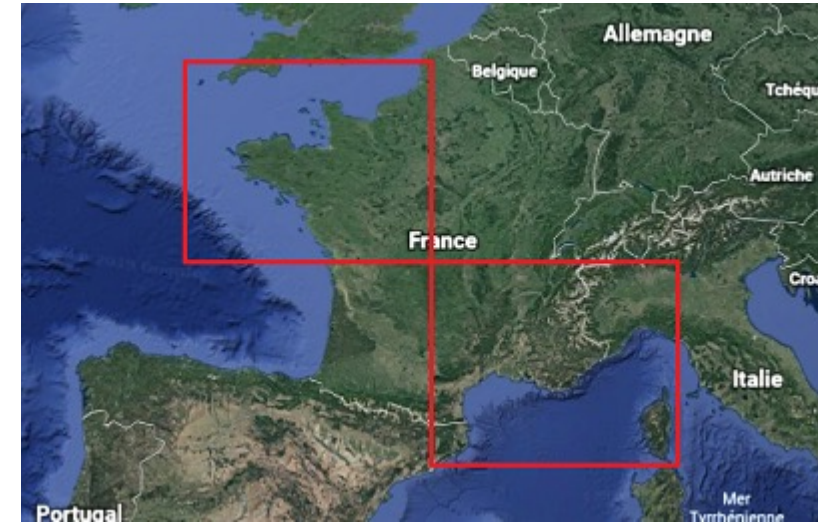


Deep Learning and Geophysical Systems

Project proposal - MeteoNet

MeteoNet presentation

- Open Weather dataset from Meteo France
- 3 years of data
- Various data sources
- Data challenges on Kaggle
- Toolbox and visualisation tools on github



- <https://meteonet.umr-cnrm.fr/dataset/>
- <https://www.kaggle.com/katerpillar/meteonet>
- <https://github.com/meteofrance/meteonet>

Data Type	Size for NW zone (GB)	Size for SE zone (GB)	Total Size (GB)	Path (example for the NW zone)
Ground Observation	0.5	2.5	3.0	/data/NW/ground_stations/
Rain Radar	5.8	6.5	12.3	/data/NW/radar/rainfall/
Rain Radar Quality Code	19.6	31	50.6	/data/NW/radar/rainfall_quality_code/
Reflectivity (<i>new product</i>)	13.5	20.0	33.5	/data/NW/radar/reflectivity_new_product/
Reflectivity (<i>old product</i>)	3.9	4.0	7.9	/data/NW/radar/reflectivity_old_product/
Weather models 2D	25.8	23.0	48.8	/data/NW/weather_models/2D_parameters/
Weather models 3D	7.8	8.0	15.8	/data/NW/weather_models/3D_parameters/
Satellite data (CT and 4 channels)	24	22.8	46.8	/data/NW/satellite/
Masks	0.0004	0.0004	0.001	/data/NW/masks/
TOTAL	100.9	117.8	218.7	

Hundreds of stations, wind speed, direction, precipitation, humidity, Dew point, Temperature, Pressure, **every 6 min**

5 minutes resolution, comes with radar quality code (uncertainty of the measurement) – cumulative rainfall

Precipitation intensity (reflectivity dBZ)

AROME & ARPEGE midnight runs, forecast +1h - +24h

Infrared, visible, cloud cover, cloud type data, water vapor **Pb with parallax**

Time series forecasting :

- Using past data
- Using ground stations data
- 2D models, radar data



- Wind power production and O&M

How to complement Numerical Weather Prediction models on short time scale using Deep Learning ?

Input

Reference methods

Output

- Ground stations
- NWP data
- Radar / Satellite



- Wind time series $t + 6\text{min} \rightarrow t + 6\text{h}$

A Review On The Hybrid Approaches For Wind Speed Forecasting – Vidya et. al. 2019

