

MSc thesis on automatic detection and classification of underwater acoustic signals

Title

Development of an automatic detection and classification tool for underwater acoustic signals

Supervisor: to be determined

Co-supervisor: Marco Alves / Pedro Pires

Master program: Any as appropriate

Description

Under the consenting process of marine renewable energy devices promoters are required to carry out an environmental impact assessment and to monitor biological groups/ parameters that can be affected by the presence of the devices prior to the installation and during its operation. Among others, two relevant monitoring plans are focused on cetaceans and the underwater noise emitted by the devices. These parameters can be monitored using a hydrophone and automatic detection devices for cetaceans (C-PODS) that are installed in the vicinity of the device.

Under the KIC-OTS Project WavEC developed, in partnership with other entities, an environmental monitoring buoy that includes in its instrumentation a hydrophone. The main objective is to use it not only for underwater noise monitoring but also, if an automatic detection tool is associated, to monitor the presence of cetaceans in the vicinity of the device to support environmental impact assessment studies.

Currently, we intend to validate the data that are being collected by the instrument and analyse the feasibility to use sound pressure level variation in 1/3 octave bands to automatically detect cetaceans.

Objectives

The work will be developed through the following steps:

1. Literature review of automatic detection for underwater sounds
2. Validation of acoustic data acquired by the hydrophone
3. Development of an automatic detection and classification tool for underwater acoustic signals
4. Tool validation
5. Report

Results

A tool for automatic acoustic detection and a user guide.

Notes

- WavEC *Offshore Renewables* has a prize policy for MSc thesis undertaken at the Centre: 500 € for 10% top marks and 1000 € for 5% top marks.
- Priority is given to students able to dedicated 100% of their time to the thesis.

- Required background: Matlab and signal processing.