seanergy
PAYS DE LA LOIRE 2021,
NANTES, SAINT-NAZAIRE | FRANCE

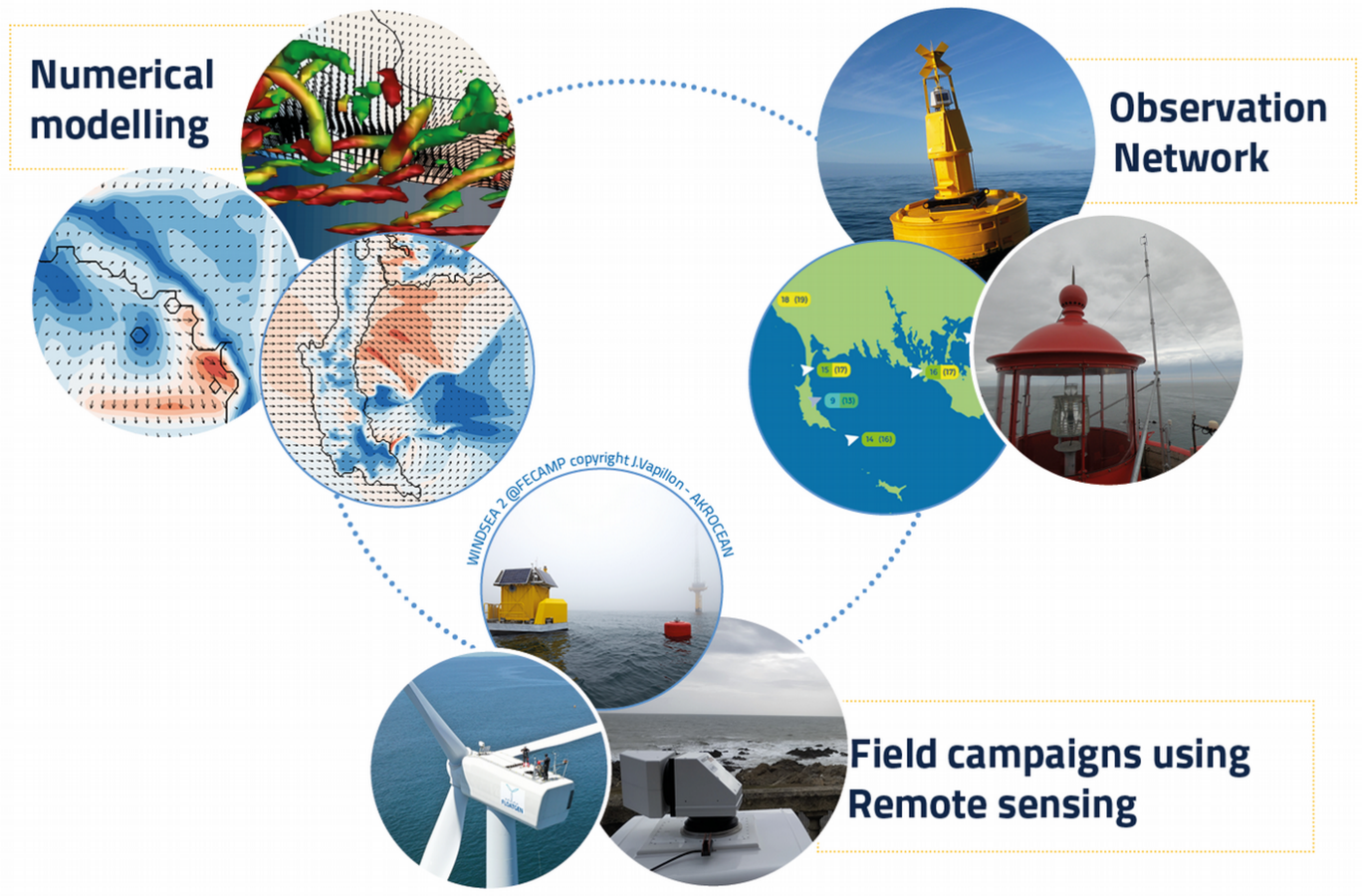
Poster n°

OFFSHORE WIND RESEARCH ACTIONS IN LHEEA LAB

Offshore wind resource

Boris CONAN, Sandrine AUBRUN, Isabelle CALMET, Thibault DESERT,
Pascal KERAVEC. Liad PASKIN. Yves PERIGNON. Iean-Marc ROUSSET

OFFSHORE WIND RESEARCH ACTIONS IN LHEEA
OFFSHORE WIND RESOURCE



Filling the knowledge gap on offshore atmospheric conditions by:

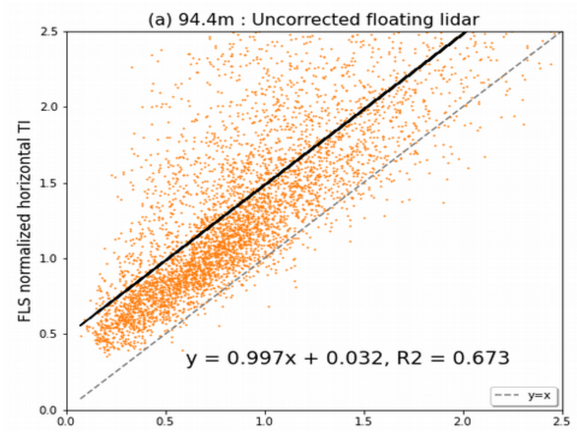
- long term observations at coastal locations, allowing for the fine characterization of the coastal wind resource including its turbulent content: turbulence intensity, turbulent scales, turbulent spectra...

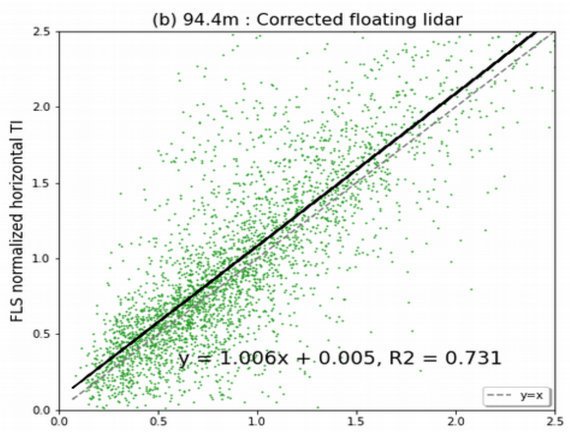
- dedicated field campaigns using remote sensing to measure severe wind conditions: extreme wind shear, low-level jets, and deviations from canonical conditions.

- development of methodology to **extract turbulent information from 10 min floating LiDAR measurements**.

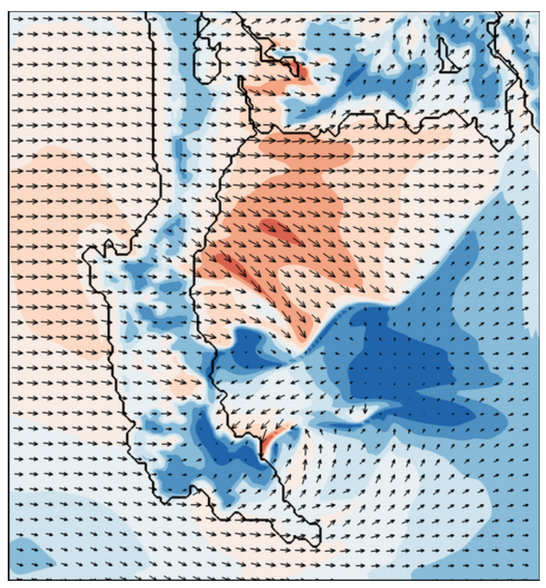
- **meso-scale CFD modeling** including meteorological forcing and several nesting steps to resolve finely the local microclimate: thermal effects, influence of the coastline and islands...

- contribution to the physical understanding of the wind – wave coupling process by a cross use of remote sensing and micro-scale CFD tools to analyses finely the wind-wave interaction.

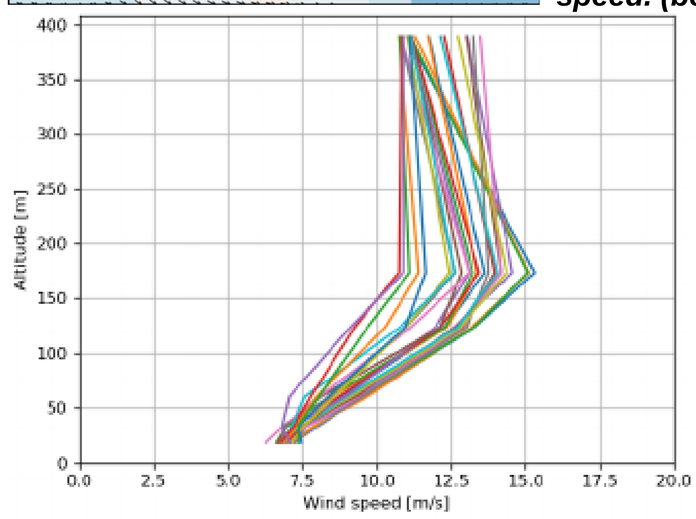




Comparison of turbulence intensity measured by a floating and a fixed LiDAR, without correction (left) with correction (right)



Snapshot of the wind modeled at 10 m agl over the Quiberon peninsula. (left)



Field observation of offshore low-level jets in the North-East Atlantic region. Vertical profile of the 10 min average horizontal wind speed. (below)

This work was granted access to the high-performance-computing resources of super-computer CINES under the allocation A0100100132 made available by the French National High-performance-computing Facility (GENCI).

The authors want to thank the financial support of the French National Research Agency through the Research Grant MATRAC (ANR-18-ASTR-0002)

FLOATEOLE, WAKEFUL and MATILDA are carried out within the framework of the WEAMEC, West Atlantic Marine Energy Community, and with funding from the Pays de la Loire Region, France.

The LHEEA is a member of: