

Post-Doc – Estimation of terrestrial migratory bird flows through the English Channel from weather radars (F/M/X)

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The Institute France Energies Marines

France Energies Marines is an offshore wind energy research and innovation centre with a recognised industrial, economic and societal impact in France and internationally.

Its mission is to remove the obstacles facing the offshore wind energy sector. Backed by the French government and supported by a multidisciplinary team of more than 90 staff, a network of international experts and unique infrastructures, the Institute conducts multi-partner research projects guided by excellence.

The results are transferred to the industry in the form of research and expertise services, operating licences, know-how transfer and participation in expert committees and networks.

These activities are structured around four complementary thematic departments: Wind and Ocean Dynamics, Systems and Performance, Biodiversity and Interactions, Ecosystem and Society. Cross-functional services support these activities.

Context

The growing number of offshore wind farms raises critical environmental and societal questions about their impact on avifauna. This question is at the heart of the environmental integration team of France Energies Marines and the [AVOCET](#) R&D project of which this position is a part. The [AVOCET](#) project aims to deepen knowledge of the terrestrial migratory bird flows across the English Channel. To do this, we propose to rely on both French and UK weather radars to monitor bird density and flight directions along the different coastlines. These bird flows could provide crucial information to describe bird migratory routes for both pre-nuptial and post-nuptial migrations. It could also help estimating the probability of migrating birds at the vicinity of existing or planned OWF and the associated environmental conditions.

Job description

The objective of this post-doctoral fellowship is therefore to develop tools for the estimation of bird flows from French and UK weather radars. The candidate will focus on improving the detection of birds from weather radar echoes. Indeed, existing tools are limited to distinguish bird echoes from other weather radar echoes such as precipitation fringes, sea clutter or insect echoes. To this end, the objective will be to (1) help expanding existing datasets of labelled weather radar echoes from UK and French radars (2) develop a classification tool to accurately classify bird echoes using deep learning tools (Lin et al. 2019; Scheckler et al. 2023; Sun et al. 2024) and (3) get insights on bird echoes characteristics and on weather radar biases for bird migration monitoring.

The enhanced detection of bird echoes from UK and French radars will further be used to:

- Estimate bird flows on English Channel coastlines for the last decade

- Describe bird migratory routes for both pre-nuptial and post-nuptial migrations
- Estimate the bird density, and flight direction at current and future offshore wind farms

The post-doc will collaborate at the European level with Météo-France and the University of Leeds.

References :

Lin et al. (2019), MistNet: Measuring historical bird migration in the US using archived weather radar data and convolutional neural networks. *Methods in Ecology & Evolution*, 10(11), 1908-1922 [doi:10.1111/2041-210X.13280](https://doi.org/10.1111/2041-210X.13280)

Schekler et al. (2023), Automatic detection of migrating soaring bird flocks using weather radars by deep learning. *Methods in Ecology & Evolution*, 14(8), 2084-2094 [doi:10.1111/2041-210X.14161](https://doi.org/10.1111/2041-210X.14161)

Sun et al. (2024), Extracting Bird and Insect Migration Echoes From Single-Polarization Weather Radar Data Using Semi-Supervised Learning, 62, 5216612, [doi:10.1109/TGRS.2024.3421899](https://doi.org/10.1109/TGRS.2024.3421899)

Profile and skills

Initial training

PhD in quantitative ecology or deep learning

Specific knowledge

- Good knowledge of bird migration ecology
- General understanding of radar remote sensing
- Experience with deep learning tools (pytorch, tensorflow, etc.)
- Programming in Python and/or R

Professional qualities

- Ability to work in a team environment in an interdisciplinary research environment
- Autonomy, rigor, sense of organization
- Analytical and synthesis skills

The +: *Interest in environmental issues and marine renewable energies*

Practical information

Type of contract	Fixed-term contract
Duration of the contract	18 months
Status	Executive
Workplace	Brest (29) or Nantes (44) or Marseille (13) or Le Havre (76)
Start date	01 April 2026
Application Deadline	22 February 2026

In accordance with the regulations, with equal skills, priority will be given to people with disabilities.

How to apply

- Applications must consist of a **CV** and a **cover letter**.
- In the case of a secondment of the candidate by a member of France Energies Marines, the application must mention the agreement of the current employer.
- To apply, go to the France Energies Marines website in the [Join us section](#).