

A major marine energy study

The Highlands and Islands is home to a unique combination of natural resources that make it a primary development location for an emerging marine renewable energy sector, encompassing tidal, wave and ocean wind power.

Through MERIKA, the Marine Energy Research Innovation and Knowledge Accelerator, funded by the European Union Seventh Framework Programme, the university is capitalising on the development and research needs of the sector, to realise its ambition to become a European Marine Energy and Innovation Hub.

Three of the university's academic partners, each research-active in the sector, are delivering the project. These are Lews Castle College UHI, the Environmental Research Institute at North Highland College UHI and SAMS UHI. The project focuses on four key activities – knowledge exchange, infrastructure upgrade, European engagement and innovation.

Knowledge exchange is delivered through an extensive bi-lateral staff exchange programme with seven leading European research institutions who are partners in MERIKA. The programme consists of a range of inbound and outbound secondments that help to foster collaboration networks, integrate our marine renewable energy research teams across the European Research Area, and provide a springboard for new joint research activities.



Knowledge exchange is delivered through an extensive bi-lateral staff exchange programme with seven leading European research institutions...

The exchange programme is underpinned by three science excellence research pillars, reflecting the multidisciplinary work undertaken at our three partner locations, and linking natural and social sciences competencies with the key development challenges faced by the sector. These are:

- Tidal resource and wave climate assessment, device-environment interaction (including turbulence and array effect), weather windowing and wave forecasting
- Understanding the effects of marine renewable energy devices on the environment and ecology
- Understanding the social, economic and policy dimensions of marine renewable energy.

MERIKA is also funding an infrastructure upgrade that is adding significant physical capacity to our three partner locations. The upgrade focuses on providing state-of-the-art equipment to support world-class marine energy research at the university, which in turn makes the Highlands and Islands an attractive destination for researchers and innovators in the field.

Staff exchange and infrastructure spend programmes are supported by a series of European engagement activities that focuses on consolidating our position within the international scientific community. In particular this means building links with institutions across the European Research Area, as well as Technology Platforms, the European Commission Directorates – General and European Energy Research Alliance – all key European Union organisations involved in shaping the marine renewable energy policy landscape, and formulating the Horizon 2020 research agenda.



The innovation potential within the emerging marine renewable energy sector is significant, and MERIKA has supported the development of innovation capacity and innovation competencies across the university. In particular, the project has focused on consolidating and improving the university's policies around the protection of intellectual property rights and improving our commercialisation processes, as well as enhancing our engagement with industry as a result of our improved research, infrastructure and innovation capacity.

The MERIKA project has received funding from the European Union Seventh Framework Programme (FP7/2007-2013) under grant agreement n° 315925.

Dr Philip Gillibrand PhD



Dr Philip Gillibrand is a senior research fellow at the university's Environmental Research Institute, based at North Highland College UHI, where he leads the Renewable Energy and the Environment research theme.

He is a physical oceanographer with interests in hydrodynamic and bio-physical modelling of the coastal zone, and the application of these models, together with observational data, to understand the dynamics and behaviour of coastal systems.

He has published papers on the circulation, exchange and deep water renewal of Scottish fjords; the Scottish coastal current; the environmental impacts of finfish aquaculture; tsunami inundation and coastal oceanography in New Zealand; and numerical methods of hydrodynamic modelling.

After graduating from the University of Wales, Bangor, Dr Gillibrand joined the Marine Laboratory in Aberdeen, where he modelled the exchange and ventilation of fjordic sea lochs and developed modelling tools to predict the dispersion of contaminants and parasites from salmon farms. He then moved to SAMS UHI and, after a spell in New Zealand and Australia, joined the Environmental Research Institute in May 2014 as part of the MERIKA team.

Dr Gillibrand's current research focuses on the estimation of tidal energy resource through field observations and numerical modelling, and on predicting the effects of tidal energy arrays on the ambient flow and the potential implications for the local environment and ecology. He maintains a general interest in the development and application of computer models to address issues relating to the coastal ocean both in Scotland and abroad. Since 2015, Dr Gillibrand has been elected convenor of the Marine Alliance for Science and Technology for Scotland Numerical Hydrodynamic Modelling Forum.

Email: philip.gillibrand@uhi.ac.uk
Tel: 01847 889686

www.uhi.ac.uk