

Introduction:

Wind power is the second largest source of renewable energy for HyrdoQuébec, a public utility corporation that provides power to Canadians in Québec.

Predicting the amount of power produced by wind farms in Québec is an important metric for the company.

Goal:

Use machine learning to predict one day in advance the total amount of wind power generated, given weather data.

Data for wind power production from HQ:

The dataset linked below gives the total amount of

<https://donnees.hydroquebec.com/explore/dataset/historique-production-electricite-quebec/table/>

Data for wind farms and turbine models:

<https://open.canada.ca/data/en/dataset/79fdad93-9025-49ad-ba16-c26d718cc070>

<https://www.hydroquebec.com/electricity-purchases-quebec/electricity-contracts.html>

Weather data:

https://climate.weather.gc.ca/historical_data/search_historic_data_e.html

Potential questions:

Can we predict power output 1 day ahead? 1 week? 1 month?

Can we infer best conditions for new wind farms?

(Climate change??)

Key Features:

Wind speed, temperature, precipitation, rotation of blades, radius, age of different fractions of turbines in a farm, humidity, temperature, wind turbine model/type

Potential KPIs:

Error on 1 day forecast of Power output, Prediction Accuracy, Cost to Energy output ratio,

Potential Stakeholders:

Power company (Hydro Québec), Government of Québec, Wind farm companies, Power trading companies (in the future), Consumers

Data Cleaning Challenges:

Potential Licencing Issues: