Effects of High Wind on Power Grid Stations Vulnerability

Wind speeds above 74mph take the shape of a hurricane. These fierce and devastating hurricanes can cause incredible damage in a short period of time. The most common impact which is also the one that has the greatest immediate effect on people is power outages. Hurricane-force winds can knock down distribution poles or slap transmission lines into each other. One such example was seen recently when Hurricane Ida's wind crippled a Louisiana power grid, leaving nearly 1 million people without electricity after the storm. A majority of the power lines in the US are above the ground making them vulnerable to strong winds.
In this study, we aim to explore the vulnerability of power grids in the south-east region of the USA by the help of data analysis tools and machine learning algorithms.

Our work would consist of working with two relevant datasets and then combining them together on the basis of the geolocations for different power grids for a fruitful outcome. The two different datasets are:

1. NASA's MERRA-2 wind component data for wind speed
    a. Link to the dataset: https://disc.gsfc.nasa.gov/datasets/M2TMNPUDT_5.12.4/summary?keywords=Wind%20speed
    b. It is available in NC4 format and can be converted to CSV format using the Panoply tool.

2. Homeland Infrastructure Foundation-Level Data for location of power grids
    a. Link to the dataset: https://hifld-geoplatform.opendata.arcgis.com/datasets/electric-power-transmission-lines/explore?location=24.025036%2C-7.477918%2C2.80
    b. Data is available in various formats, we chose the CSV format to download the data.
    c. Some of the columns included in data: Name, city, state, status, latitude, longitude, no. of lines etc.

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