

## **SCORE - Executive summary**

The SCORE (Satellite Climate Observation for Offshore Renewable Energy Cost Reduction) interdisciplinary project aimed at exploring possible synergies between satellite measurements and Offshore Renewable Energy (ORE) industry that could reduce costs associated to different stages of an ORE project. In particular, SCORE wanted to address the following questions. Can satellite data be used to address challenges currently faced by the Offshore Renewable Energy (ORE) sector? What benefit can satellite observations bring to resource assessment and maintenance of ORE farms? Can satellite observations be used to assess the environmental impact of offshore renewables leading towards a more sustainable ORE sector?

The project combined expertise at the University of Edinburgh (UoE), Strathclyde University (UoS), and an Industrial Advisory Board (IAB) with relevant members from the satellite and ORE sectors. First, the team investigated prioritisation of research and development (R&D) efforts and resources, such that a decision map could be defined. This was done through an extensive literature study, targeted discussion workshops with IAB members, and the creation of a review paper to formalise findings and disseminate outcomes. Second, research focused on the use of second level (L2) satellite products for wind and Significant Wave Height (SWH) to propose a method to assess spatial uncertainty in measurements characterizing wind and sea surface conditions. The method has the potential of supporting ORE manager decisions during both designing/construction phase and operational phase. Project outcomes were disseminated through two publications: a literature review paper (Medina-Lopez et al., 2021), and a paper presenting the method to quantify spatial uncertainty in wind and significant wave height measurements (Zen et al., 2021). The next step to this project would be the inclusion of the products and uncertainty analysis into Levelised Cost of Energy (LCOE) calculations to assess cost reductions driven by satellite data.

## **References**

- Zen, Hart & Medina-Lopez, The use of satellite products to assess spatial uncertainty and reduce life-time costs of offshore wind farms, *Cleaner Environmental Systems*, 2 (100008), 2021, doi.org/10.1016/j.cesys.2020.100008.
- Medina-Lopez, McMillan, Lazic, Hart, Zen, Angeloudis, Bannon, Browell, Dorling, Dorrell, Forster, Old, Payne, Porter, Rabaneda, Sellar, Tapoglou, Trifonova, Woodhouse & Zampollo, Satellite data for the offshore renewable energy sector: synergies and innovation opportunities, *Remote Sensing of Environment* (under review), 2021.