



UK Coastal Research Conference

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WAVES, WINDS AND WATTS: COASTAL RESEARCH IN AN ENERGY INDUSTRY SETTING

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Coastal regions are increasingly exposed to a convergence of environmental and infrastructural challenges, including intensifying oceanic and atmospheric extremes, rising sea levels, and the growing need for resilient energy systems. These pressures are particularly important for coastal nuclear facilities, which must maintain operational continuity under dynamic and often hazardous conditions. Ensuring their resilience requires a multidisciplinary approach that integrates environmental science, engineering, and regulatory compliance.

This presentation outlines our industrial research efforts focused on enhancing the resilience of coastal energy infrastructure through the integration of coastal oceanography, marine climatology, and energy systems engineering. We will present key internal and collaborative projects that demonstrate how advanced environmental modelling, real-time monitoring, and scenario-based risk assessments are applied to support robust facility design and operation. Furthermore, we will highlight our active engagement with academic institutions through PhD collaborations, which foster innovation and knowledge exchange while contributing to workforce development in this critical field. By bridging scientific research and practical application, our work aims to support the long-term sustainability and safety of coastal nuclear energy systems in the face of evolving environmental risks.

About Dafni

Dafni is the Senior Manager of Natural Hazards & Environment EDF R&D UK. With a background in geology, coastal oceanography and marine climatology, she focuses on understanding the complex dynamics of coastal processes (e.g. erosion, flooding), waves, and other natural disasters and how these are impacted by climate change. Her role involves managing the team and conducting research, analysing data, and developing strategies to minimize the risks associated with such events. She collaborates with interdisciplinary teams across the business (EDF UK and Group) for Nuclear and Renewables, academics, and other institutes to ensure we do the research required for the resilience of our fleet against natural hazards. She has 13+ years of experience in her technical field, and she is always interested in discussing best practices and building cross collaborations so we can mitigate risks and adapt in a changing climate.