




Politecnico  
di Torino




## Earth observation satellites for offshore wave and wind applications

Thesis proposal at the Marine Offshore Renewable Energy Lab

Department of Mechanical and Aerospace Engineering, Politecnico di Torino

 Recommended profile:

Mechanical engineering, Mechatronic engineering, Aerospace Engineering

 Topics involved:

Satellites, earth observation, metocean monitoring, resource assessment, site selection, data processing

 Skills required or suggested:

Matlab/Python


### Proposal description

The role of monitoring and data gathering in science and technology is continuously increasing. Within this context, the proposed research considers the use of earth observation satellites, especially in the field of ocean monitoring, needed for design and operation of offshore renewable energy systems.

Satellite data have a wider spatial coverage with respect to in-situ measurements, but generally have low revisit time and inaccurate results close to shore. This thesis aims at investigating the performance, mainly in terms of accuracy and resolution, of satellite data, as well as their compatibility with offshore engineering applications, rather than climate change monitoring. In addition, satellite measurements will be compared with co-located in-situ data: a sensitivity analysis will include the influence of the distance threshold for the spatial co-location, and the time-window for the temporal co-location, which is related to the stationary of the underlying stochastic process.

This thesis is performed in collaboration with [MESPAC](#), which is a young innovative start-up, as well as spin-off of Politecnico di Torino.

Relevant reference: [link](#).

 Contact references:

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