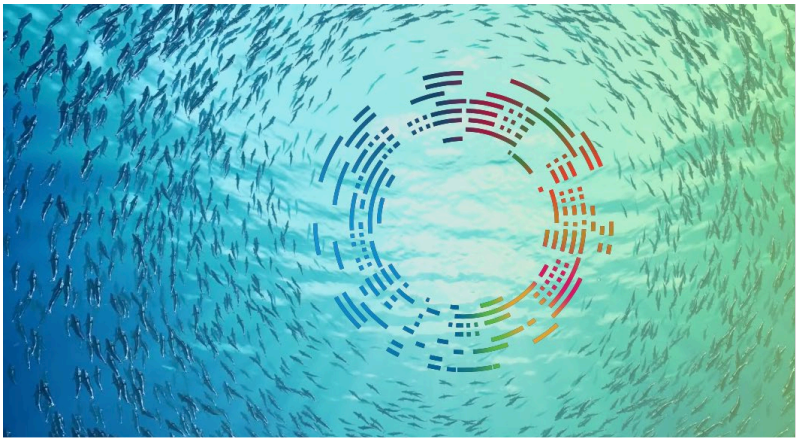

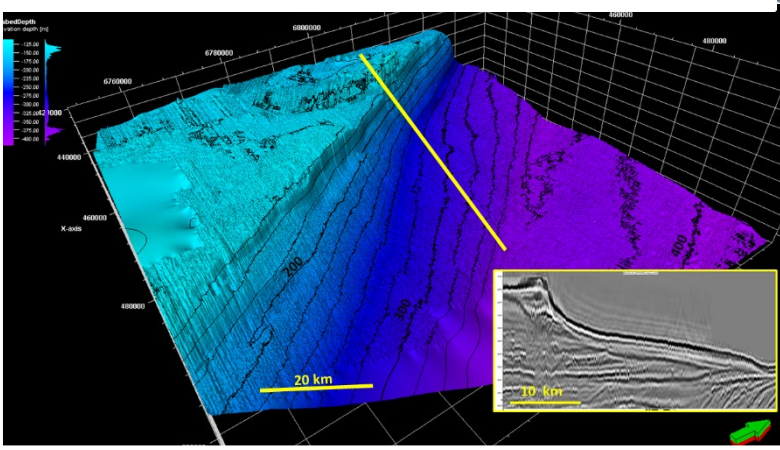

BERGEN OFFSHORE WIND CENTRE (BOW) ANNUAL REPORT 2019

UNIVERSITY OF BERGEN

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Foreword

2019 was the first full year of operation for Bergen Offshore Wind Centre (BOW) after the inauguration in September 2018. Our start-up was boosted by a three-year funding from the university. This made it possible to employ a full-time Associate Professor at the Faculty of Law and an Administrative Coordinator.

The challenges related to utilize the wind energy offshore are truly multidisciplinary. The University of Bergen has research and education in a wide range of disciplines relevant to offshore wind energy, even if the competence has not previously been applied in this context. Much of the 2019 activity has thus been devoted to communicating the challenges related to offshore wind energy and explore how researchers in various academic fields can contribute. My experience is that more and more researchers realize that they have research activities relevant to the offshore wind field, and that they are enthusiastic about contributing to this field.

In 2019 we organized the centre in a more structured way. We have established a Steering Committee with members from UiB and NORCE, and a highly qualified international Scientific Advisory Committee with members from industry and the research community. They have given us valuable advice on how to move forward.

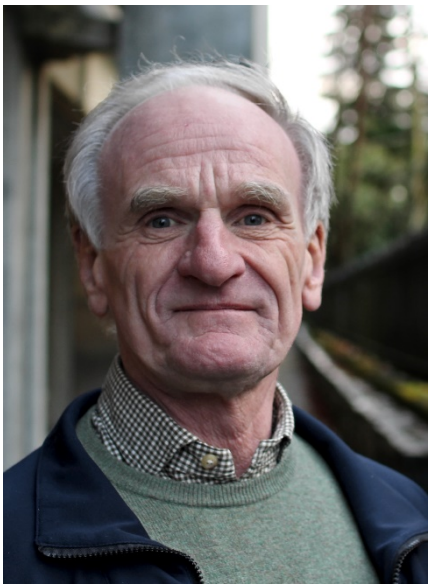
To make BOW a real multidisciplinary centre we rely upon success in our research project applications. Several applications were submitted to The Research Council of Norway (RCN) as well as to the “Academia agreement” between Equinor and UiB. We were successful with several of the Academia agreement applications and you can read more about those projects in the report. The RCN applications were not that successful. Our competence profile did not fit the actual calls very well. However, we expect more success in future calls as several “non-technical” issues as e.g. resource, environmental, law and social science issues gain more focus.

The Academia Agreement projects gave us the opportunity to recruit new staff. Together with positions allocated via various university departments, as well as other EU projects, we have through 2019 strengthened our staff substantially. You can read more about some of our key staff members in the research chapter. With a reinforced staff, we are now in the process of submitting research applications both for Horizon2020 and RCN.

The Norwegian debate in 2019 about where to localize onshore wind farm, triggered the question “why not build offshore wind farms?”. BOW wants to convey knowledge about offshore wind both at an academic level, but also to the community at large. This implies contributing with knowledge both on opportunities and potential conflicts. We have used much resources on making BOW visible in the academic community, industry and media. You will find an overview of these activities in the report. We now

see that BOW is considered a knowledge hub nationally. This makes it possible to use our insight to convey important research questions. The yearly Science Meets Industry conference is an important meeting place between industry, authorities and researchers. Here challenges and research results are presented and discussed.

By the start of 2020, BOW is much stronger than one year ago, thanks to a very qualified and enthusiastic staff contributing to the important energy transition. We look forward to further strengthen our position as a knowledge hub, both nationally and internationally, in 2020.



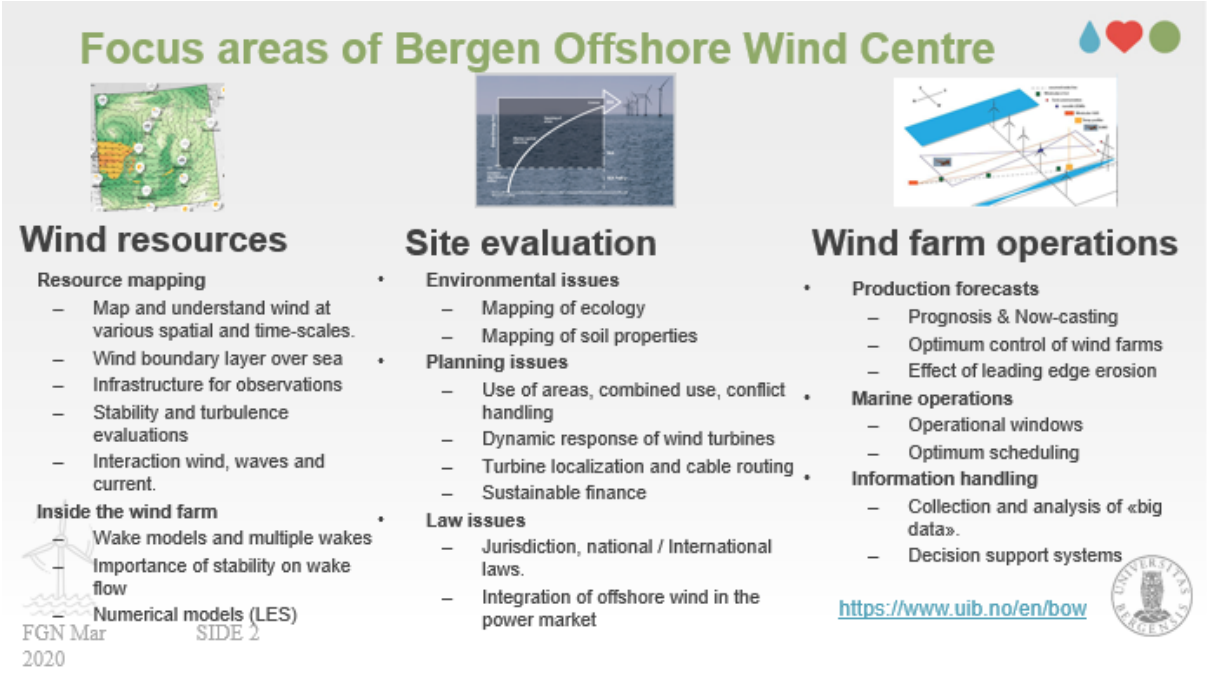
Finn Gunnar Nielsen, director of Bergen Offshore Wind Centre (BOW)

Presentation of the centre and affiliated personnel

Presentation

Bergen Offshore Wind Centre (BOW) was officially opened on 13 September 2018 at the Science Meets Industry conference. The centre is established by the University of Bergen in order to coordinate and strengthen the research and education in offshore wind energy. BOW has three focus areas: Wind resources, Site evaluation and Wind farm operations.

BOW has a Steering Committee with representatives from NORCE and UiB, and a Scientific Advisory Committee (SAC) with representatives from academia and industry (for members see affiliated personnel). In 2019 BOW held one meeting with the SAC in September. The Steering Committee also held its first meeting in December.



Picture: Illustration of the focus areas of Bergen Offshore Wind Centre (BOW)

Affiliated personnel 2019

Professors / associate professors:
- Finn Gunnar Nielsen (Geophysical Institute (GFI)), director
- Joachim Reuder (GFI)
- Mostafa Bakhoday-Paskyabi (GFI)
- Nils Gunnar Kvamstø (GFI)
- Sigrid Eskeland Schütz (Faculty of Law (Law))
- Berte-Elen R. Konow (Law)
- Ignacio Herrera Anchustegui (Law)
- Dag Haugland (Department of Informatics (INF))
- Ahmad Hemmati (INF)
- Magne Haveraaen (INF)
- Haflidi Haflidason (Department of Earth Science (GEO))
- Christian Haug Eide (GEO)
- Bodil Holst (Department of Physics and Technology (PHYS))

Researchers / Postdocs:
- Pablo Saavedra G. (GFI)
- Thomas Hansen (GFI)
- Etienne Cheynet (GFI)
- Justas Zalieckas (PHYS)

Adjunct professors / associate professors:
- Charlotte Bay Hasager (DTU)
- Marte Godvik (Equinor)
- Bjørn Maronga (Leibniz Univ. Hannover)

PhD candidates
- Ida Marie Solbrekke (GFI)
- Astrid Nybø (GFI)
- Christiane Duscha (GFI)
- Maria Krutova (GFI)

Administrative coordinator
- Torill Andersen Eidsvaag (GFI)

Scientific Advisory Committee (SAC):
- Christina Aabo, Head of R&D, Wind Power, Ørsted
- Henrik Bredmose, Professor, Danish Technical University (DTU) Wind Energy
- Bernhard Lange, Division Manager Wind Farm Planning and Operation, Fraunhofer Institute for Wind Energy Systems
- Thina Margrethe Saltvedt, Chief Analyst, Sustainable Finance Norway, Nordea
- Jan-Fredrik Stadaas, Corporate Strategy Manager, Equinor
- Jan Willem Wagenaar, R&D coordinator and project manager Wind Energy Systems, TNO

Steering Committee:
- Gunn Mangerud, vice dean, Climate and Energy transition, leader of the committee
- Karl Harald Søvig, dean, Faculty of Law
- Tor Eldevik, Head of Department, Geophysical Institute
- Aina Berg, Director of Energy, NORCE
- Jan Erik Askildsen, Dean, Faculty of Social Science
- Torill Eidsvaag, BOW (secretary)

Summary of main activities 2019

In 2019 Bergen Offshore Wind Centre (BOW) has been involved in (details are found in the report):

- successful wind measurement campaign at Obrestad (collaboration with NORCE and the University of Stavanger)
- 11 project applications to the Academia Agreement (four projects, two adjunct positions and one field course were funded)
- three project applications for researcher's projects to RCN
- NORCE led Chinese-Norwegian RCN project application, CONWIND, that received funding.
- several important wind energy conferences and meetings, including EERA Deepwind 2019, EERA JP Wind Annual meeting and more
- the offshore wind conference Science Meets Industry (collaboration with NORCOWE and GCE Ocean Technology)
- two breakfast meetings about offshore wind to provide updated information about the topic to interested stakeholders.
- the high-profile meeting on offshore wind held by the Norwegian prime minister Erna Solberg.
- several meetings with stakeholders from politics, funding bodies and industry, including the centre's SAC.
- public debate about offshore wind in the media and through several popular talks.

In 2019 BOW has also:

- signed an MoU with DTU Wind on selected topics in wind energy.
- held a strategy seminar that will form the basis for developing the centre strategy.
- established a Steering Committee which, in addition to the SAC, aids the centre in developing the strategy and later work in accordance with the developed strategy.

Research

Meet our researchers

Offshore wind is a multidisciplinary field and many researchers from different faculties and departments are affiliated with the centre through projects or through their position. Below some of them are presented.

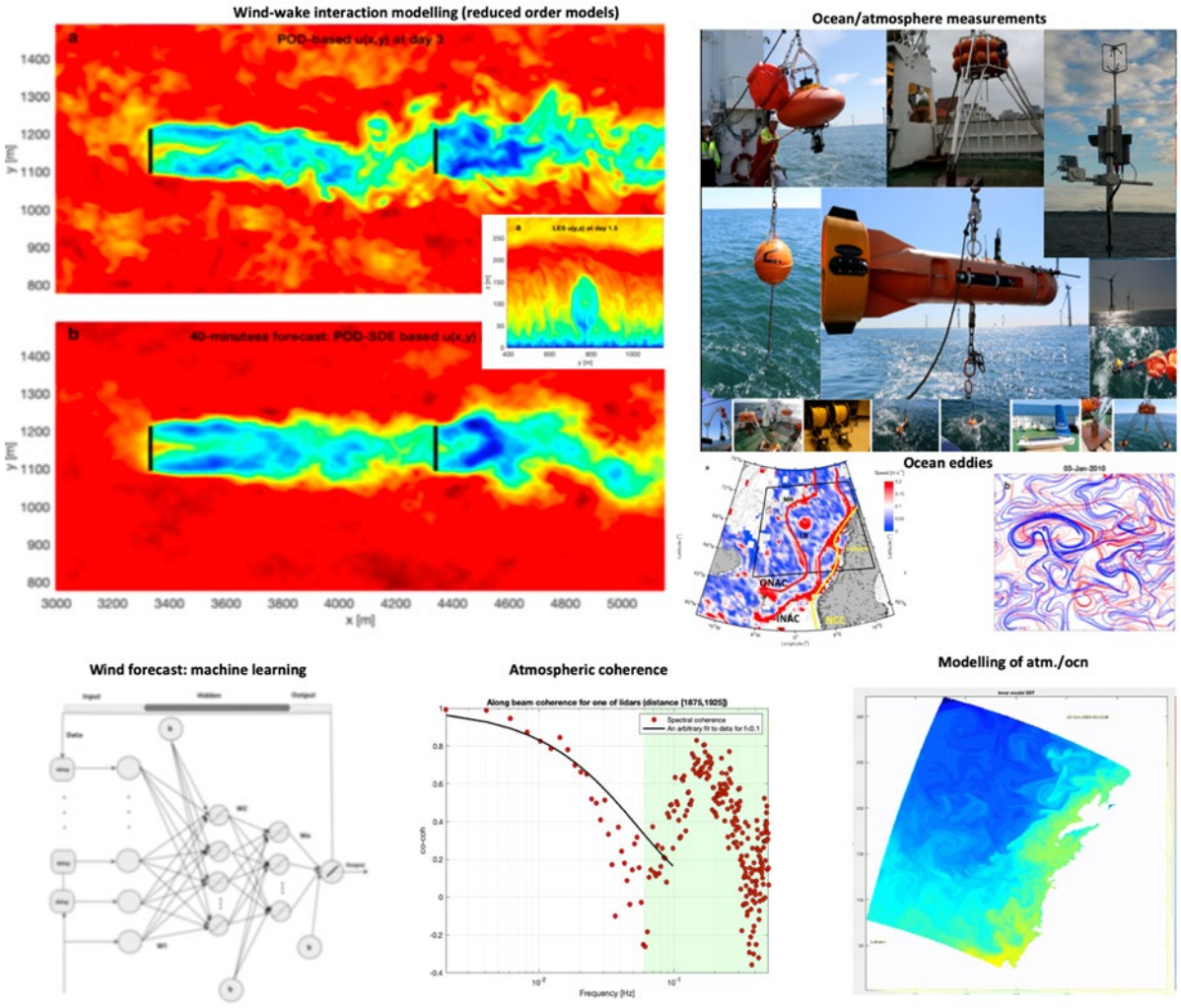
Professor Joachim Reuder works with measurements in the atmospheric boundary layer (ABL) and corresponding data analysis. He also heads the Offshore Boundary Layer Observatory (OBLO), a national infrastructure that provides access to in-situ (e.g. sonic anemometers and instrumented drones) and remote sensing (e.g. lidar and sodar) instrumentation for wind energy research. One of his focus areas is the interaction of the ABL with wind turbines, both with respect to the characterization of the incoming wind field, and the structure and dynamics of wind turbines and wind farm wakes.

Picture: OBLO instrumentation. Photo credit: Joachim Reuder

Associate professor Ignacio Herrera Anchustegui works at the Faculty of Law. His research interests are on the regulation of energy markets with a special emphasis on offshore wind electricity. In addition to BOW he is affiliated with the Bergen Center for Competition Law & Economics (BECCLE). He has devoted a good part of my academic career to market and competition issues in the field of public procurement and buyer power. Currently, Ignacio is the principal investigator of the research project "Governing Offshore Wind: Legal Challenges, Market Opportunities and Policy Perspectives (GOV-WIND)" in which he aims to conduct a critical and rigorous

interdisciplinary analysis of the current regulation of offshore wind in the EU/EEA and other selected jurisdictions from a market-oriented perspective.

Associate Professor Mostafa Bakhoday Paskyabi is interested in multiscale numerical modeling of ocean and atmospheric processes from mesoscale to small scales with focus on offshore wind energy and environmental applications. He has worked as an observational oceanographer for several years and has been involved in acquiring, processing and interpreting data collected on both sides of air-sea interface (e.g. atmospheric measurements from sonic anemometers). His main interests are modelling/parameterizing/measuring wind-wave-current interaction processes in the area of offshore wind farms, wave-turbulence interactions, and oceanic and atmospheric (mixed layer) instabilities. Moreover, he has a bachelor and master's degree in applied mathematics with expertise on optimization, solving deterministic/stochastic differential equations, machine learning for short term forecast of air-sea quantities, and statistical data-driven methods.



PhD candidate Astrid Nybø works with characterizing the offshore wind field with respect to analysis of large offshore wind turbines. She evaluates turbulence models

against measurements, with focus on their ability to represent the relevant characteristics of the incident wind field towards dynamic response analysis of wind turbines. Their ability to represent coherence is of special interest.

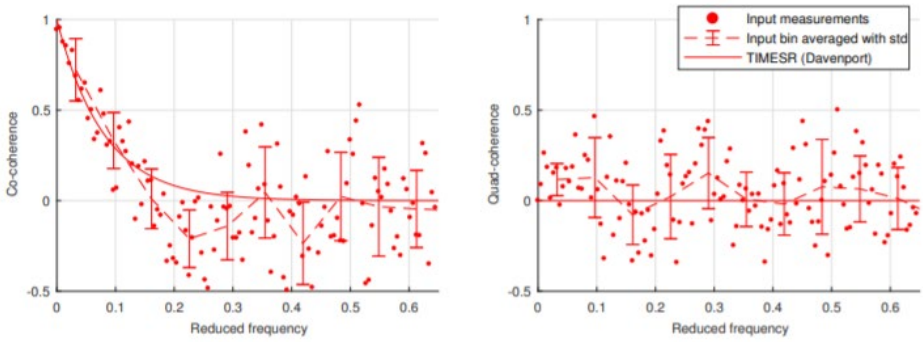
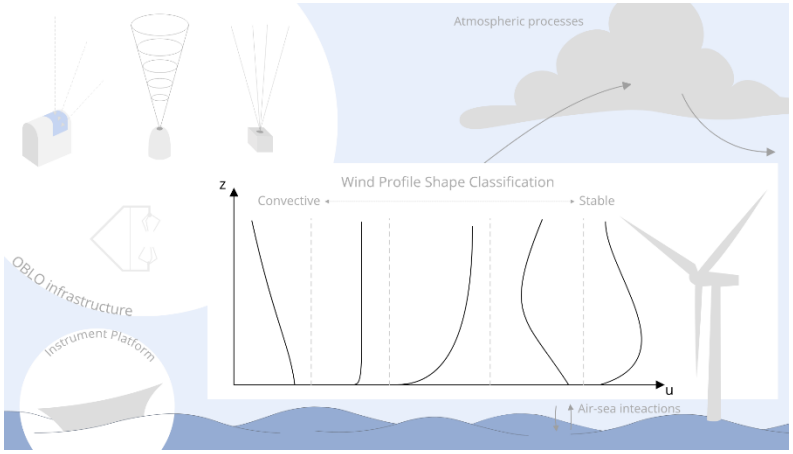


FIGURE 8 Vertical coherence of measurements between 80 and 40 m for the neutral 12.5 m/s case.

Postdoc Thomas Hansen has a background in aerodynamic modelling and performed his PhD on aerodynamic optimization for wind turbine application using evolutionary and surrogate-based methods. At BOW Thomas work on aerodynamic modelling of offshore wind turbines and optimization to reduce the cost of future wind farms.

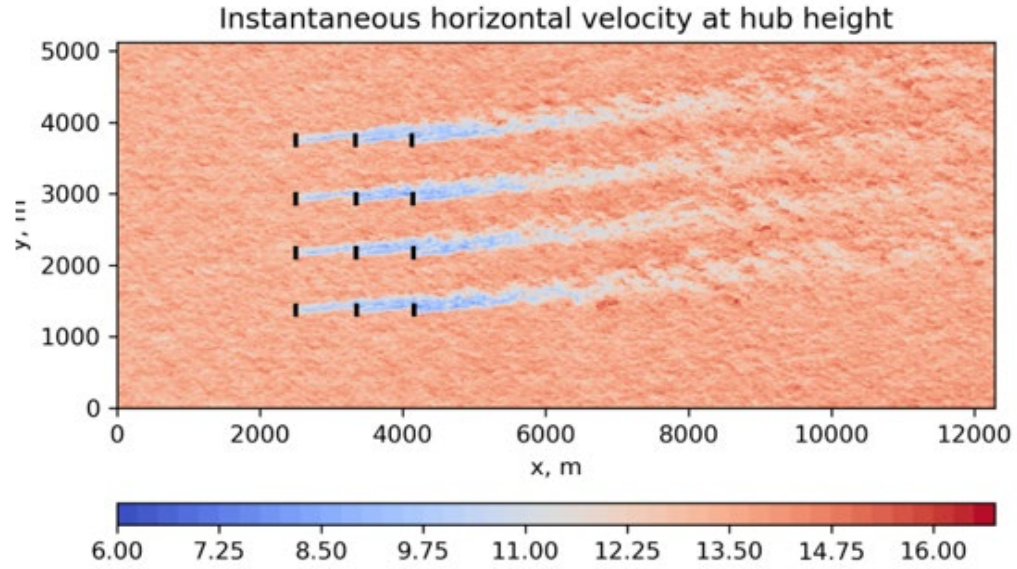
Postdoc Etienne Cheynet works on the characterization of atmospheric turbulence in the marine atmospheric boundary layer. He uses both traditional anemometry and remote sensing of wind as a mean to collect data. New measurement techniques will also be explored. As his research background includes structural vibrations, he aims to explore the relationship between atmospheric turbulence and the associated measured dynamic response of offshore wind turbines.

PhD candidate Christiane Duschas's work focuses on sampling and evaluating the vertical structure of the Marine Atmospheric Boundary Layer, utilizing the instruments included in the Offshore Boundary Layer Observatory (OBLO). The core instrumentation, installed over the course of several measurement campaigns consist of pulsed and continuous-wave profiling doppler Lidars, passive microwave radiometers and sonic anemometers. Among others, Christiane studies the potential of varying instrument setups on different offshore platforms (e.g. buoys and ships) to sample the evolution of characteristic marine wind speed profiles,



stability conditions, turbulent fluxes, air-sea interactions and in general the governing atmospheric processes, in order to create a high-quality database to evaluate the possible risks and impacts for future offshore wind turbine installations.

PhD candidate Maria Krutova works with Large Eddy Simulations of wakes from offshore wind turbines and wake interaction inside wind farms. She studies wake meandering and turbulence statistics in a wake from a wind turbine using analytical wake models.

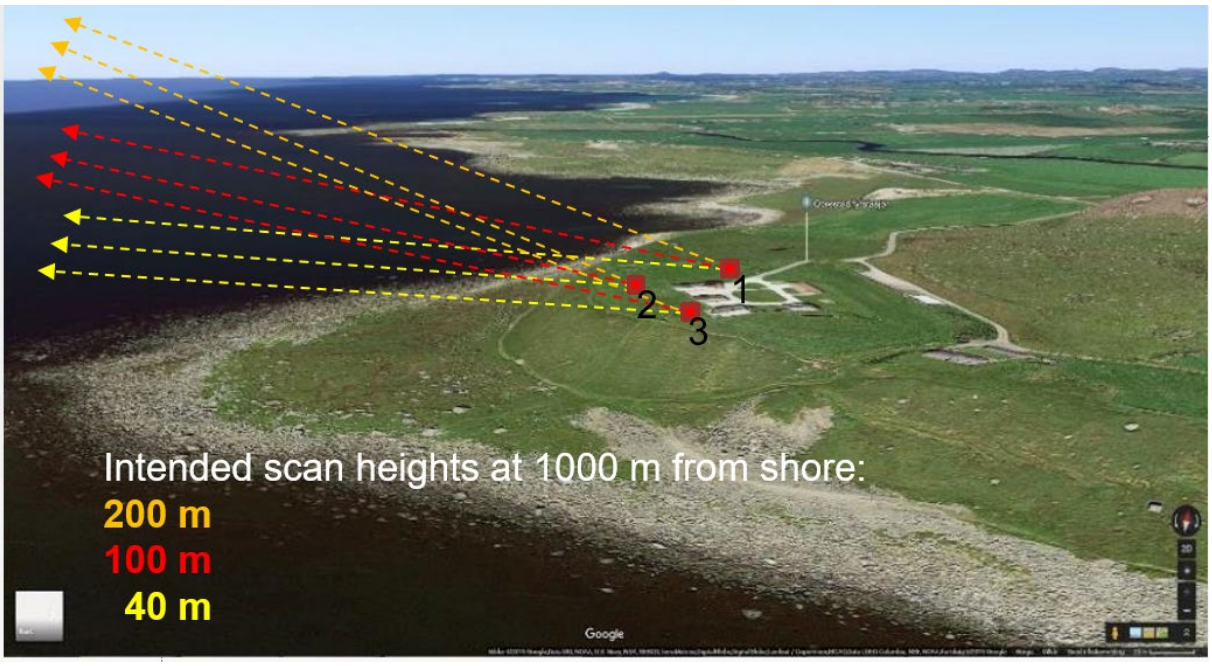


Picture: Large Eddy Simulations (LES), PALM code. Simulation of wind farm wakes. Photo credit: Maria Krutova

Ongoing projects 2019

COTUR campaign

COTUR (Measuring COherence and TURbulence with lidars) is a joint research project under the lead of NORCE (former CMR) with the Geophysical Institute of the University of Bergen, the University of Stavanger, and Equinor as partners. Main goal is the investigation of coherence in the turbulent wind field at scales that are relevant for state-of-the-art offshore wind turbines, with rotor diameters of beyond 150 m. Such data on horizontal coherence in the offshore wind turbulence are not available. Core of the campaign is the deployment of three scanning lidar systems (Leosphere WindCube 100S) in a triangular setup that are operated synchronized.



Picture: Illustration of the different scan heights for the COTUR campaign. Photo credit: Etienne Cheynet.

Funding for research projects acquired in 2019

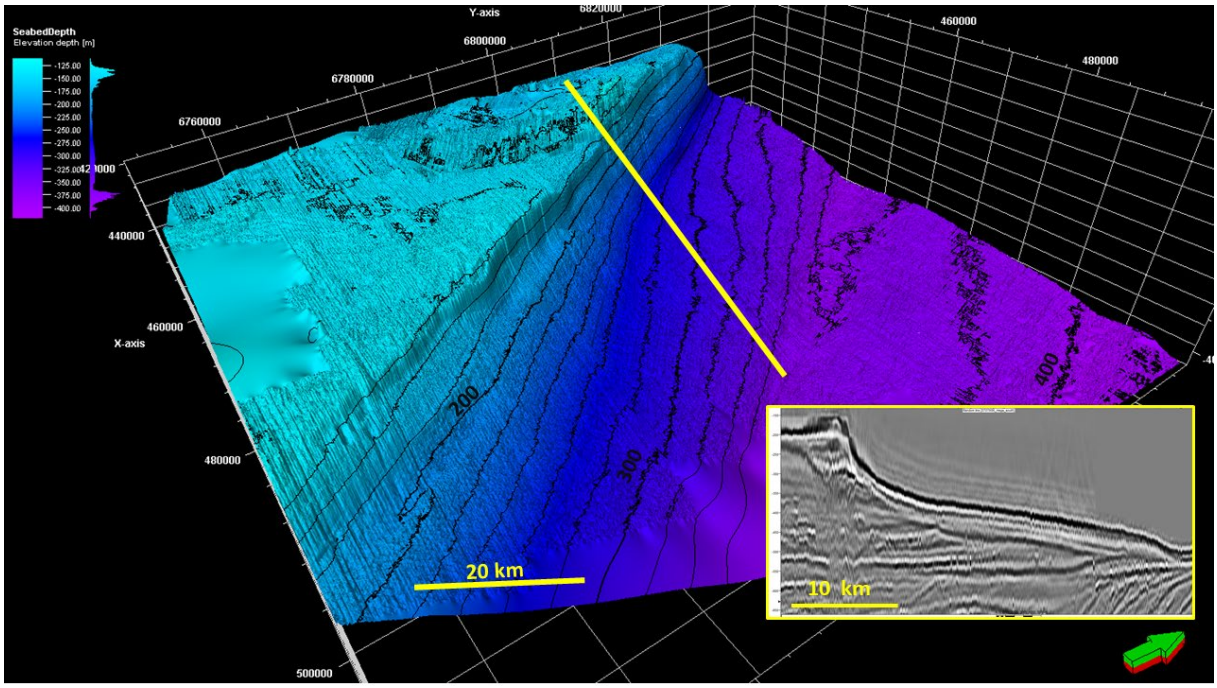
Academia Agreement Funding

Picture: The PIs of the projects that received Academia Agreement funding. From left: Mostafa Bakhoday-Paskyabi, Bodil Holst, Joachim Reuder, Sigrid Eskeland Schütz, Haflidi Haflidason. Photo credit: UiB

The following offshore wind projects got funding from the Academia Agreement between the University of Bergen and Equinor:

- **Large Eddy Simulation Modeling of Offshore Wind Farms Under the Influence of Varying Atmospheric Stability and Sea-State Conditions**
  - PI: Mostafa Bakhoday-Paskyabi, Associate Professor at BOW / Geophysical Institute
- **Designing a Refined Legal Framework for Legitimate Offshore Wind in the North Sea Basin (DeWindSea)**
  - PI: Sigrid Eskeland Schütz, Professor at the Faculty of Law
- **Estimation and Prevention of Erosion on Offshore Wind Turbine Blades**
  - PIs: Bodil Holst, Professor at the Department of Physics and Technology and Joachim Reuder, professor at BOW / Geophysical Institute
- **Maringeologisk grunnundersøkelse for havvindsinstallasjoner**
- PIs: Haflidi Haflidason, Professor at the Department of Earth Science and Christian Haug Eide, Associate Professor at the Department of Earth Science

In addition to the projects, Bergen Offshore Wind Centre (BOW) was awarded one Associate Professor II position, one Professor II position and funds for a field course in wind energy.



Picture: 3D map of the North Sea seabed using seismic data. Photo credit: Haflidi Haflidason

CONWIND

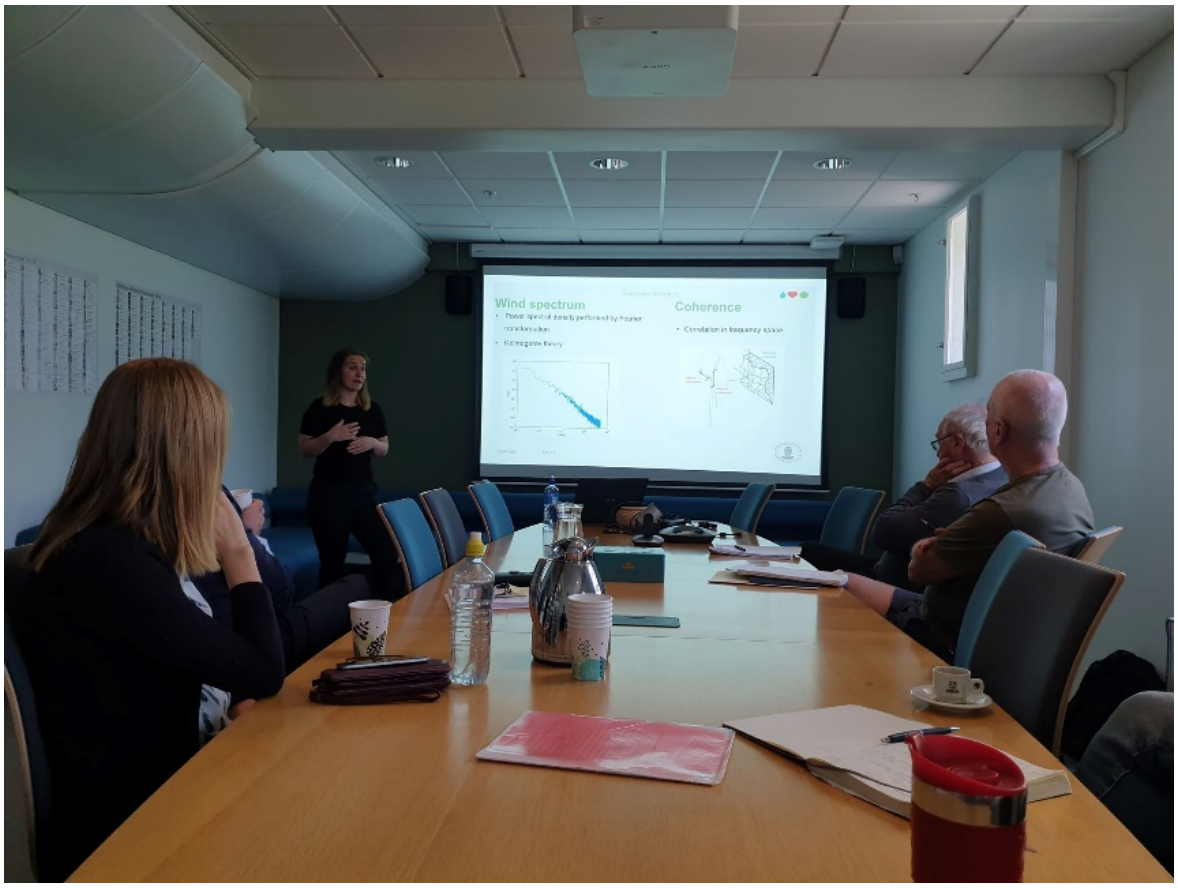
CONWIND is a Norwegian-Chinese collaborative project on offshore wind technologies, running over three years. The project is led by NORCE and have partners from both former Norwegian research centers for environmentally friendly energy (FME) on offshore wind: NORCOWE and NOWITECH.

The University of Bergen/Bergen Offshore Wind Centre (BOW) leads work package 1 on wind prediction (nowcasting) and wind farm control. Mostafa Bakhoday-Paskyabi is the main contact person for the project at BOW.

Education

Candidates

There are currently four active candidates with offshore wind related themes enrolled in the 2 year's master's programme in energy and two enrolled at the Faculty of Law. Four master's candidates and one PhD candidate graduated in 2019. The list can be found in Appendix 1.



Picture: Master's candidate Maylinn Myrtvedt presents her master's thesis on dynamics of offshore wind turbines. Photo credit: Torill Eidsvaag

Field course in wind energy – wind measurements

Picture: Field course in wind energy. Photo credit: Pablo Saavedra G. (Twitter)

Joachim Reuder, Mostafa Bakhoday-Paskyabi, Pablo Saavedra, and Christiane Duscha from GFI/BOW arranged a field course in wind energy. The development and realization of the course was financially supported by a grant from the academia agreement. The course gave an introduction to various measurement and analysis techniques relevant for wind energy research. Following the introduction lectures, the students participated in a field trip to Ulven. Here they got a hands-on training in the set-up and operation of state-of-the-art measuring equipment and performed real wind measurements with various in-situ and remote sensing measurement techniques. The one-week deployment of the instrumentation was followed by an extensive data analysis based on the own measurement data. To earn 5 ETCS, the students also had to submit a written report with their analysis of the collected data.

Horizon2020 funding for two Marie-Curie ITN research schools: LIKE and Train2Wind

Joachim Reuder from the Geophysical Institute (GFI) and Bergen Offshore Wind Centre (BOW) is participating in two new Marie Skłodowska-Curie Actions (MASC-ITN) that got approved funding in June and September 2019. Both training networks are related to topics that are in the main focus areas of BOW.
“LIKE” (Lidar Knowledge for Europe; https://www.msca-like.eu/) aims to foster training and education of young researchers on emerging laser-based wind measurement technologies and their translation into industrial applications. GFI/BOW will be the host institution of two of the 15 PhD projects. One will be related to the

characterization of the atmospheric boundary layer for the airborne wind energy device Kitemill, a tethered unmanned aircraft that will drive a generator on the ground. The second one will investigate turbulence in complex terrain and its implications for air traffic safety at exposed airports by model simulations and lidar measurements. Although not directly related to offshore wind energy, both the modelling and measuring activities in the PhD project will directly influence future offshore wind related research.

“Train2Wind” (TRAINing school analysing enTRAINment in offshore WIND farms) will investigate the entrainment process using advanced high-resolution computer modelling and wind tunnel models together with measurements of the wind field above, in and downstream of large wind farms, using lidars, radars, satellites and Unmanned Aerial Systems (UAS). GFI/BOW will be the host institution of two PhD projects. Each PhD project will be supported by a research assistant for 12 to 18 months. The first PhD project is dedicated to ship based lidar measurements inside and around wind farms and has a strong focus on motion correction of lidar measurements from a moving platform. The second PhD project will focus on the development, test and validation of a multicopter-based turbulence measurement system using sonic anemometry with the aim to provide unrivaled measurement capabilities, both for turbulence and coherence estimation in the incoming wind field, as well as for detailed studies of the structure and dynamics of single turbine wakes.

New specialization in wind and ocean energy on the 5-year Integrated master’s program in energy

“Wind and ocean energy” is one of four new specializations the students on the 5 year integrated master’s program in energy. The new structure of the energy program will be in operation from 2020. The new specialization now includes a new course on wind and wave induced loads.

Highlighted events

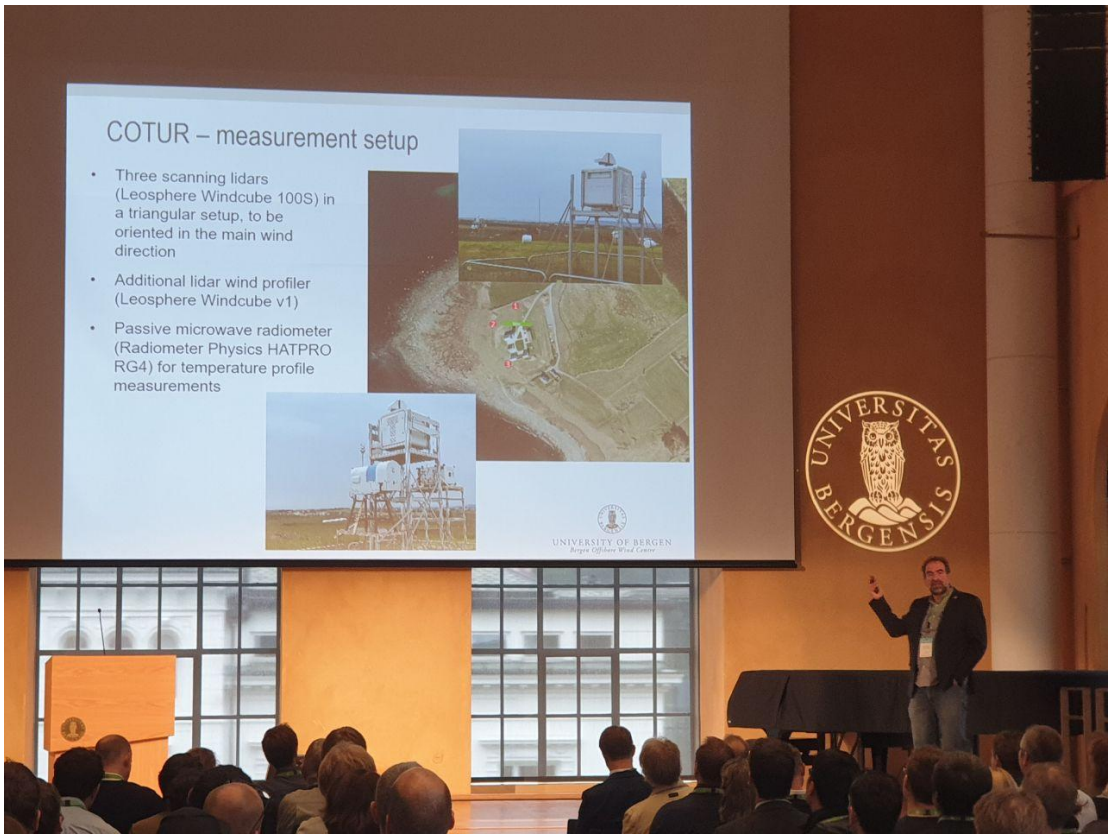
Offshore Wind at Arendalsuka

Offshore wind was high on the agenda at the political festival Arendalsuka. In 2019 the festival was held 12 – 16 August. BOW director Finn Gunnar Nielsen joined UiB's "climate sail" to Arendal and took part in the panel debate on "The potential of floating offshore wind" organized by Bergen Næringsråd.

Picture: Finn Gunnar Nielsen gives an introduction to offshore wind onboard Statsraad Lehmkul on the climate sail to Arendal. Photo credit: Tore Furevik, Twitter.

Science meets industry

On 12 September 2019 Bergen Offshore Wind Centre (BOW) co-hosted the offshore wind conference Science Meets Industry in the University Aula. Around 180 participants from academia, the industry sector and the public sector contributed to making the conference a memorable event. Joachim Reuder and Nils Gunnar Kvamstø presented results from research activities in BOW and all projects with funding from the Akademia Agreement presented posters. **Picture:** Kai Stolz from GCE Ocean Technology on stage at the Science Meets Industry conference. Photo credit: Jens H. Ådnanes



Picture: Joachim Reuder presents results from the COTUR campaign at the Science Meets Industry conference. Photo credit: Torill Eidsvaag

The prime minister's high-profile meeting on offshore wind at UiB

The prime minister invited industry CEOs, leaders from research institutions and representatives from interested organizations to a high-profile meeting on offshore wind at the University of Bergen. Director of Bergen Offshore Wind Centre (BOW), Finn Gunnar Nielsen, was one of the invited guests.

Picture: Erna Solberg talks at the high-profile meeting at Marineholmen. Photo credit: Jens H. Ådnanes

Memorandum of Understanding with DTU Wind

In September the Vice Dean for Energy Transition, Gunn Mangerud, and centre director, Finn Gunnar Nielsen, signed a Memorandum of Understanding between Bergen Offshore Wind Centre and DTU Wind on external conditions within offshore wind energy.

Suggested areas of cooperation are:

- Measurements and modelling of offshore wind & wake fields
- Wind and wave induced loads
- Weather induced erosion on wind turbine blades

SAC dialogue meeting

On 13 September 2019 Bergen Offshore Wind Centre had a dialogue meeting with the Scientific Advisory Committee. The committee gave advice on strategy, focus and communication which amongst other things led to the organization of a strategy seminar for the centre. SAC presented BOW with 5 challenges:

1. Create a strategy.
2. Decide where the focus should be.
3. Make a clear organizational structure – who decides.
4. Have a plan for funding
5. Have a plan for communication

Strategy seminar

The strategy seminar was held on 11 December 2019 at Scandic Hotel Ørnen. Around 25 people across most relevant disciplined took part in the strategy seminar. In addition, BOW's Steering Committee participated in the seminar. The seminar yielded many interesting discussions that will be used in the further strategy work. Discussion topics were, amongst others, key goals and research questions, funding sources, communication and innovation. Åshild Nylund from the Communication Division and Yves Aubert from the Division of Research and Innovation talked about stakeholder communication and innovation respectively. They also took part in the following group discussions.

Communication and outreach

Researchers form Bergen Offshore Wind Centre (BOW) have presented their work to stakeholders within the scientific community, political arena and general public through various activities and meetings. A (non-exhaustive) list of communication activities is given in Appendix 1.

High Level Panel for a Sustainable Ocean Economy report: The Ocean as a Solution for Climate Change: 5 Opportunities for Action

The Ocean as a Solution for Climate Change: 5 Opportunities for Action, published 23 September, 2019 at the U.N. Secretary-General's Climate Action Summit in New York, finds that the ocean economy and coastal regions could play a much bigger role in shrinking the world's carbon footprint and limiting global temperature rise to 1.5°C than previously realized. One of the 5 opportunities outlined in the study is harnessing ocean-based renewable energy. The largest contribution herein comes from offshore wind energy. Finn Gunnar Nielsen from Bergen Offshore Wind Centre and Peter M Haugan from the Institute for Marine Research and Geophysical Institute at the UiB co-authored the chapter on renewable energies.

EERA JP Wind & SETWind Annual Event

Joachim Reuder and Mostafa Bakhoday-Paskyabi joined the EERA JP Wind & SETWind Annual Event in Amsterdam 24th and 25th of September. Joachim Reuder presented results from the wind measuring campaign COTUR.

Bergen Offshore Wind Centre – website and Twitter account

The website was further developed in 2019 to provide an overview of the centre's ongoing activities and affiliated personnel. Planned additions are a section on education, a research section and more information on the structure and strategy of the centre.

The Twitter account @BergenWind currently has 158 followers and is regularly updated with news from the centre.

Hearing on opening of areas for offshore electricity production

Affiliated personnel at BOW contributed to the hearing sent from UiB to the Ministry of Petroleum and Energy on the opening of areas for electricity production offshore. Especially the Faculty of Law gave detailed input on the regulation of offshore wind. The work with the hearing was led by UiB's Energy Director Kristin Guldbrandsen Frøysa.

Newsletters

One newsletter was sent out in 2019. The aim for the centre is to send 3 – 4 newsletters per year depending on the activity level.

Picture: Ignacio Herrera Anchustegui presents his views on “The Norwegian Offshore Wind Paradox” at the Energy Lab, University of Bergen. Photo credit: UiB CET, Twitter.

Appendix 1 – list of publications

Scientific publications

- Nybø, Astrid & Nielsen, Finn & Reuder, Joachim. (2019). Processing of sonic anemometer measurements for offshore wind turbine applications. Journal of Physics: Conference Series. 1356. 012006. 10.1088/1742-6596/1356/1/012006. (access)
- High Level Panel for a Sustainable Ocean Economy report: The Ocean as a Solution for Climate Change: 5 Opportunities for Action (Chapter on renewable energy co-authored by Finn Gunnar Nielsen and Peter Haugan)
- Flügge, M., M. Bakhoday-Paskyabi, J. Reuder, and O. El Guernaoui, 2019 Wind stress in the coastal zone: Observations from a buoy in Southwestern Norway. *Atmosphere,* 10(9), 491; DOI:10.3390/atmos10090491 (access)
- Wagner, D., G. Steinfeld, B. Witha, H. Wurps, and J. Reuder Low Level Jets over the Southern North Sea. *Meteorologische Zeitschrift,* Online first, DOI:10.1127/metz/2019/0948 (access)
- Schütz, Sigrid Eskeland; Slater, Anne-Michelle. From strategic marine planning to project licences – Striking a balance between predictability and adaptability in the management of aquaculture and offshore wind farms. Marine Policy 2019 s. 1-11UiB (access)

Media publications

- Forskning.no "Ustabil havvind kan bli til stabil energiforsyning"
- Dagens Næringsliv "Betre kunnskap er avgjerande for havvindindustrien"
- TV2 "Økt tro på flytende vindturbiner: – Nordsjøen er blant områdene med størst potensial i verden"
- NRK Hordaland "Motstanden mot vindkraft på land aukar"
- På Høyden "Alle vil ha Erna med på havvind"
- Khrono "Ingen lovnader om satsing på havvind"
- På Høyden "— All kompetansen vi har på vindenergi er en godt bevart hemmelighet"
- På Høyden "Vind vinner i årets Akademia-tildeling"
- Sysla "Kva vil Norge med havvind?"
- Sysla "Norge bør satsa på flytande havvind"
- BT: "Hva om vi erobrer havet med vindturbiner?"
- NRK: "Havvind er en opplagt mulighet for å skape framtidsrettede arbeidsplasser uten store naturinngrep"

- Sysla: "Et område på 6400 kvadratkilometer på sokkelen er det som trengs for at havvind skal bli like stort som vannkraft"
- Stavanger Aftenblad "Dette fyret skal nå vise veien for gigantiske vindturbiner til havs"

News from uib.no

- Dette mener nordmenn om vindkraft på land og til havs (19.12.2019)
- Havrapport: Bruk havet for å redde klimaet (23.09.2019)
- Samla havvind-kompetansen (19.09.2019)
- Ut av det blå og inn i det grønne (04.09.2019)
- Kartlegger havbunnen for vindmøllefundamentering (02.09.2019) (also referred to on geoforskning.no)
- Støtte til flere havvindsøknader gjennom Akademiaavtalen (17.06.2019)
- Havvind på Arendalsuka (09.08.2019)
- Ser fremover i nye lokaler (07.06.2019)

News from uib.no/en

- Ocean report: Offshore wind can provide significant contribution to CO2 mitigation (23.09.2019)
- Out of the blue and into the green (24.06.2019)
- Academia Agreement: Several offshore wind projects receive funding (17.06.2019)
- Measuring the wind (22.01.2019)

Appendix 2 – project funding

Akademia			
Prosjekt/ Fokus område	**Beløp (million NOK)**	**PI**	**Kommentar**
Large Eddy Simulation Modelling of Offshore Wind Farms Under the Influence of Varying Atmospheric Stability and Sea-State Conditions	4,866	M. Bakhoday-Paskyabi	Varighet 3 år
Designing a Refined Legal Framework for Legitimate Offshore Wind in the North Sea Basin" (DeWindSea)	5	S. Eskeland Schutz	Varighet 3 år
Estimation and Prevention of Erosion on Off-Shore Wind Turbine Blades	5	B. Holst	bevilgning 5 mill, søkt 6.5 + midler til phd fra fakultetet
Maringeologisk grunnundersøkelse for havvinds-installasjoner	5	H. Haflidason	Varighet 3 år
Feltkurs i vindenergi	0,3	F.G. Nielsen	Engangssum
II er stillinger	1,399	J. Reuder (2), F.G. Nielsen,	2 stillinger innvilget, varighet 3 år
NFR			
Prosjekt/ Fokus område	**Beløp**	**PI**	**Kommentar**
Research on smart operation control technologies for offshore wind, CONWIND (ledet av NORCE), beløp er tildeling til UiB/BOW	6	M. Bakhoday-Paskyabi	
Total prosjekfinansiering (feltkurs og IIer-stillinger ikke inkludert):	25,866		
Estimert årlig prosjektfinansiering	7,240		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