

# Hydropower renewable projects

**Major objective:** learn how to predict water inflow at a certain place & time.

**Outcomes:**

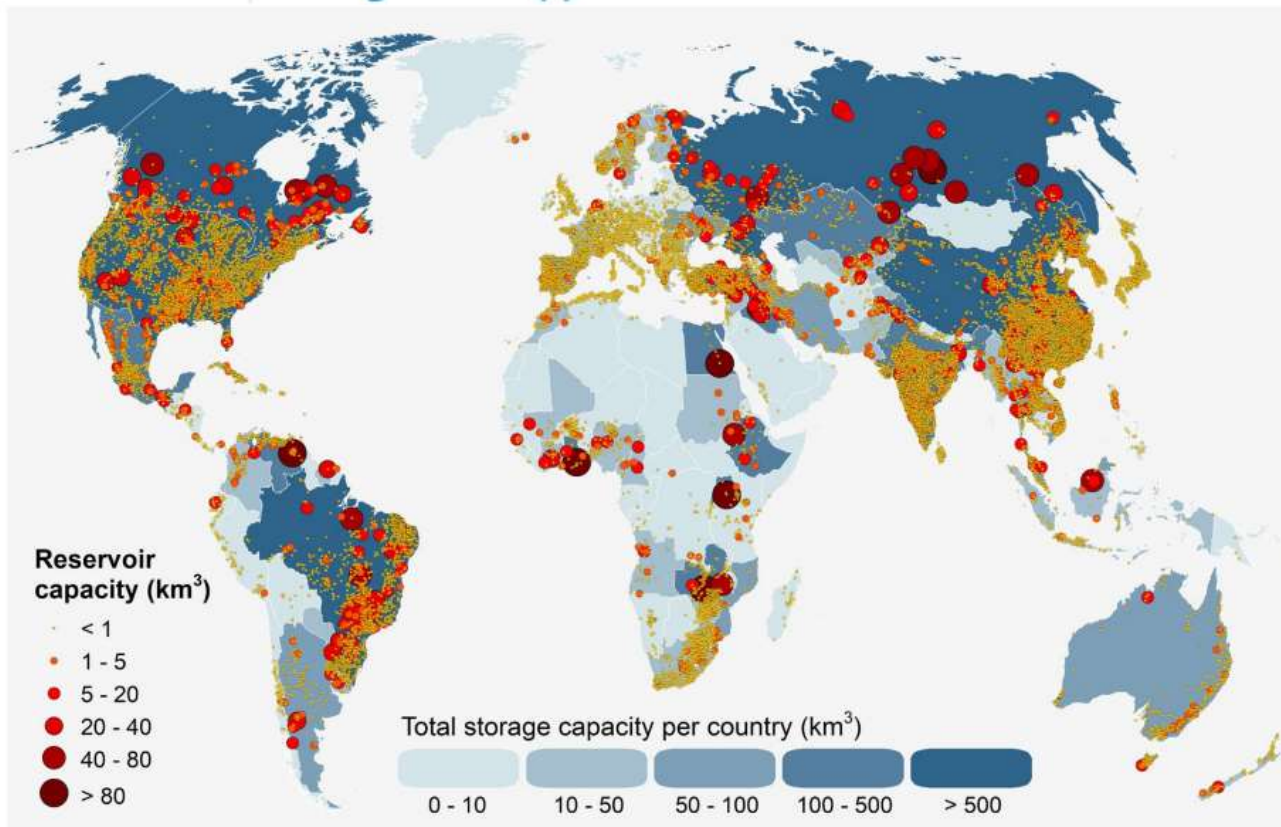
- More efficient dam projects operation, i.e. when to fill/pour off the dam;
- Assessment of no-dam projects efficiency;
- Optimal strategy on the energy market, i.e. price+time

# Data available

- **ResOpsUS** includes **daily** inflow, outflow, storage, elevation and evaporation where available. (<https://doi.org/10.1038/s41597-022-01134-7> )
- Gage height+discharge: <https://waterdata.usgs.gov/monitoring-location/02080500/#dataTypeId=continuous-00065-0&period=P7D&showMedian=false>
- Inflows: [https://www.weather.gov/serfc/inflows\\_gasn7](https://www.weather.gov/serfc/inflows_gasn7)
- Precipitation: [https://www.wpc.ncep.noaa.gov/pqpf/conus\\_hpc\\_pqpf.php](https://www.wpc.ncep.noaa.gov/pqpf/conus_hpc_pqpf.php)
- <https://water.noaa.gov/gauges/FROV2/tabular>

## scientific **data**

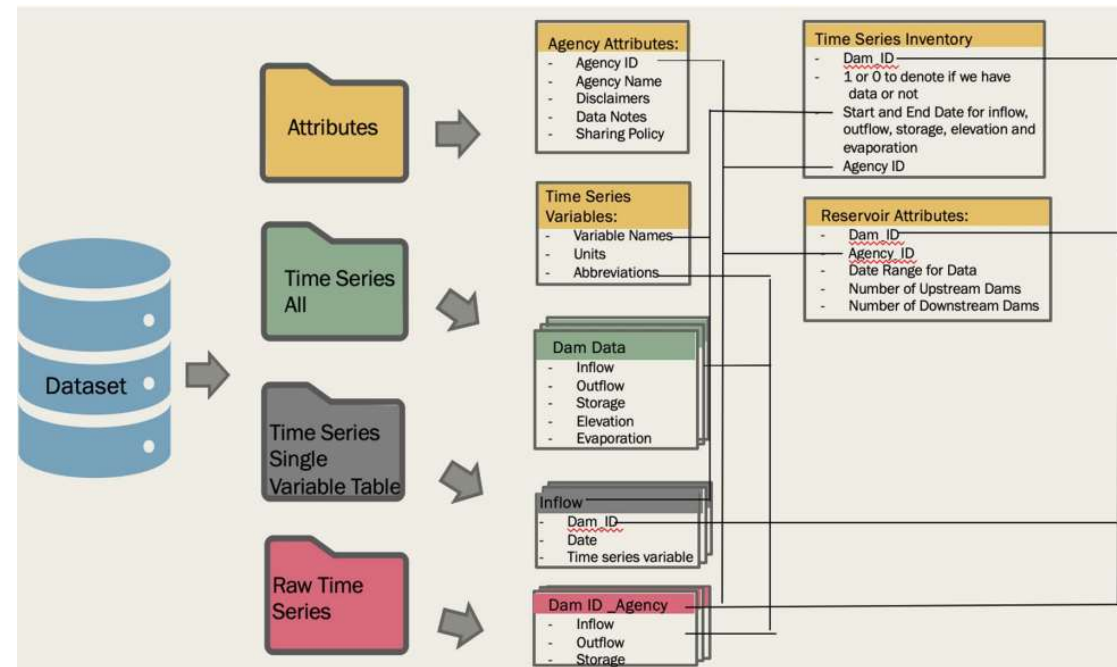
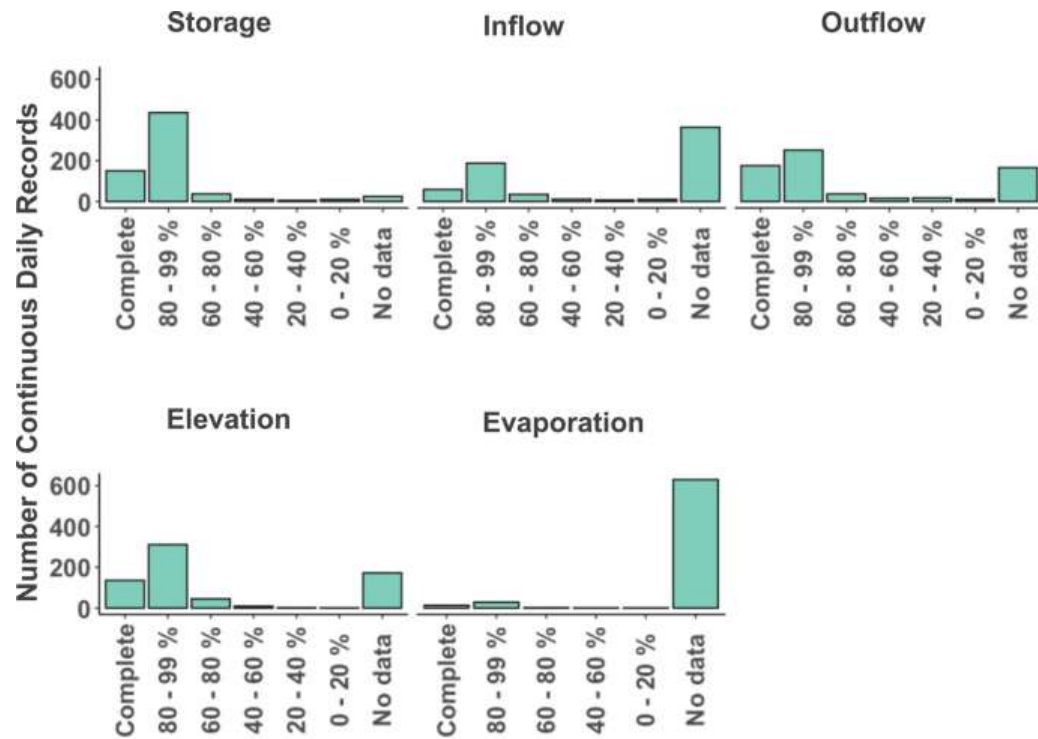
OPEN  DATA DESCRIPTOR The Global Dam Watch database of river barrier and reservoir information for large-scale applications



- Large scale dataset

Figure 1: Global distribution of river barriers and reservoirs in GDW version 1.0 database.

# ResOpsUS (static dataset)



- Inflow and Elevation to predict

# Objectives

- Dams (hydropower generators) historical behavior (cover from small to large) – in progress
  - Dispatch focused generation (water dispatch to energy) – pending
  - Some companies (U.S. Army Corps of Engineers) provide historical data from FOIA (public) - in progress
- 
- Predict DA elevation and inflow (independent from load or economical dispatch) - goal

## Option 1

- In order to form Month-Hour model few years of available data will be used
- Incorporate USGS weather data to account precipitation and evaporation (humidity)

## Option 2

- In order to form Month-Hour model few years of available data will be used
- Incorporate FOIA data from companies (hourly data from inflow/elevation)

# To – Do

- Google drive create
- Examples to share with inc data