; Revenga, C; Fekete, B; Vörösmarty, C; Crouzet, P; Döll, P; Endejan, M; Frenken, K; Magome, J; Nilsson, C; Robertson, JC; Rödel, R; Sindorf, N; and Wisser, C. 2010. *High resolution mapping of global reservoirs and dams and their impact on downstream rivers* (submitted). (Global Reservoir and Dam Database, GRanD).
3. FAO. 2000. El riego en América Latina y el Caribe en cifras. Informe sobre temas hídricos de la FAO No. 20. Roma.
80. Lynch, C. The Amazon river basin. Transboundary waters.

### Antigua and Barbuda

58. APUA. 2013. *Monthly source Production*. Water Manager's office – Antigua Public Utilities Authority. Submitted by water Engineer Ian Lewis on instruction of Mr. Ivan Rodrigues, Water Department manager.

### Belize

8. Belize Magazine. The Chalillo dam: the greatest engineering feat in modern Belize. Available at: [http://www.belizemagazine.com/edition09/english/e09\\_05dam.htm](http://www.belizemagazine.com/edition09/english/e09_05dam.htm)
9. Davis D. 2002. Hydroelectric Power development in Belize: Focus on the Mollejon Hydro Project
10. BEST & CCCCC. 2009. National adaption strategy to address climate change in the water sector in Belize. Strategy and action plan. Belize Enterprise for Sustainable Technology & Caribbean Community Climate Change Centre.
11. Ramos A. 2009. Proposed hydro dam in Maya mountain massif provokes critical questions. Available at: <http://amandala.com.bz/news/proposed-hydro-dam-in-maya-mountain-massif-provokes-critical-questions/>
12. BECOL. 2006. Environmental Impact Assessment. Vaca Hydroelectric project, Cayo district, Belize. Belize Electric Company Ltd.
13. Usher C. 2013. Hydroelectric dams and Belize. Available at: <http://ckucorner.blogspot.com/2013/02/hydroelectric-dams-and-belize.html#!/2013/02/hydroelectric-dams-and-belize.html>
14. The Island Newspaper. 2006. Belize produces electricity with Chalillo Dam. Ambergris Caye, Belize. Vol. 16, No. 4. January 26, 2006.

### Costa Rica

28. ICE. 2012. Plan de expansión de generación eléctrica, periodo 2012-2024. Instituto Costarricense de Electricidad. Dirección del Centro de Planificación Eléctrica. Página 59

### Cuba

59. INRH. 2012. Parte diario de Embalses. Instituto Nacional de Recursos Hidráulicos. No publicado. Constituye un instrumento interno de trabajo del INRH. Información dada por el consultor nacional.
60. BedInCuba. Todo sobre Cuba / Geografía / Lagos y Embalses. Available at: [http://www.bedincuba.com/cuba/cuba\\_informacion\\_geografia\\_lagos\\_embalses.htm](http://www.bedincuba.com/cuba/cuba_informacion_geografia_lagos_embalses.htm). Accessed on 23-04-2015.
61. BedInCuba. Presa Zaza. Available at: [http://www.bedincuba.com/cuba/cuba\\_informacion\\_geografia\\_presa\\_zaza.htm](http://www.bedincuba.com/cuba/cuba_informacion_geografia_presa_zaza.htm). Accessed on 23-04-2015.
62. BedInCuba. Presa Hanabanilla - Jibacoa. Available at: [http://www.bedincuba.com/cuba/cuba\\_informacion\\_geografia\\_presa\\_hanabanilla\\_jibacoa.htm](http://www.bedincuba.com/cuba/cuba_informacion_geografia_presa_hanabanilla_jibacoa.htm). Accessed on 23-04-2015.
63. BedInCuba. Conjunto Hidráulico Pedroso-Mampostón. Available at: [http://www.bedincuba.com/cuba/cuba\\_informacion\\_geografia\\_conjunto\\_hidraulico\\_pedroso\\_mamposton.htm](http://www.bedincuba.com/cuba/cuba_informacion_geografia_conjunto_hidraulico_pedroso_mamposton.htm). Accessed on 23-04-2015.
64. BedInCuba. Presa Alacranes. Available at:

[http://www.bedincuba.com/cuba/cuba\\_informacion\\_geografia\\_presa\\_alacranes.htm](http://www.bedincuba.com/cuba/cuba_informacion_geografia_presa_alacranes.htm).  
Accessed on 23-04-2015.

65. BedInCuba. Presa Carlos Manuel de Céspedes. Available at:  
[http://www.bedincuba.com/cuba/cuba\\_informacion\\_geografia\\_presa\\_carlos\\_manuel\\_de\\_cespedes.htm](http://www.bedincuba.com/cuba/cuba_informacion_geografia_presa_carlos_manuel_de_cespedes.htm). Accessed on 23-04-2015.
66. BedInCuba. Presa Gilbert Valdés Roig. Available at:  
[http://www.bedincuba.com/cuba/cuba\\_informacion\\_geografia\\_presa\\_gilbert\\_valdes\\_roig.htm](http://www.bedincuba.com/cuba/cuba_informacion_geografia_presa_gilbert_valdes_roig.htm). Accessed on 23-04-2015.

## Dominican Republic

67. Get a map.net. América del Norte, República Dominicana (Santo Domingo). Available at: [http://es.getamap.net/mapas/dominican\\_republic/](http://es.getamap.net/mapas/dominican_republic/). Accessed on 23-04-2015.
68. ONE. 2008. República Dominicana: Presas existentes en el país, según región hidrográfica. Oficina Nacional de Estadística.
69. Gobierno de la Republica Dominicana. 2008. República Dominicana: Presas existentes en el país, según región hidrográfica.
70. República Dominicana - Plan de Acción para el Desarrollo Regional de la Línea Noroeste.
71. Consorcio IGME-BRGM-INYPSA. 2004. Mapa geológico de la República Dominicana.
72. Instituto Nacional de Recursos Hidráulicos (INDRHI). Website.  
<http://www.indrhi.gob.do/>. Accessed on 23-04-2015.
73. El Diario de San Juan. 2014. Las Matas de Farfán; iniciaran reconstrucción presa de Palma Sola.
74. Ofiteco. Presa de materiales sueltos de "Maguaca" (República Dominicana). Available at  
[http://directorio.mcmi.com.es/adjuntos/20137813264074\\_ficha%20presa%20maguaca.pdf](http://directorio.mcmi.com.es/adjuntos/20137813264074_ficha%20presa%20maguaca.pdf). Accessed on 23-04-2015.

## El Salvador

31. HARZA Engineering Company International L.P/ Comisión Ejecutivo Hidroeléctrica del Río Lempa -CEL. 1999. Estudio Global de la Sedimentación en la cuenca del río Lempa

## Guatemala

32. Ministerio de Energía y Minas (MEM), Instituto Nacional de Electrificación (INDE)/ Ing. Duby Aguirre (MEM), Ing Oscar Avalos, Ministerio de Ambiente y Recursos Naturales. 2013. Comunicación personal al consultor nacional Bayron Medina: Presas autorizadas por el MEM en funcionamiento desde finales de 2012.

## Haiti

75. Gregory L. Morris Engineering. Sedimentation Study of Peligre Reservoir, Haiti. Prepared for Banco Interamericano de Desarrollo
76. HaitiMega. 2005. Peligre Hydroelectric Dam. Retrieved May 29, 2005

## Honduras

33. ENEE. 2013. Represa Hidro Eléctrica Francisco Morazán "El Cajón". [www.enee.hn](http://www.enee.hn). Empresa Nacional de Energía Eléctrica
34. SERNA/CEDEX. 2003. Balance Hídrico de Honduras. Secretaria de Recursos Naturales y Ambiente/Centro de Estudios y Experimentación de Obras Públicas
35. OIRSA. 2009. Descripción de Embalses de Honduras. Organismo Internacional Regional de Sanidad Agropecuaria
36. ENEE. 2014. Cañaveral - Río Lindo. <http://www.enee.hn/index.php/centrales-hidroelectricas/80-canaveral>. Empresa Nacional de Energía Eléctrica

## Jamaica

77. NWC. 2014. Water Supply Facilities and Sewerage Treatment Plants. National Water Commission

## Nicaragua

39. ENEL (Empresa Nicaragüense de Electricidad), 2013
40. MEM. 2010. Proyectos Hidroeléctricos. Ministerio de Energía y Minas



**Panama**

41. Comité Panameño de Presas. 2006. Inventario de Presas de Panamá
42. AES Panamá, S.A. 2011. Plan de Acción Durante Emergencia (PADE) de la Central Hidroeléctrica Ascanio Villalaz (Bayano). Presentado por AES Panamá, S.A. (operador de la central hidroeléctrica) a la Autoridad de los Servicios Públicos (ASEP).
43. ENEL. 2013. Website of Enel Fortuna. Central Hidroeléctrica La Fortuna
44. AES Panamá, S.A. Plan de Acción Durante Emergencia (PADE) de la Central Hidroeléctrica Changuinola I. Presentado por AES Panamá, S.A. (operador de la central hidroeléctrica) a la Autoridad de los Servicios Públicos (ASEP).
45. GDF Suez Energy Central América. 2013. Information provided by GDF Suez Energy Central América to the AQUASTAT national consultant
46. Autoridad Nacional del Ambiente. Information taken from the Estudio de Impacto Ambiental (EsIA)

**Saint Lucia**

78. Encyclopedia of the nations. 2015. Saint Lucia. Available at:  
<http://www.nationsencyclopedia.com/geography/Morocco-to-Slovakia/Saint-Lucia.html>. Accessed on 23-04-2015

**Trinidad and Tobago**

79. WASA. 2015. Website. Water and Sewerage Authority.  
[http://www.wasa.gov.tt/WASA\\_EnvironmentalIssues.html](http://www.wasa.gov.tt/WASA_EnvironmentalIssues.html). Accessed on 23-04-2015