

Team:



Bird Migration Fluxes at Offshore Wind Farms

Leveraging radars and AI for real-time monitoring and forecasting

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Introduction

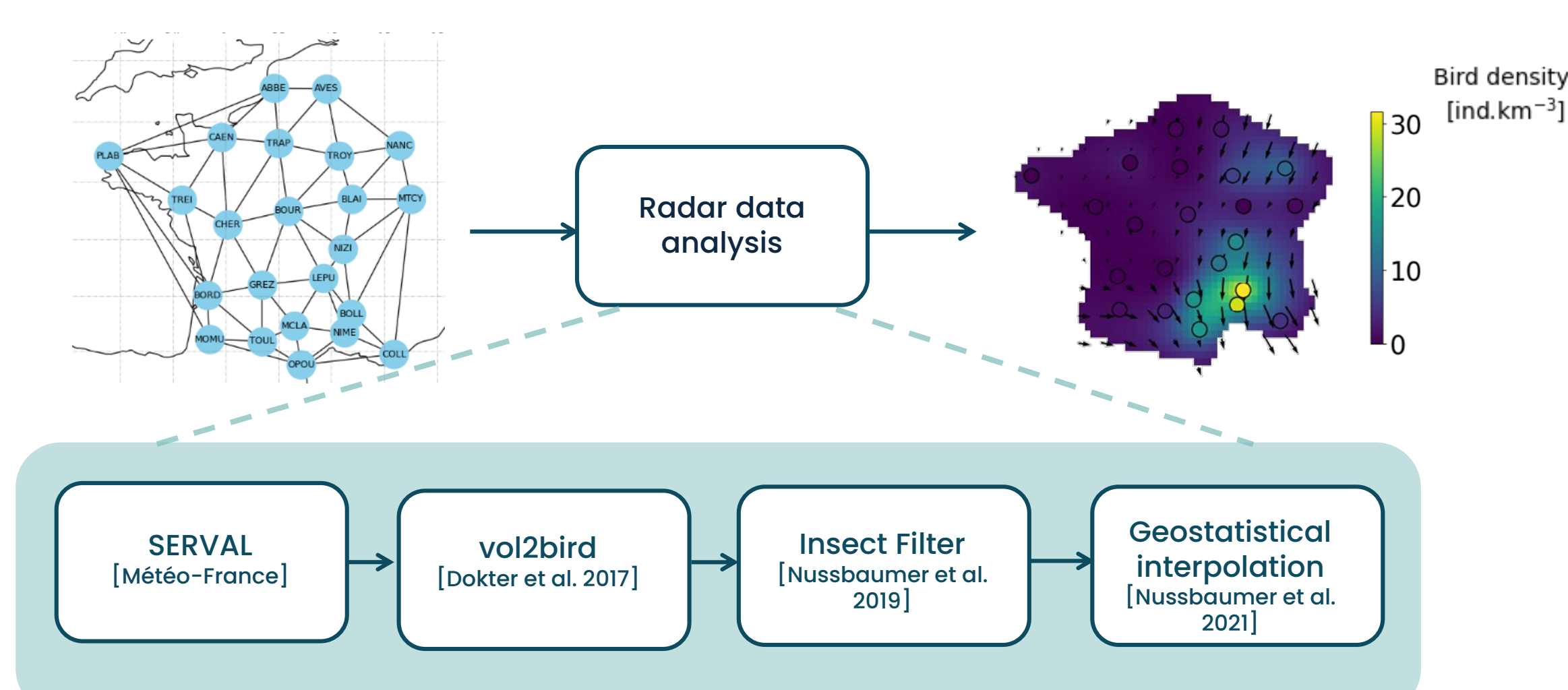
France is located at the **crossroad** for **billions of migratory birds**, flying over land and sea, however migratory routes are poorly known. Given the potential impacts of wind turbines on avifauna, many challenges arise about **reconciling biodiversity conservation and wind energy**. The development of tools to monitor and forecast bird migratory fluxes is crucial to support the development of wind energy.

Objectives :

- Develop a **real-time observatory** of migrating birds using **weather radars**
- **Forecast** migratory passages across the territory and at-sea

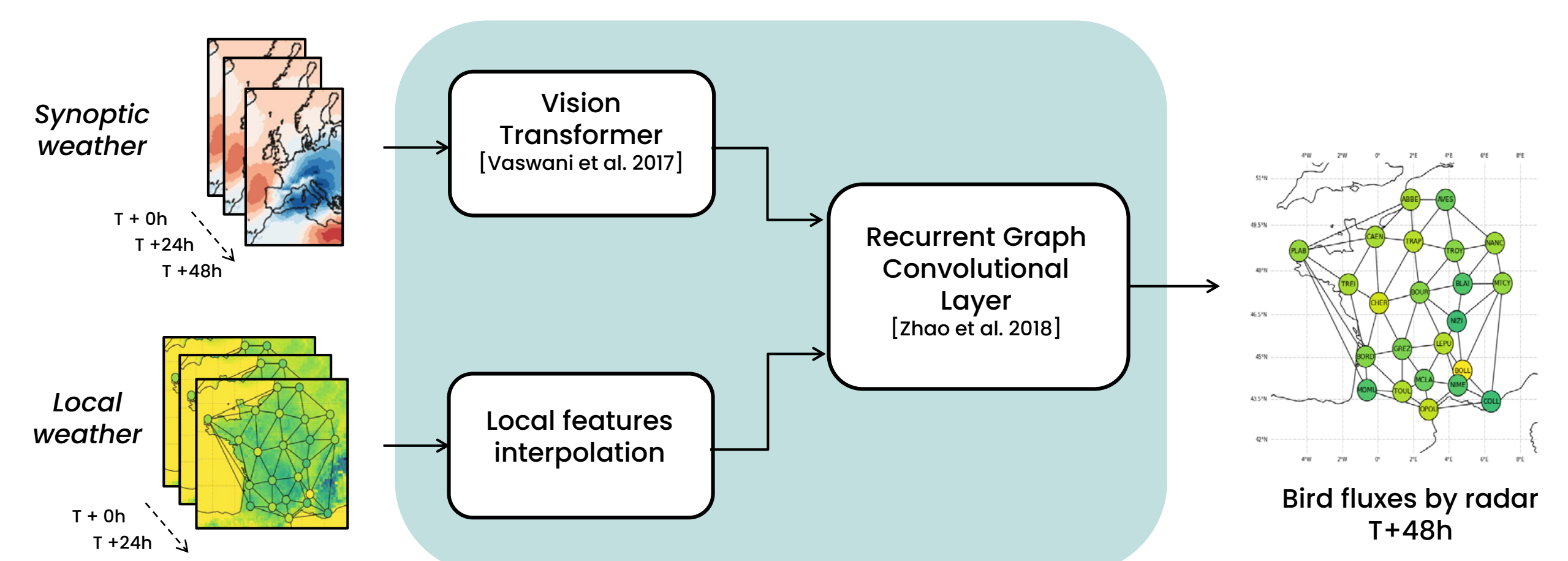
Methods

Bird quantification by weather radars



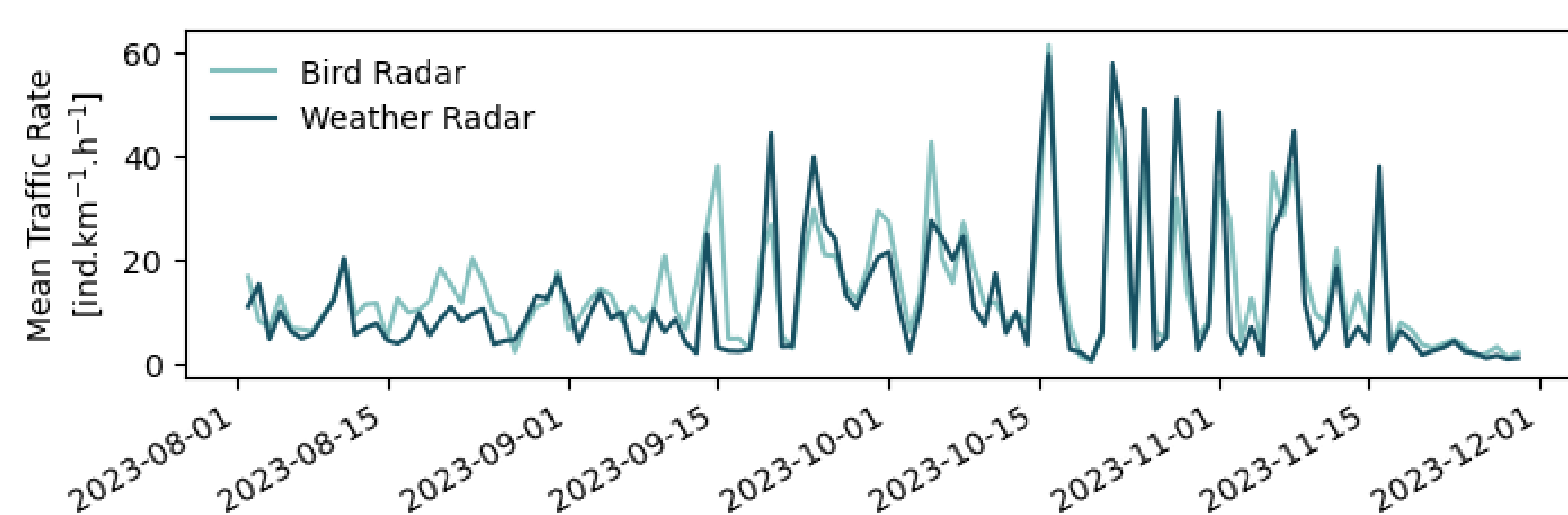
- Data validation using *in situ* ornithological radar

Deep neural network forecast model

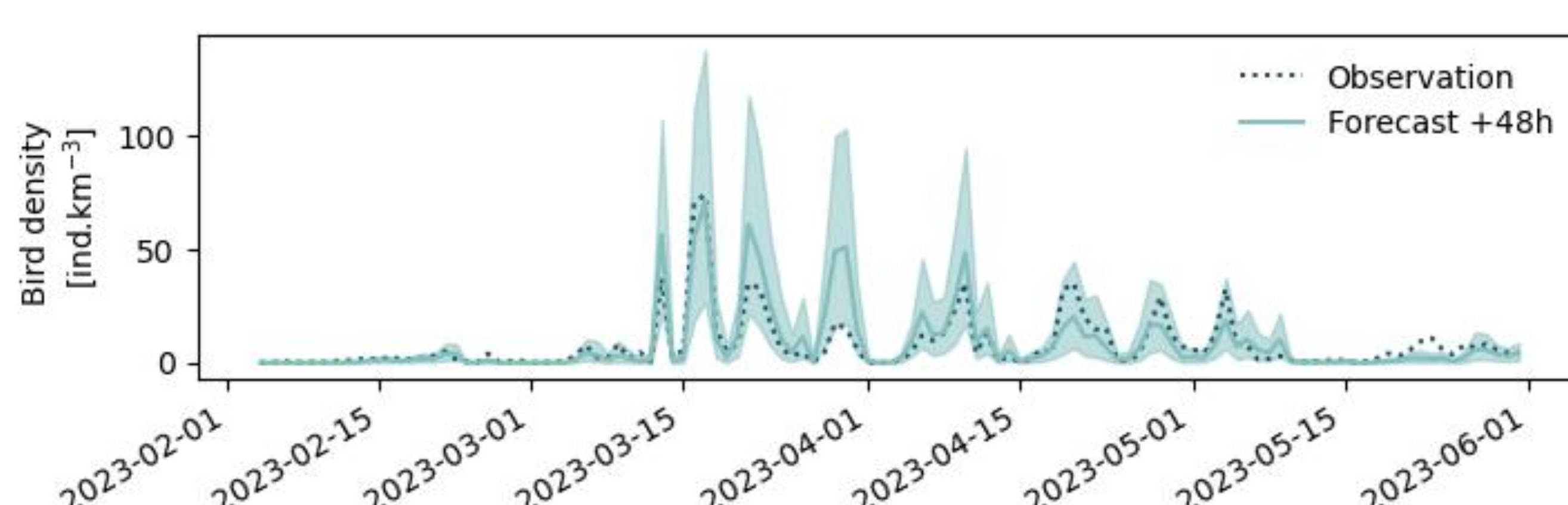


- Training with 10 years of historical weather radar data

Results



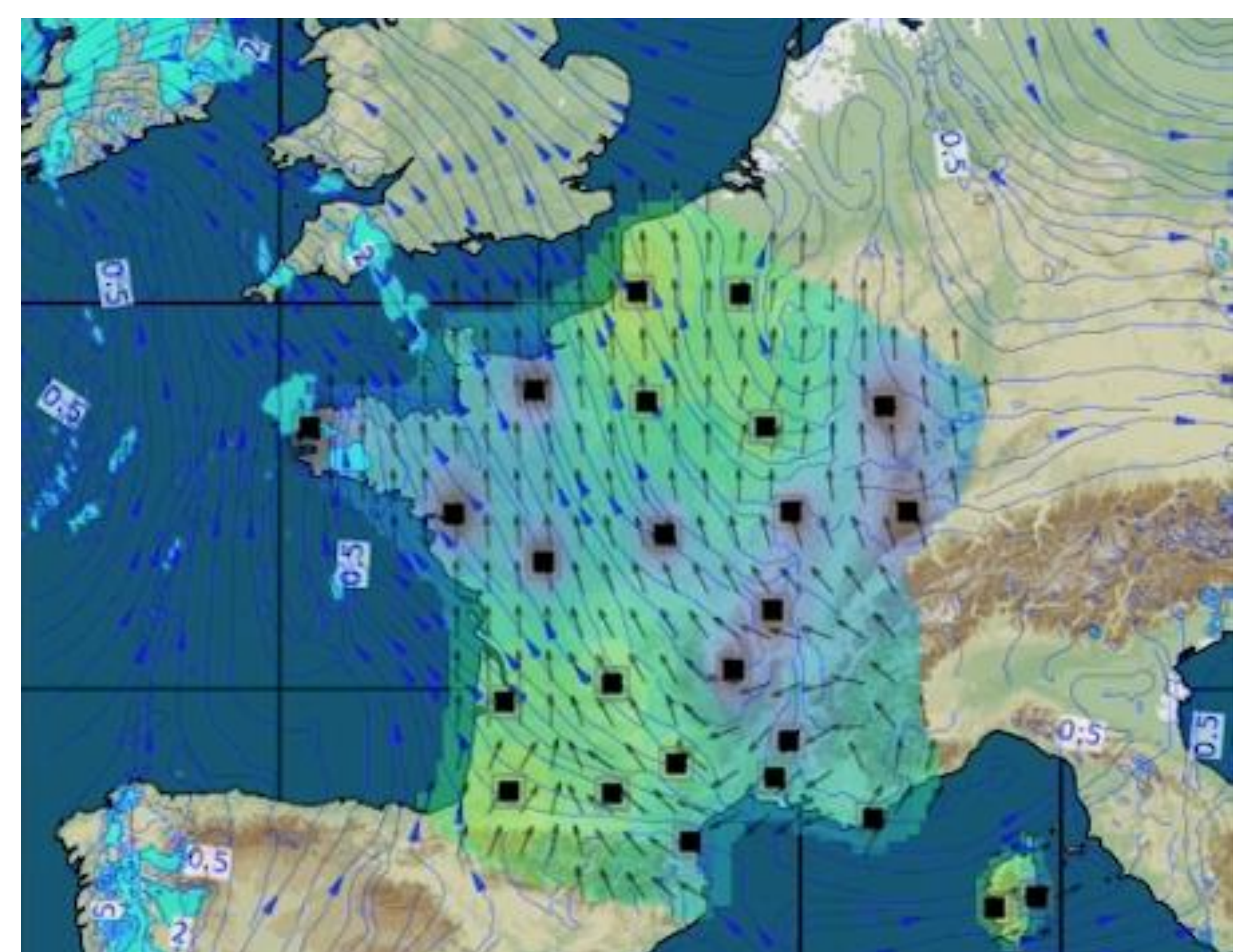
- **Strong relationship** between weather & bird radars
- This demonstrates the **great value of weather radar in detecting and tracking bird migration**



- Great ability to **identify migration peaks 48h in advance**
- Quantification of birds within peaks is challenging

Perspectives

- Use of **offshore ornithological radar** for validation at-sea
- Explore **species-specific information** using additional data (citizen science, acoustic data, banding data, etc.)
- **Web platform deployment** to visualize bird migration fluxes in real-time and up to 48h in advance



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