

MSc/Engineer Internship - Satellites at the service of offshore wind power: landfall zone and climate change (F/M/X)

Are you looking for an internship in a human-sized structure, where innovation, benevolence and team spirit are at the heart of the projects? France Energies Marines offers you the opportunity to contribute to applied research, recognized by the sector's players and directly related to the challenges of the energy transition. Join us to actively participate in the development of a booming industrial sector... and build the world of tomorrow together!

The France Energies Marines Institute

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

Its mission? To remove the obstacles facing the offshore wind sector. Supported by the State, supported by a multidisciplinary team of more than 90 employees, a network of international experts and unique infrastructures, the Institute conducts multi-partner research projects guided by excellence.

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

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

Background

The export power cables of offshore wind farms join the onshore grid by crossing a landing area, usually a beach, where they are buried under the sand (burial). This burial must remain effective throughout the life of the farm, several decades, while the beach is constantly evolving over storms and seasons and, in the longer term, under the effect of rising sea levels and changing wave climates. Erosion that exposes the cable exposes it to degradation and can require costly work, and conversely accretion can cause the cables to overheat. Knowing the topography, bathymetry and morphodynamics of these beaches, and anticipating the evolution of the coastline, is therefore necessary to size and choose the type of burial and plan the monitoring of landfalls.

This knowledge is now based on empirical and numerical modelling of the morphological evolution of beaches. These models need historical observations in order to calibrate them at study sites. On the other hand, in situ surveys (topography, bathymetry) are expensive, often spaced out in time and incomplete. Today, satellite data offer an increasingly credible alternative: coastlines and intertidal topography extracted from Sentinel-2 optical images (e.g. with the CoastSat tool, [Vos et al., 2019](#)), height profiles from the ICESat-2 space lidar, or wide-swath altimetry from the SWOT mission, launched at the end of 2022, whose contribution to the coastal zone is beginning to be evaluated ([Turki et al., 2025](#)). However, their accuracy, spatial and temporal resolutions, and their ability to describe landing ranges remain to be evaluated.

The proposed internship is part of the [2C MORE](#) (France Energies Marines) project, which aims to assess the impacts of climate change on offshore wind power, and one part of which focuses on the evolution of the coastline in the area of cable landfalls. The internship will assess the extent to which satellite data can complement, or even replace, in situ surveys, and how they can feed models of the evolution of the coastline under climate change.

Description of the internship

The main missions entrusted during this internship are:

- **The production of a bibliographic synthesis** of satellite methods applied to the coastline (coastline, intertidal topography, coastal bathymetry).
- **The extraction and processing of satellite data** on test sites: **SWOT** altimetry, coastlines and intertidal topography by **Sentinel-2 imagery**, **ICESat-2 lidar**.
- **Comparison with available in situ measurements** and **quantification of uncertainties** and spatial and temporal resolutions of these data.
- **The proposal of a methodology for integrating** the data retained into the modelling chain of the evolution of the project's coastline.

Quality scientific co-supervision will be offered by France Energies Marines and the École Nationale des Ponts et Chaussées, as well as the possibility of contributing to scientific publications or communications.

Profile and skills

Initial training

Final year of engineering school or master 2 with a specialization in oceanography, applied mathematics, coastal management, meteorology or equivalent

Specific knowledge

- Satellite data processing (remote sensing)
- Scientific Programming (Python)
- Geospatial Data Processing

The +:

Knowledge of coastal morphodynamics, a first experience with tools such as Google Earth Engine or CoastSat, an interest in climate issues and MRE

Professional qualities

- Scientific rigour and organization
- Analytical and synthesis skills
- Autonomy
- Scientific curiosity
- Communication skills
- Collaborative spirit

Practical information

Type of contract	Internship
Duration of the contract	6 months
Internship allowance	€960 gross monthly (Bac +5 level)
Place of work	France Energies Marines – Brest (29)
Start date	01/02/2027 (flexible)
Application Deadline	08/11/2026

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

Application procedure

- Applications must consist of a **CV** and a **cover letter**.
- To apply, go to the France Energies Marines website in the [Join us section](#).