

CASSIOWPE

Characterising the atmosphere and sea surface interactions for the deployment of offshore wind in the Gulf of Lion

DURATION: 30 months | LAUNCH: 2020 | Total budget: €1,290€

CONTEXT

The Gulf of Lion is frequently exposed to intense winds, making it an area of high wind potential. The development of floating systems is favoured because the water depth increases rapidly. It therefore requires a precise knowledge of the climatology of the metocean conditions that are used to:

- the estimation of the energy resource and power production potential at a given site;
- the estimation of loadings on ORE systems at sea and associated support structures. This includes both extreme loadings for the survivability of the systems, and mean loadings for fatigue design;
- the planning and implementation in optimal conditions of the deployment, operation and maintenance phases of the wind turbines.

OBJECTIVE

To support the development of offshore wind energy in the French Mediterranean coastal areas by providing a database of high-resolution observations of wind, wave and current fields as well as a new numerical tool for the modelling of metocean conditions in the Gulf of Lion.

EXPECTED RESULTS

- **Compilation of existing in-situ measurements and satellite data**, covering wind, sea states and current data, in particular with regard to their interaction processes
- **Prototype of a new SAR data processing chain for rapid and massive data processing**, including a new inversion scheme of the wind field at the ocean surface and documenting surface waves and major currents
- **Coupled digital system** to better simulate the specific conditions of the Gulf of Lion and integrating a new physical parameterization of air-sea flows to take into account the effect of sea spray
- **One-year retrospective database** of metocean conditions in the Gulf of Lion to serve as a demonstrator for the long-term hindcast simulation in a second phase of the project



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TECHNOLOGIES



STAGES OF THE VALUE CHAIN



Preparatory studies



Design



Installation Construction



O&M



Dismantling

SCIENTIFIC CONTENTS

- **Collection** of available observational data to describe the difficult state of ocean-weather conditions in the Gulf of Lion
- **Development** of a new level 2 SAR processing chain
- **Development** of a coupled digital system and incorporation of new physical parameterisations
- **Validation** of the coupled model on the particular conditions of the Gulf of Lion
- **Construction** of a one-year retrospective database

PARTNERS



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