University of the Highlands and Islands
Oilthigh na Gàidhealtachd agus nan Eilean

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The effects of marine renewable energy devices on the environment and ecology

Dr Philip Gillibrand

Senior Research Fellow

Environmental Research Institute, Thurso

w. merikafp7.eu e. merikafp7@uhi.ac.uk @merikafp7

University of the Highlands and Islands Oilthigh na Gàidhealtachd agus nan Eilean

HIE Highlands and Islands Enterprise Iomairt na Gàidhealtachd 's nan Eilean

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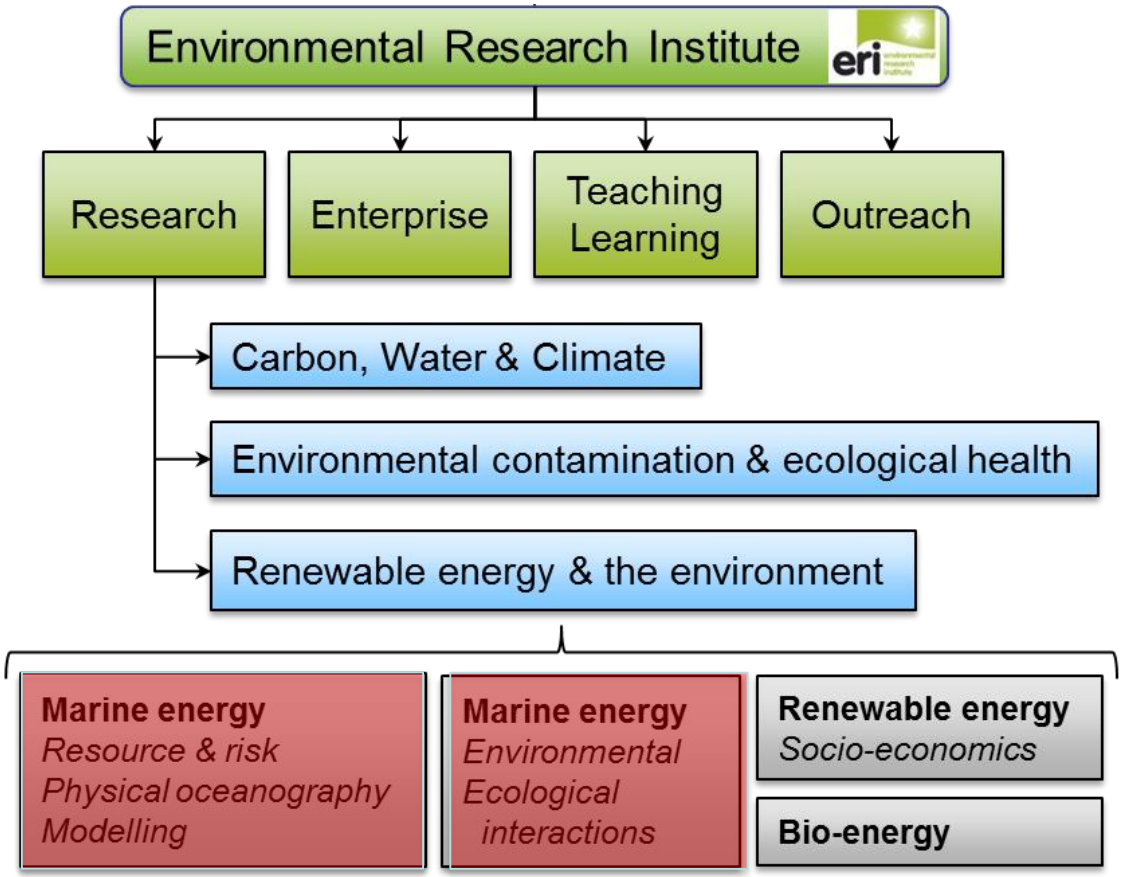
Research at the ERI



Courtesy Philippe Gleizon

Marine energy – resource and risk

Objectives

- To better understand the marine energy resource in Scotland, particularly the Pentland Firth
- To better understand the oceanographic and meteorological challenges to operation and maintenance of marine energy arrays

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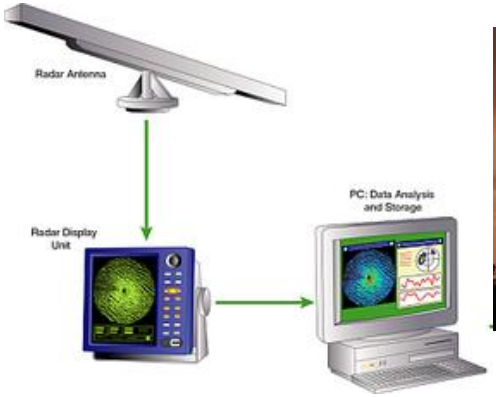
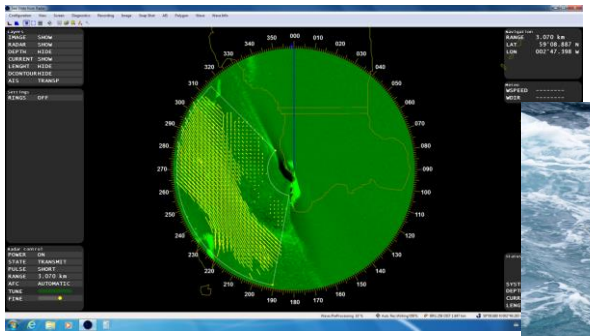
Marine energy – resource and risk

- Tidal resource assessment; wave climate assessment
- Modelling (including turbulence & array effects)
- Device-environment physical interaction (measurement and modelling)
- Climatology including Weather windowing (for installation & maintenance)





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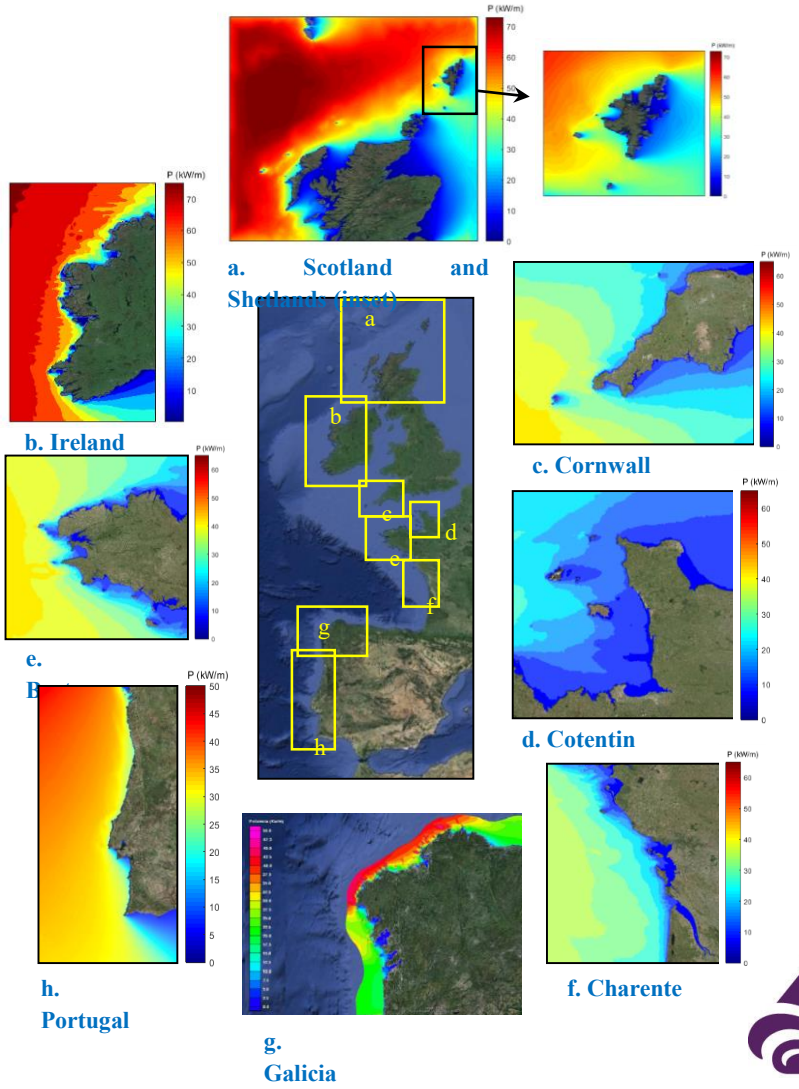

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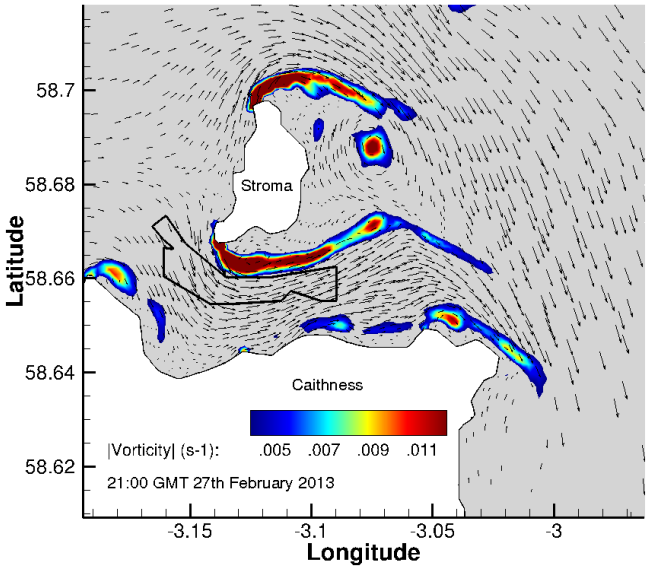

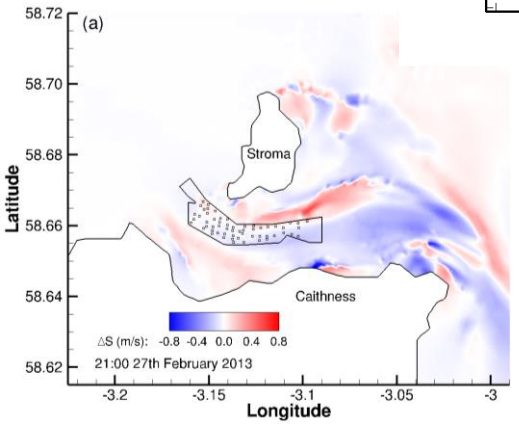

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Marine energy – environmental and ecological interactions

Objectives

- To better understand the environment in which marine energy arrays are planned
- To better understand the potential interactions of marine energy extraction with that environment.
- To enable sustainable development of the marine energy industry.

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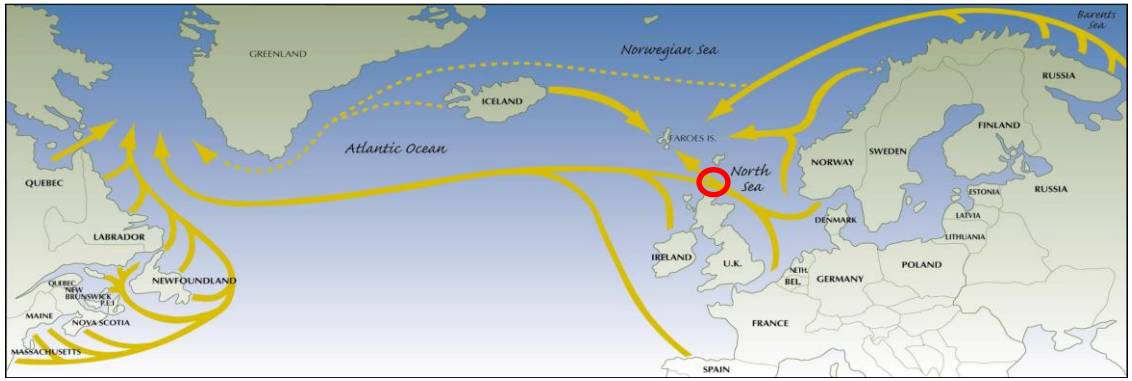
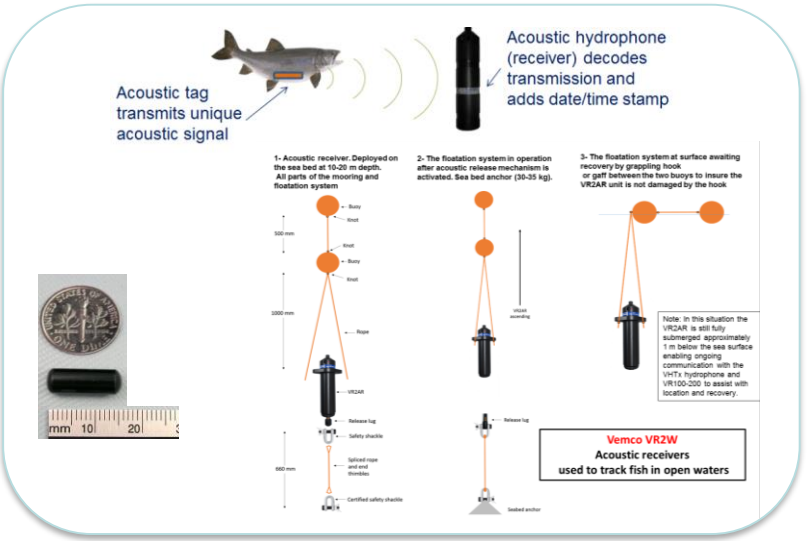
Marine energy – environmental and ecological interactions

- Fish habitat use and migrations (particularly salmonids)
- Seabird ecology
- Benthic interactions
- Bio-fouling and non-native species



Important migratory route for Atlantic salmon around Europe



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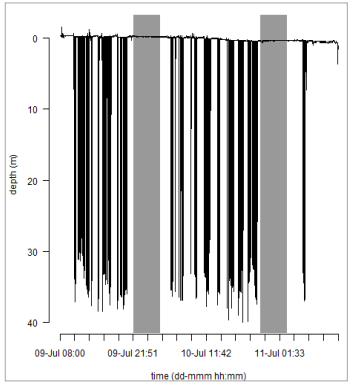
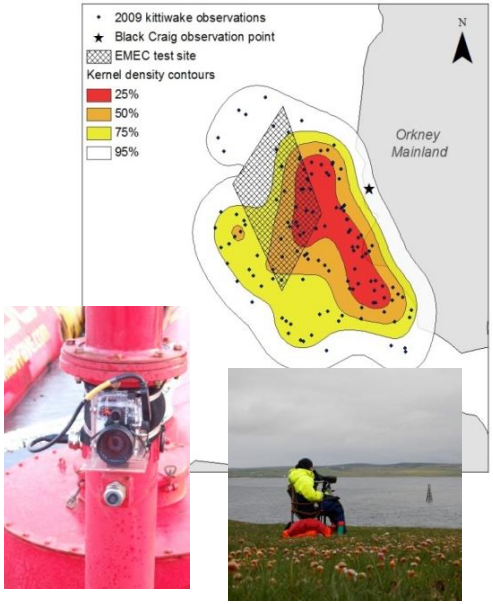
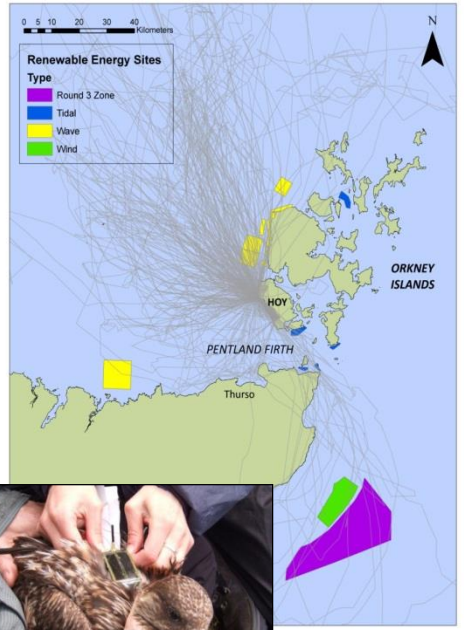


Diving behaviour of black guillemots

GPS tracks of great skuas





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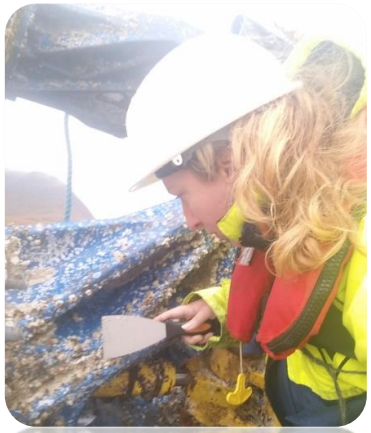

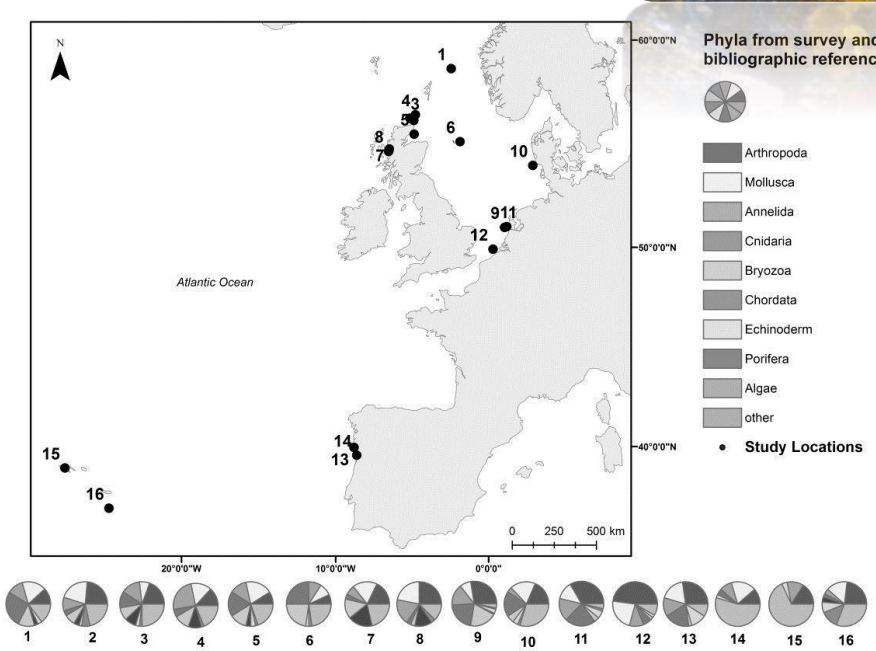

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Outcomes

- Contributions to scientific literature
- Improved tools and methods for resource assessment
- Improved understanding of some key aspects of marine energy interactions with the environment
- Engagement and knowledge exchange with policymakers and developers

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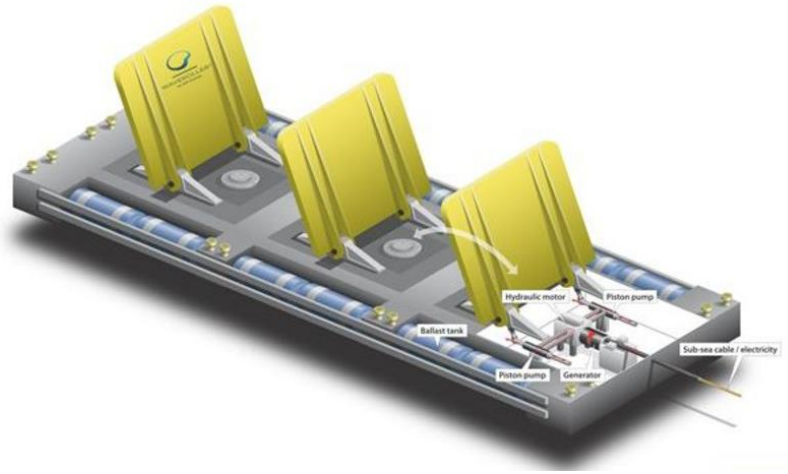
Contribution to the marine energy sector

- Developing tools and methods to improve resource estimation
- Developing tools and methods to predict the operating environment
- Providing information and data pertinent to Environmental Impact Assessments and sustainable development of industry
- Gathering information for the type, siting and scale of future development



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