CASSIOWPE

Characterisation of interactions between the atmosphere and the sea surface for the deployment of offshore wind in the gulf of Lion

DURATION: 36 months (2020-2023) | **Total budget:** €1,290K

CONTEXT

The Gulf of Lion is frequently exposed to strong winds, making it an area with high wind energy potential. The development of floating systems is favoured because the water depth increases rapidly. However, the environmental conditions in this area are complex (strong onshore winds, winter storms from the south or west, etc.), resulting in a wide variety of sea states. **These meteocean conditions are not correctly reproduced in the operational numerical models currently in use.**

OBJECTIVE

To better characterise weather and ocean conditions in the Gulf of Lion to support the deployment of floating wind turbines in the Mediterranean

MAIN ACHIEVEMENTS

- **Compilation** of existing in situ measurements, covering wind and sea states
- **Development** of a coupled ocean-wave-atmosphere modelling chain to assess the impact of air-sea interactions on the wind resource
- **Creation** of a one-year database of winds, waves and currents generated using this coupled simulation

CONCLUSION

CASSIOWPE has made it possible to develop a coupled ocean-wave-atmosphere model and associated methodology that are extremely useful for studying meteo-oceanic processes. A one-year retrospective database has been created and validated using a wide range of observations. It stands out both for its high spatial and temporal resolution and for the diversity of meteocean variables simulated. It can be used for comparisons with the databases usually used by offshore wind sector.

TECHNOLOGIES

STAGES OF THE VALUE CHAIN

Design

O&M

OUTPUT RESOURCES

- **Review** of existing databases of meteocean observations carried out between 2011 and 2020 in the Gulf of Lion
- **Coupled ocean-wave-atmosphere modelling chain** adapted to the specific conditions of the Gulf of Lion
- **Retrospective database** for 2020 validated by comparison with observations and integrating new variables, ocean-wave-atmosphere coupling and a fine temporal resolution

PARTNERS

This project benefited from €359K French State funding managed by the National Research Agency under the France 2030 investment plan. It also benefited from the financial support of SUD Provence-Alpes-Côte d'Azur region and Pôle Mer Méditerranée.