RAVE
RESEARCH AT ALPHA VENTUS

RAVE Workshop 2022 – Opening remarks

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Gefördert durch:
Bundesministerium für Wirtschaft und Klimaschutz
aufgrund eines Beschlusses des Deutschen Bundestages

PTJ Projektträger Jülich Forschungszentrum Jülich

Fraunhofer IWES

BSH Bundesamt für Seeschifffahrt und Hydrographie

Welcome!

… to the RAVE workshop 2022 – unfortunately again only virtual…

- What is RAVE and alpha ventus?
- What measurements are available and how?
- How is the workshop today organized?

Offshore test field alpha ventus

First German offshore wind farm – built 2009

Test field with support from the German government

60 km distance to coast, 30 m water depth

12 Wind energy converters

- 6 Adwen M5000 on tripod foundations
- 6 Senvion 5M on jacket foundations

CAPEX: 250 M€

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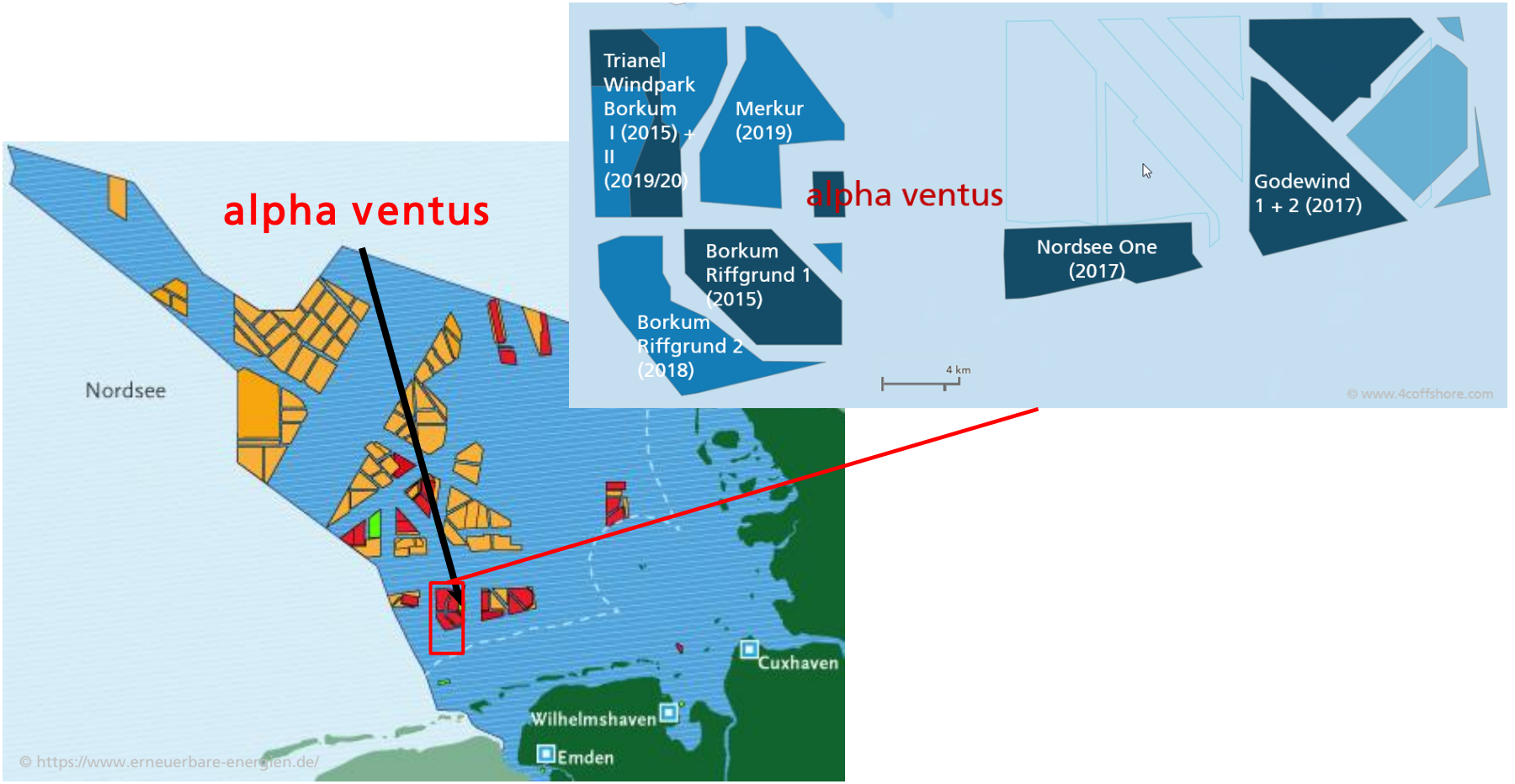
Offshore test field alpha ventus



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RAVE – Research at alpha ventus

- Accompanying research at the alpha ventus test field
- Funded by the Federal Ministry for Economic Affairs and Climate Action (BMWK)
- Running since 2008
- > 35 R&D projects
- > 60 project partners
- > 120 million € research funding

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RAVE objectives

- At the start of RAVE:
  - Prove the offshore-capability of the 5 MW turbine class
  - Demonstrate feasibility of offshore wind with large distance to coast and deep water
  - Investigation of open questions to offshore wind power utilization
- In recent years:
  - Operation of offshore wind farms (control, forecasting)
  - Effects of neighbouring wind farms
- In the future:
  - Life time modelling, life time extension, repowering, decommissioning, …
    - ➔ Discussion at the end of the workshop

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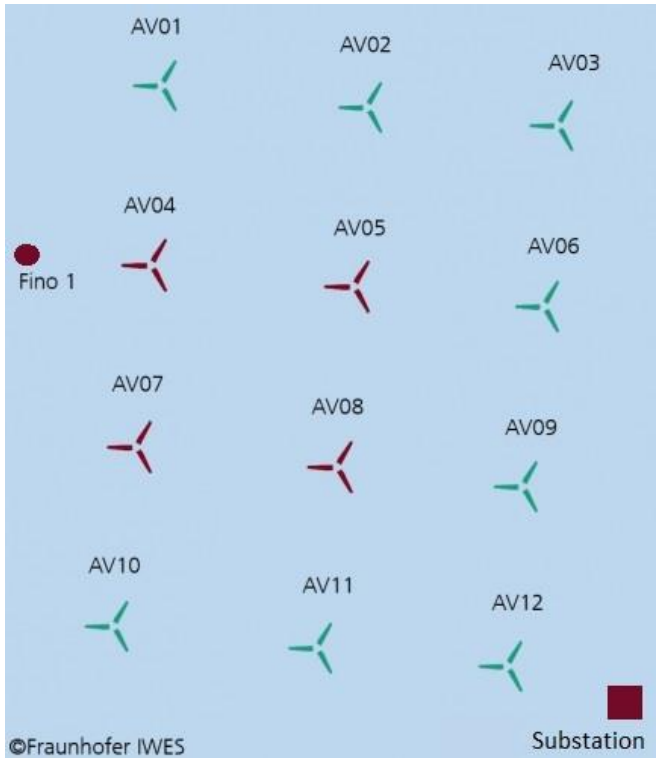
RAVE measurement programm

- 4 turbines instrumented
- 100m met mast FINO 1 in direct vicinity
- Oceanographic measurements at different locations
- Electrical measurements on offshore and onshore substations
- SCADA and turbine controller data
- Special measurements (noise, water pressure, Lidar,…)

Long-term time series of up to 12 years, up to 1400 data channels … ongoing



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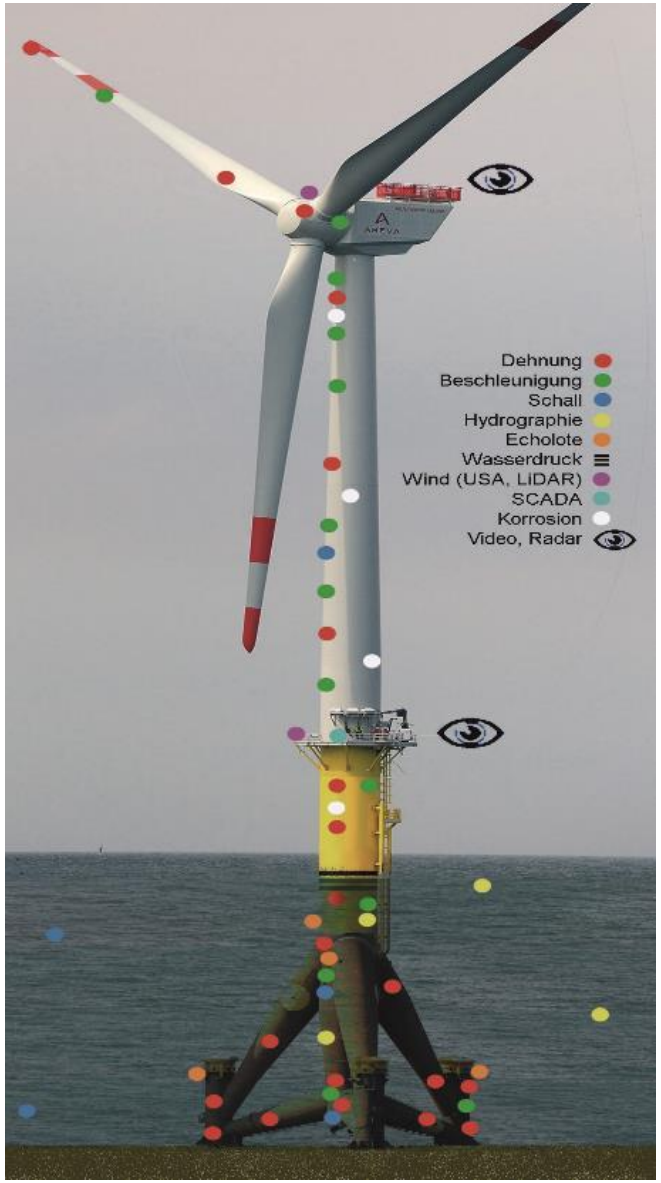
Example: AV07

- strain gauges
- acceleration
- acoustic sensors
- hydrographic sensors
- met data (sonic, lidar)
- sonars
- water pressure sensors
- SCADA
- corrosion
- video cam, radar



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Data access

- RAVE is funded by the German government with the aim of supporting the development of offshore wind energy through research
- Data is stored in the RAVE data base hosted by BSH
- Easy to use plot and download features, *CSV* or *NetCDF* formats supported
- Data is confidential but available for research with a standard data usage agreement
- For more information, see: www.rave-offshore.de
- Contact and Support: rave-forschungsarchiv@bsh.de

Aim of the workshop

- Presentation of results with RAVE data or relevant for RAVE
- Exchange between researchers working with RAVE data

BMU-Forschungsplattform FINO 1, ©Germanischer Lloyd

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Workshop organisation

Program

3 blocks of presentations

10:00 CET: Opening & introduction, machine learning

11:40 CET: Environmental conditions, wakes and forecast

14:00 CET: Decommissioning, CMS, environmental topics

Discussion

- At 15:20 there is time for a discussion on the future role of alpha ventus and RAVE

Workshop organisation

Questions and answers

- Please post your questions during or after each talk in the Q&A chat
- No oral interaction is possible, please mute your microphones

Discussion

- At the end of the workshop there is time for a discussion
- Please raise your hand to contribute to the discussion and than use your microphone

Slides will be available after the workshop published asap on the RAVE Homepage,
but no video recordings

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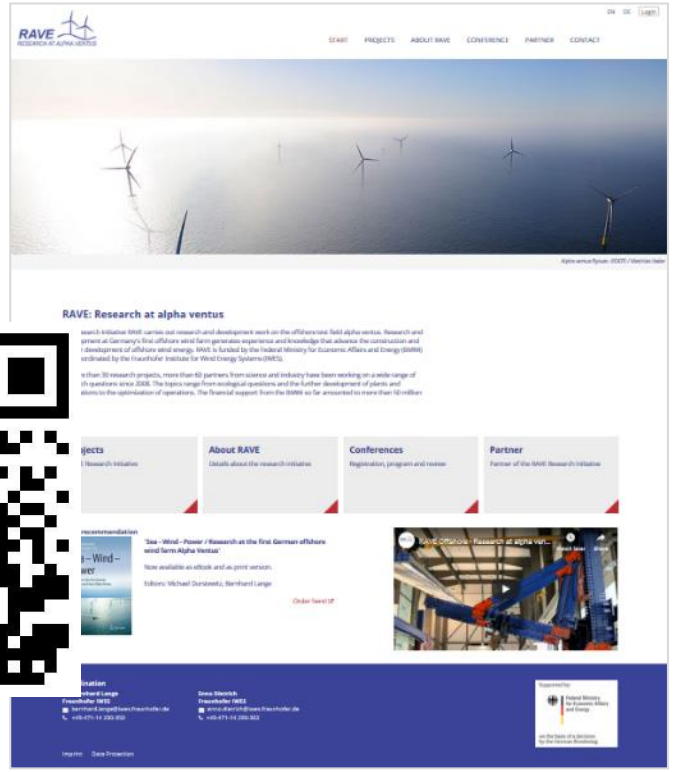
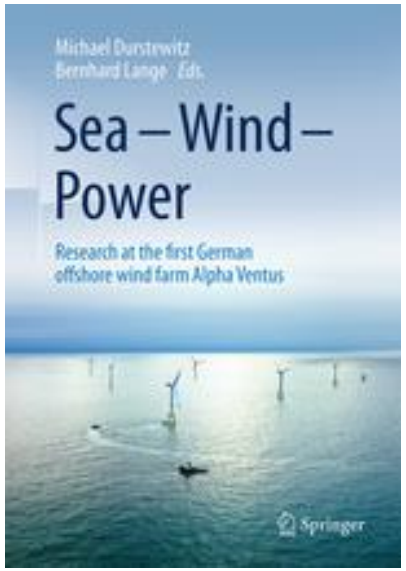
More information about RAVE…

RAVE Homepage:
www.rave-offshore.de



RAVE video:
DVD and youtube

RAVE book (Springer):
Sea – Wind - Power



Offshore wind R&D conferences 2012, 2015 and 2018 and workshops 2020, 2021

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Thank you…

…to the BMWK for the funding of RAVE:

Supported by:

on the basis of a decision
by the German Bundestag

… and to you for your attention!

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