

Data source of primary wind in power plants

What is a Power Plant Database?

The database covers approximately 35,000 power plants from 167 countries and includes thermal plants (e.g. coal, gas, oil, nuclear, biomass, waste, geothermal) and renewables (e.g. hydro, wind, solar). Each power plant is geolocated and entries contain information on plant capacity, generation, ownership, and fuel type.

How many wind plants are there?

In total we include 1175 wind plants. We used two sources of data to characterize each wind plant: (1) the United States Wind Turbine Data Base (USWTDB) 49 and (2) U.S. Energy Information Administration Form 860 data 50. To define plant centroids and hub height we used data from USWTDB, or if unavailable, we used data from EIA860.

What is the plant-level US multi-model wind and generation data repository?

The Plant-Level US multi-model WIND and generation (PLUSWIND) data repository helps to address these challenges. PLUSWIND provides wind speeds and estimated generation on an hourly basis at almost all wind plants across the contiguous United States from 2018-2021.

Where can I find wind speeds and estimated generation?

PLUSWIND provides wind speeds and estimated generation on an hourly basis at almost all wind plants across the contiguous United States from 2018-2021. The repository contains wind speeds and generation based on three different meteorological models: ERA5, MERRA2, and HRRR. Data are publicly accessible in simple csv files.

What are wind speeds and generation based on?

The repository contains wind speeds and generation based on three different meteorological models: ERA5, MERRA2, and HRRR. Data are publicly accessible in simple csv files. Modeled generation is compared to regional and plant records, which highlights model biases and errors and how they differ by model, across regions, and across time frames.

How is wind power generated?

Wind power is generated by transforming the wind's kinetic energy into physical torque. As generated wind power is proportional to wind speed cubed, the performance of an operating wind turbine is mainly determined by wind speed.

In some countries, we see a dramatic decline in nuclear's role as plants have been taken offline. Japan is an ... "Renewables" combine multiple electricity sources, including hydropower, solar, wind, geothermal, biomass, and wave & ...

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By mapping wind intensity with a turbine-specific power curve to extracted wind power, data can be generated without taking any--potentially disclosed--wind power data of the turbines that are modeled into account.

Electricity generation capacity. To ensure a steady supply of electricity to consumers, operators of the electric power system, or grid, call on electric power plants to ...

Mapping Power Plant Retirements. Many fossil fuel-fired power plants (especially coal-fired power plants) have announced plans to retire, based on data collected by the Energy Information Administration (EIA). This ...

Project Goal: Develop predictive models for "Primary Fuel" and "Capacity (MW)" of global power plants using dataset from Global Power Plant Database. This entails data analysis, feature ...

Wind turbines and hydropower use wind or flowing water, respectively, to spin turbine blades that are connected to electricity generators. Solar thermal power plants are like steam boilers, but the steam is produced ...

For example, available wind power in Europe alone may be able to produce enough electricity for global demand to 2050, whilst replacing US hydroelectric dams with solar PV could pro-duce ...

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