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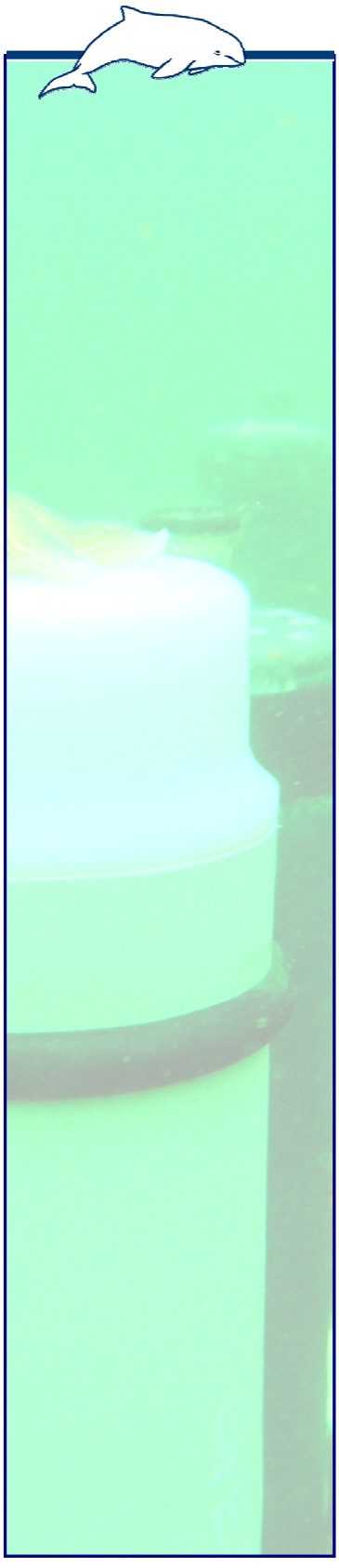

AMPOD

Applications and analysis methods for the deployment of T-PODs in environmental impact studies for wind farms: Comparability and development of standard methods

FKZ 0327587

Final report

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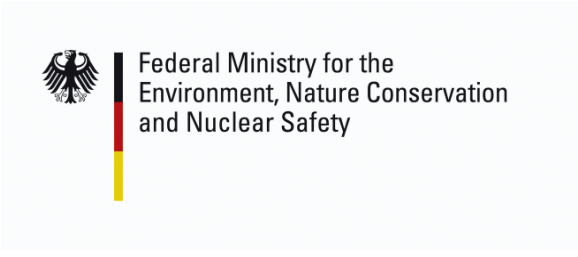

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1. Summary

In the expansion of regenerative energy, the offshore-wind farms take up a special relevance. Locations at sea benefit from a unique availability of wind energy, making them attractive for the installation of wind farms. However, construction and operation of a wind farm has an influence on the marine environment. Therefore applicants for wind farm projects in German waters are committed by the German Federal Maritime and Hydrographic Agency (BSH) to conduct an environmental impact study by regulations outlined in the "Standards for the Environmental Impact Assessment" (so called StUK3). Amongst others, the StUK is describing how to investigate the habitat use of harbour porpoises with the help of acoustic data loggers, the porpoise detectors (PODs). These devices register echolocation click sounds of porpoises, which are used for orientation and foraging as well as for communication.

The AMPOD-project "Application and analysis methods for the deployment of T-PODs in environmental impact studies for wind farms: Comparability and development of standard methods" aimed for developing standard methods and guidelines for the application of PODs in static acoustic monitoring (SAM) programs in environmental impact studies (EIS) for wind farms. The influences of technical as well as environmental parameters on the data gained were investigated with calibration and field trials. Furthermore, different analysis methods were compared. This knowledge helps for a better interpretability and comparability of results obtained in SAM studies. Cooperation with Danish, British and German institutes involved in SAM studies, mainly with regards to offshore wind farm EIS, gave a great opportunity to establish standard methods for conducting static acoustic monitoring.

In the final project phase, the results of the AMPOD-project and of recent POD-applications in SAM projects were presented at a symposium. Furthermore recommendations were developed, giving guidelines on how to conduct SAM with PODs and proposing a standard procedure for POD application and data analysis.

The results of the AMPOD-project show the importance of calibrating PODs. Adjusting the devices to a standard sensitivity helps to gather comparable data. A model is introduced that is applicable to align data recorded with PODs of different sensitivity deployed in shallow waters. In water depths of 20 m and more we found that T-PODs deployed at different depths retrieved significantly different data, caused by either the harbour porpoises' preference of sojourning at certain water depths or of thermoclines interfering with the detection abilities of the T-PODs. It is therefore important and recommended to keep the deployment depth of monitoring devices in a study constant. Above a certain level of background noise received by the monitoring devices, data will be affected by either the noise masking true detections or by a rise of the false detection rate. Analysis of data should therefore always consider the recorded background noise, and either exclude or adjust data retrieved at noise levels that affect data comparability.