Analyse des Donnees de Vent ERA5 (France, Janv-Aout 2022)

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# 1. Importation & Fusion
import pandas as pd
import glob
import matplotlib.pyplot as plt
import seaborn as sns

fichiers = sorted(glob.glob('./csv_vent_mensuel/vent_2022_0[1-8].csv'))
df_list = [pd.read_csv(f) for f in fichiers]
df = pd.concat(df_list, ignore_index=True)
df['time'] = pd.to_datetime(df['time'])

# 2. Analyse Exploratoire
print(df.describe())
print(df.isna().sum())
print(df['time'].min(), df['time'].max())

df['mois'] = df['time'].dt.month
print(df['mois'].value_counts().sort_index())

# 3. Analyse Temporelle
df_journalier = df.groupby(df['time'].dt.date)['wind_speed_10m'].mean()
df['heure'] = df['time'].dt.hour
df.groupby('heure')['wind_speed_10m'].mean().plot(kind='bar')

# 4. Carte Spatiale
df_moy = df.groupby(['latitude', 'longitude'])['wind_speed_10m'].mean().reset_index()
pivot = df_moy.pivot(index='latitude', columns='longitude', values='wind_speed_10m')
sns.heatmap(pivot)

# 5. Rafales Extremes
rafales_extremes = df[df['gust'] > 20]
plt.scatter(rafales_extremes['longitude'], rafales_extremes['latitude'],
            c=rafales_extremes['gust'], cmap='Reds')
```