

Cornerstone for R&D projects: RAVE-Measurements

Central realisation of measurements within the framework of RAVE research projects

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Gefördert auf Grund eines Beschlusses
des Deutschen Bundestages

Projektträger

Koordination

Overview

- Motivation
- Project Organisation
- Observations
- Conclusions



Motivation

History

1. German strategy for wind energy utilisation at sea
 - 25 Gigawatts offshore wind production until 2030
2. BMU Initiative to support an offshore wind farm test site
 - Targets: Evaluation of the technical, financial and environmental sustainable feasibility of offshore wind farm operation

Test site „alpha ventus“ and comprehensively accompanied research (RAVE)



alpha ventus & RAVE



- First german offshore wind farm
- 45 km north of the East Frisian island of Borkum (German Bight)
- 30 m water depth
- 12 x 5 MW offshore wind energy plants
- plant manufactures: Areva (Multibrid) and REpower

Operator: Deutsche Offshore Testfeld- und Infrastruktur GmbH & Co. KG (DOTI)

➡ Consortium of EWE, E.ON and Vattenfall



alpha ventus & RAVE

"...The RAVE research initiative simultaneously runs with the construction and operation of the "alpha ventus" test site to attain broad based experience and knowledge for future offshore wind parks... "

Research areas: Operation, foundations and support structures, turbine technology and monitoring, grid integration and ecology and safety

!More than 20 research projects with individual requirements and demands!



In order to harmonise the projects requirements / demands a central RAVE-MEASUREMENT-PROJECT is essential

Project Organisation

RAVE – Subproject Measurements

Research at **alpha ventus**

Förderung

BMU – political initiative and sponsorship
PTJ – professional and administrative controlling

Messservice

Co-ordination of RAVE Measurements, oceanographic and geological monitoring
– BSH –

Logistics, field service
– GL Garrad Hassan HH –

Measurements at AREVA
– DEWI –

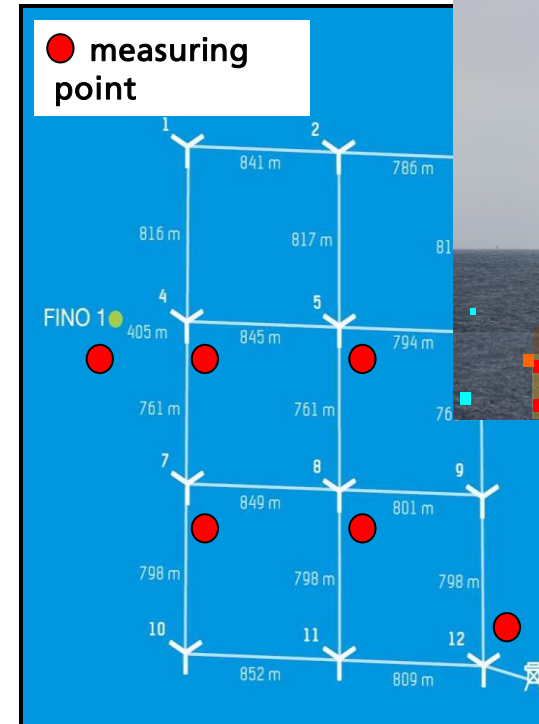
Measurements at REpower
– GL Garrad Hassan Windtest–



RAVE-Measurement Project

core activities

- Co-ordination of RAVE research measurements
- Implementation of measurement concept
- Installation and technical realisation of measurements
- Operation, maintenance and inspection of instruments
- Logistics
- Data management, preparation and provision of data for an integrated database



~1200 Sensors installed

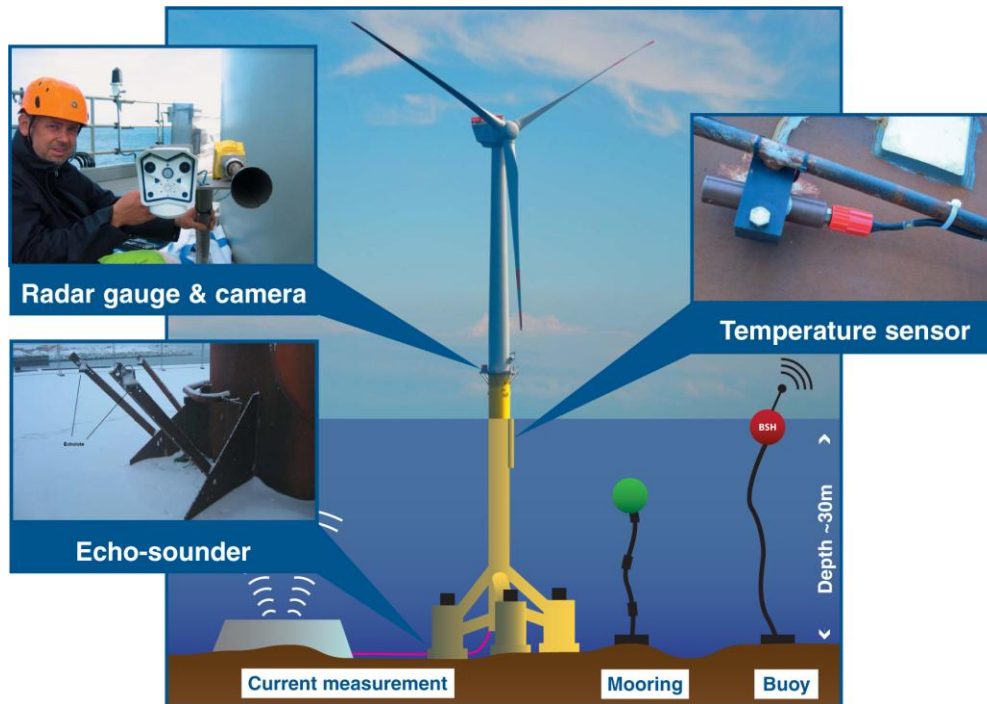


Onshore & Offshore Installations



Observations

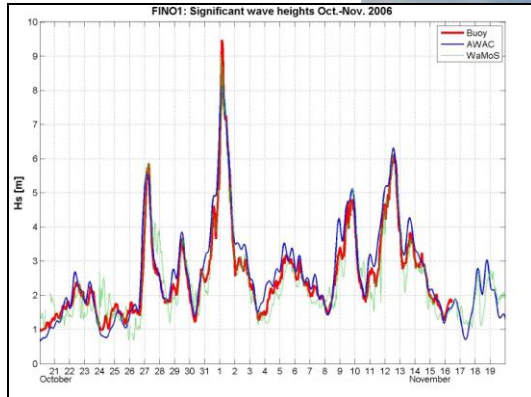
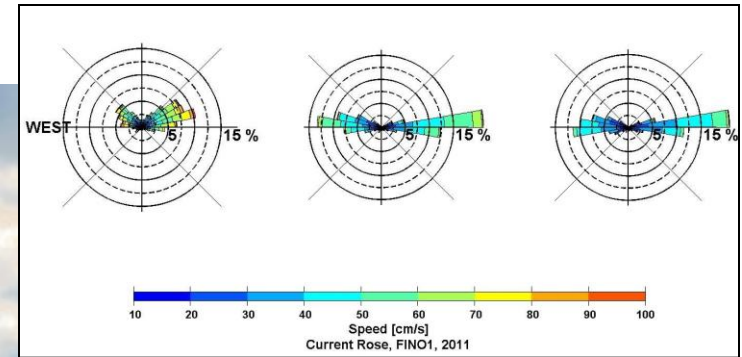
Oceanographic and Geological monitoring



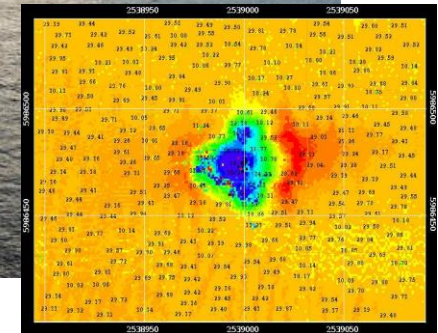
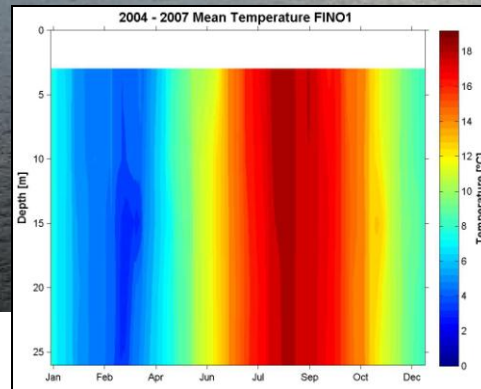
Structural Dynamics



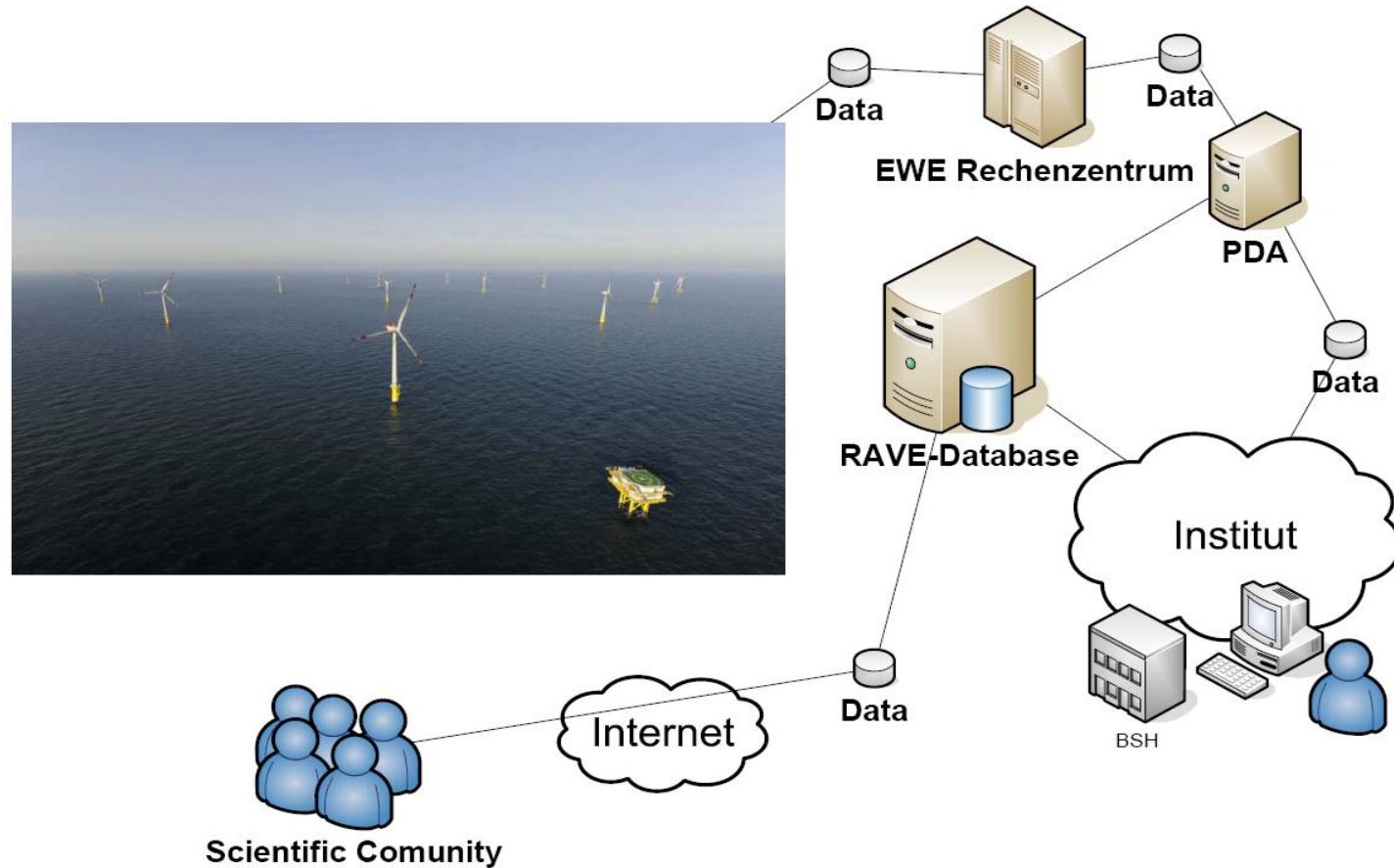
Data



Oceanographic and Geologic conditions Session: Site conditions Wednesday, May 9th

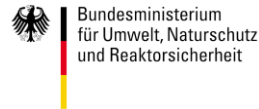


Datahandling



Conclusions

- To harmonise the comprehensive RAVE-Measurements a central measurement project has been realised
 - Co-ordination of all RAVE-Measurements
 - Supply of basic data sets
- Lessons learned
 - Measurements within offshore regions are complex, expensive and time-intensive
 - Suitable research needs real measurement-data



Thank you for your attention!

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