

# OERA Student Research Travel Grant

## Trip Report

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### **Executive Summary**

The following report highlights work undertaken at the University of Edinburgh during July 2014. During this time, I was a visiting researcher at the Institute of Energy Systems and worked under the supervision of Dr. Brian Sellar. The work was funded by an OERA Student Research Travel Grant which was awarded in March 2014.

The overall outcome of the trip was a continuation of collaborative site assessment work that was initiated during a visit to Edinburgh in the fall of 2013. Some data analysis was finalized and draft versions of two papers were initiated. I am the lead author on one paper which compares the tidal flow characteristics in the Fall of Warness (Scotland) and Grand Passage (Nova Scotia). I will be a co-author on a second paper related to the influence of waves on the tidal flow metrics in the Fall of Warness.

## Trip Details and Background Info

The research was carried out at the University of Edinburgh from July 1st to July 31st, 2014. During that time, I worked under the supervision of Dr. Brian Sellar on a project known as the Reliable Data Acquisition Platform for Tidal (ReDAPT), which is a consortium of industry and academic partners that is currently involved in testing a 1 MW turbine in the Fall of Warness situated in the Orkney Islands. The role of the research group at the UoE is to provide the project partners with flow measurements acquired using sensors located both directly on the turbine, and upstream and downstream of the device. The data is being used to fully characterise the tidal site and to understand the impact of a turbine on the natural flow conditions.

## Trip Outcomes

While in Scotland, I applied my analysis techniques to the ReDAPT data set in an attempt to make comparisons with my existing data from Grand Passage. I focused specifically on the tidal dynamics that can be measured with Acoustic Doppler Current Profilers (ADCPs) as these instruments were used in both the Fall of Warness and Grand Passage. As a result of this work, I am in the process of writing a paper which compares several features of the mean flow in the two passages. Additional outcomes of my trip to Scotland were:

- Signed a non-disclosure agreement so that I can continue to access the ReDAPT data remotely.
- Had discussions regarding the influence of waves on the tidal energy metrics. I will be a co-author on a paper that addresses this topic.
- Development of data analysis tools that will be used by the ReDAPT team
- Made connections with other researchers working on offshore renewable energy projects (FloWave, Marinet, EXMED, among others)

## Ongoing Work

The work that was initiated during my trip to Scotland is still ongoing. In the coming months, my collaboration with Dr. Brian Sellar will continue with the following intended outcomes:

- The finalization of papers related to the resource assessment work (mean flow characteristics and the influence of waves)
- Completion of the ReDAPT report, which is due at the end of 2014