

## Publikationsliste / List of publications

### ForWind - Zentrum für Windenergieforschung, Universität Oldenburg

Projektname: Verifikation von Offshore-WEA  
Kurzname in RAVE: OWEA (FKZ 0327696B)  
Stand: August 2014

### Veröffentlichungen / Publications

#### Dissertationen

Milan, P.: The conversion dynamics of wind energy systems treated as a complex stochastic process, Dissertation, Universität Oldenburg, 2014.

Sušelj, K.: Modelling of the near-surface wind speed, Dissertation, Universität Oldenburg, 2009.

#### Geprüfte Aufsätze / Reviewed articles

Wächter, M.; H. Heißelmann, H.; Hölling, M.; Morales, A.; Milan, P.; Mücke, T.; Peinke, J.; Reinke, N.; Rinn, P.: The turbulent nature of the atmospheric boundary layer and its impact on the wind energy conversion process, *Journal of Turbulence* 13, 1-21 (2012). doi:10.1080/14685248.2012.696118

Gottschall, J.; Peinke, J.: Impact of Atmospheric Turbulence on the Power Output of Wind Turbines in Progress in Turbulence III, Springer Proceedings in Physics 131, Springer, Berlin, 2010.

Sušelj, K.; Sood, A.; Heinemann, D.: North Sea near-surface wind climate and its relation to the large-scale circulation patterns, *Theoretical and Applied Climatology*, 99, 403-419.

Milan, P.; Wächter, M.; Barth, St; Peinke, J.: Power Curves for Wind Turbines, in: Rebennack, S.; Pardalos, P. M.; Pappu, V.; Pereira, M. V.; Illiadis, N. A. (eds.), *Handbook of Wind Power Systems*, Springer, in print.

Peinke, J.; Steinfeld, G., G.; Medjroubi, W.; Stoevesandt, B.: Numerical Approximation Schemes for the Navier Stokes Equations, and some Technical Applications in "Modern Computational Science 09," Lecture Notes from the Int. Summer School, eds. R. Leidl and A. K. Hartmann, BIS-Verlag, Carl von Ossietzky

Universität Oldenburg, pp. 253, 200).

Sušelj, K.; Sood, A.: Improving Mellor-Yamada-Janjic parameterization for the wind conditions in the Marine Planetary Boundary Layer. *Boundary-Layer Meteorology* (2009).

Milan, P.; Wächter, M.; Peinke, J.: A Dynamical Approach to Wind Power Generation 5th PhD Seminar on Wind Energy in Europe, 2009.

Morales, A.; Wächter, M.; Peinke, J.: Gust description by means of increment statistics EWEC Proceedings PO.170, 2009.

Morales, A.; Wächter, M.; Peinke, J.: Characterization of High-Frequency Atmospheric Turbulence 5th PhD Seminar on Wind Energy in Europe, 2009.

Peinke, J.: Intermittency and extreme events Intern. Conference on Complexity in Physics, ENS Lyon, Frankreich, 1-5 June 2009.

Peinke, J.: The impact of turbulence on wind turbines – a stochastic approach for the dynamics Cornell Workshop on Large-Scale Wind Generated Power, Cornell University, Ithaca, USA, 12-13 June 2009.

Sood, A.; Bange, J.: Decaying Coherent Eddy Structures and Turbulent Fluctuations in Wind Turbine and Wind Farm Wakes – analysis of airborne measurements Euromech Colloquium 508 on Wind Turbine Wakes, Madrid.

Steinfeld, G., G.; Raasch, S.; Tambke, J.; Peinke, J.; Heinemann, D.: Untersuchung der Strömungs- bedingungen und Nachlaufbelastungen in Offshore-Windparks METTOOLS VII, Hamburg.

Steinfeld, G., G.; Raasch, S.; Tambke, J.; Peinke, J.; Heinemann, D.: Development of a large-eddy simulation (LES) model for modelling the far wake effects of offshore wind farms Euromech Colloquium 508 on Wind Turbine Wakes, Madrid.

Sood, A.; Schmidt, M.; Heinemann, D.; Sušelj, K.: Improving Coastal Wind Resources Assessment using High Resolution Surface Forcing in the German Bight, Poster at European Geosciences Union General Assembly (EGU), Vienna, Austria, Geophysical Research Abstracts, Vol. 10, EGU2008-A-03511, 2008, SRef-ID: 1607-7962/gra/EGU2008-A-03511. 13-18. Apr. 2008.

Sušelj, K.; Sood, A.: Adjusting Mellor-Yamada-Janjic Boundary Layer Parametrization for Offshore Surface Conditions, Poster at European Geosciences Union General Assembly (EGU), Vienna, Austria, Geophysical Research Abstracts, Vol. 10, EGU2008-A-03808, SRef-ID: 1607-7962/gra/EGU2008-A-03808, 13-18. Apr. 2008.

Sušelj, K.; Sood, A.: Improving Mellor-Yamada-Janjic Boundary Layer Parameterization, Case Of Marine Atmospheric Boundary Layer, 18th Symposium on Boundary Layer and Turbulence, AMS, Stockholm, Sweden, 9th to 13th June

2008.

Wächter, M.; Rettenmeier, A.; Kühn, M.; Peinke, J.: Wind Velocity Measurements Using a Pulsed LIDAR System: First Results, IOP Conf. Ser.: Earth Environ. Sci. 1, 012066 (2008).

### **Expertengeprüfte Artikel / Peer-reviewed articles**

Milan, P.; Wächter, M.; Peinke, J.: Turbulent Character of Wind Energy, Phys. Rev. Letter, 110 (13), 138701, (2013).

Morales, A.; Wächter, M.; Peinke, J.: Characterization of Wind Turbulence by Higher-Order Statistics, Wind Energy, Wind Energy 15 (3), pp. 391–406, (2011).

Wächter, M.; Milan, P.; Mücke, T.; Peinke, J.: Power performance of wind energy converters characterized as stochastic process applications of the Langevin power curve, Wind Energy 14 (6), pp. 711-717, (2011).

### **Artikel / Articles**

Milan, P.; Wächter, M.; Peinke, J.: Stochastic Modeling of Wind Power Production EWEA 2011 Proceedings, Brüssel, March 14th-18th 2011, (2011).

Wächter, M.; Hölling, M.; Milan, P.; Peinke, J.: Turbulence and the Nature of the Atmospheric Boundary Layer Proceedings of the 6th AIAA Theoretical Fluid Mechanics Conference, Hawaii, June 27th-30th 2011, (2011).

### **Weitere Veröffentlichungen / Other publications**

Tambke, J.: Wind Energy Meteorology - Resource Assessment and Forecasting (8 hours lecture), Bremerhaven International Summer School, Wind Energy Course, Bremerhaven, Germany, August 2008.

### **Vorträge / Oral presentations**

### **Konferenzbeiträge / Conference contributions**

Dörenkämper, M., Tambke, J., Steinfeld, G.; Heinemann, D., Kühn, M., 2012: Atmospheric Impacts on Power Curves of Multi-Megawatt Offshore Wind Turbines, Conference Proceedings to "The Science of Making Torque from Wind", Oldenburg, 2012.

Dörenkämper, M., Tambke, J., Steinfeld, G.; G., Heinemann, D., Kühn, M., 2012: Influence of Marine Boundary Layer Characteristics on Power Curves of Multi-Megawatt Offshore Wind Turbines, Conference Proceedings DEWEK 2012, Bremen, 2012.

Kühn, M., Steinfeld, G.; G., Tambke, J., Trujillo, J., Wächter, M., Chen, P.W., Käufer, D., Lutz, T., Meister, K., Quappen, J., Rettenmeier, A., Smolka, U., Dubois, J., Emeis, S., Foreman, R., Kruse, J., Kühnel, D., Neumann, T., Westerhellweg, A., Siegmeier, B., 2012: Verification of Offshore Wind Turbines at

,alpha ventus‘ – Overview on the Results of the Project RAVE-OWEA, DEWEK 2012, Bremen, 2012.

Steinfeld, G., G., Stütz, E., 2012: Interaction of wind turbine wakes and inter wind farm effects, RAVE International Conference 2012, Bremerhaven, Deutschland.

Steinfeld, G.; G., Witha, B., Stütz, E., Heinemann, D., 2012: Investigation of the impact of atmospheric stability on the flow conditions in the offshore wind farm alpha ventus by the means of large-eddy simulation, EMS Annual Meeting 2012, Lodz, Polen.

Steinfeld, G.; G., Witha, B., Dörenkämper, M., Heinemann, D., 2012: Analysis of Thermal Effects on the Wind Farm Flow by the Means of Large-Eddy-simulation, DEWEK 2012, Bremen, Deutschland.

Stütz, E., Steinfeld, G.; G., Heinemann, D., 2012: Mesoscale Simulation Study of Large Offshore Wind Farms, DEWEK 2012, Bremen, Deutschland.

Kühn, M.; Steinfeld, G.; Tambke, J. Trujillo, J.-J., Wächter, M.; Cheng, P. W., Kaufer, D., Lutz, T., Meister, K., Quappen, J., Rettenmeier, A., Smolka, U., Dubois, J. , Emeis, S. , Foreman, R., Kruse, J. , Kühnel, D. , Neumann, T. Westerhellweg, A. and Siegmeier, B. Verification of offshore wind turbines at ‘alpha ventus’ - overview on the results of the project rave-owea. In DEWEK; Bremen, Germany; November, 2012.

Hölling, M.; Morales, A.; Wächter, M.; Peinke, J.: Atmospheric Turbulence and its Relevance for Wind Energy Related Research 64th Annual Meeting of the American Physical Society – Division of Fluid Dynamics, (APS-DFD) Baltimore, USA, November 20th- 22th 2011.

Kühn, M.; Steinfeld, G.; G.; Dubois, J.; Emeis, S.; Foreman, R.; Kruse, J.; Lutz, T.; Meister, K.; Neumann, T.; Quappen, J.; Rettenmeier, A.; Siegmeier, B.; Tambke, J.; Trujillo, J.J.; Wächter, M.: Verification of Offshore Wind Turbines at Alpha Ventus – Overview on First Measurement Analyses EWEA Offshore 2011, Amsterdam, (2011).

Kuhnle, B.; Trujillo, J.J.; Kühn, M.: Analysis of Aero-Elastic Simulations in Wind Farms With Measurements at the Offshore Test Field Alpha Ventus 7th EAWC PhD Seminar 2011 Seminar on Wind Energy in Europe, Delft, (2011).

Morales, A.: Adaptive De-Trending and Stochastic Analysis of Wind Time Series DPG 75th Annual Meeting and Spring Meeting 2011, Dresden March 13th-18th 2011.

Morales, A.: Characterization of Wind Turbulence With Higher-Order Statistics, Boundary Layer Turbulence (BlT-Bbos) KNMI (Royal Netherlands Meteorological Institute), De Bilt Netherlands, May 26th 2011.

Morales, A.; Peinke, J.; Millan, P.: Statistical Unfolding of Atmospheric Turbulence 64th Annual Meeting of the American Physical Society – Division of Fluid Dynamics (APS- DFD) Baltimore, USA, November 20th-22th 2011.

Peinke, J.: Analysis of Extreme Weather/Stock Market Events Summer Modern Computational Science: Simulation of Extreme Events (MCSExtreme), University of Oldenburg, August 15th-26th 2011.

Peinke, J.: Stochastic Modelling and Extreme Winds EAWE 2nd Ph.D. School von Karman Institute for Fluid Dynamics, Brussels, Belgium, November 7th-11th 2011.

Rinn, P.; Milan, P.; Wächter, M.; Peinke, J.: Stochastic Modeling of Wind Turbine Characteristics Workshop, Selbstorganisation und Komplexität, Zaferna-Hütte, August 7th- 12th 2011.

Rinn, P.; Milan, P.; Wächter, M.; Peinke, J.: Stochastic Modeling of Wind Turbine Characteristics 7th EAWE PhD Seminar on Wind Energy in Europe, Delft, Netherlands, October 27th-28th 2011.

Rinn, P.; Milan, P.; Wächter, M.; Peinke, J.: Wind Energy Conversion – a Stochastic Response Problem XXXI. Dynamics Days Europe, Oldenburg, September 12th-16th 2011.

Steinfeld, G., G.; Tambke, J.; Peinke, J.; Heinemann, D.: Anwendung eines Grobstruktursimulationsmodells zur Analyse der Strömungsbedingungen in Offshore-Windparks, 2. Fachtagung Energiemeteorologie, Bremerhaven, Deutschland.

Trabucchi, D.; Trujillo, J.J.; Steinfeld, G., G.; Schneemann J.; Machta, M.; Cariou, J.P.; Kühn, M.: Numerical assessment of performance of lidar WindScanner for wake measurements Bruxelles, EWEA 2011.

Trabucchi, D.; Trujillo, J.J.; Steinfeld, G., G.; Schneemann, J.; Kühn, M.: Simulation of measurements of wake dynamics with nacelle and ground based lidar wind scanners Wake Conference Visby, Visby, (2011).

Wächter, M.: Stochastic Modeling of Wind Power Production EWEA 2011, Brüssel, March 14th-18th 2011.

Wächter, M.; Hölling, M.; Milan, P.; Peinke, J.: Turbulence and The Nature of the Atmospheric Boundary Layer 6th AIAA Theoretical Fluid Mechanics Conference, Hawaii, June 27th-30th 2011.

Wächter, M.; Milan, P.; Mücke, T.; Peinke, J.: Stochastic Modeling of Turbulent Wind Fields EERA-Aerodynamics/IEA-Aerodynamics experts meeting, Amsterdam, December 8th-9th 2011.

Hölling, M.: Atmospheric turbulence, wind measurements and stochastic analysis, Seminar, Case Western Reserve University, Cleveland, USA, April 14th 2010.

Hölling, M.; Morales, A.; Schneemann, J.; Mücke, T.; Wächter, M.; Peinke, J.: The relevance of turbulence for wind energy related research, iTi 2010 Conference on Turbulence Bertinoro, Italy, September 19th-22nd 2010.

Kaufert, D.; Fischer, T.; Vorpahl, F.; Popko, W.; Kühn, M.: Different Approaches to

Modelling Jacket Support Structures and their Impact on Overall Wind Turbine Dynamics, DEWEK, Bremen, November 2010.

Milan, P.; Wächter, M.; Peinke, J.: Are wind turbines Langevin processes?, Workshop on Advanced Stochastics and Wind Energy, Oldenburg, September 1st 2010.

Milan, P.; Wächter, M.; Peinke, J.: Stochastic modeling of turbulence-driven Systems: Application to Wind Energy, 63rd Annual Meeting of the American Physical Society, Division of Fluid Dynamics Long Beach, USA, November 21st-23rd 2010.

Mücke, T.; Wächter, M.; Milan, P.; Peinke, J.: Numerical modeling of a WECs power performance under the influence of atmospheric and synthetic wind fields, iTi 2010 Conference on Turbulence Bertinoro, Italy, September 19th-22nd 2010.

Peinke, J.: Atmospheric turbulence at various scales, European Academy of Wind Energy, 1st EAWE/WAUDIT summer school Pamplona, Spain, May 17th-21st 2010.

Schmidt, M.; Mücke, T.; Peinke, J.: Modeling turbulent typhoon time series, IEA WIND – Topical Expert Meeting on Wind Conditions for Wind Turbine Design, Tokio, Japan, December 14th-15th 2010.

Steinfeld, G., G.; Tambke, J.; Peinke, J.; Heinemann, D.: Application of a Large-Eddy Simulation Model to the Analysis of Flow Conditions in Offshore Wind Farms, DEWEK 2010, 10th German Wind Energy Conference, Bremen, November 17th-18th 2010.

Steinfeld, G., G.; Tambke, J.; Peinke, J.; Heinemann, D.: Development of a tool for the study of flow conditions and turbulent loads in offshore wind farms, EWEC 2010, Warschau, April 20th-23rd 2010.

### **Konferenzbeiträge (Artikel) / Conference contributions (articles)**

Milan, P.; Morales, A.; Wächter, M.; Peinke, J.: Wind energy: a turbulent, intermittent resource Proc. EUROMECH Colloquium 528: Wind Energy, Oldenburg, 22.-24.2.2012.

Morales, A.; Peinke, J.: Assessment of turbulence by high-order statistics: Offshore example, Proc. EWEA, Copenhagen, 16.-19.4.2012.

Milan, P.; Wächter, M.; Peinke, J.: Modeling the Turbulent Power Output of a Wind Farm, Proc. DEWEK, Bremen, 7.-8.11.2012.

Würth, I.; Rettenmeier, A.; Schlipf, D.; Cheng, P. W.; Wächter, M.; Rinn, P.; Peinke, J.: Determination of Stationary and Dynamical Power Curves Using a Nacelle-Based Lidar System Proc. DEWEK, Bremen, 7.-8.11.2012.

### **Vorträge (Konferenzen) / Presentations (conferences)**

Milan, P.; Morales, A.; Wächter, M.; Peinke, J.: Wind energy: a turbulent, intermittent resource (Talk) EUROMECH Colloquium 528 “Wind Energy”,

Oldenburg, 22. - 24. February 2012.

Morales, A.; Peinke, J.: Assessment of turbulence by high-order statistics: Offshore example (Poster), EWEA 2012, Copenhagen, 16.-19.4.2012.

Wächter, M.; Milan, P.; Morales, M.; Rinn, P.; Peinke, J.: Statistics of extreme wind events and power curve monitoring (Vortrag) RAVE International Conference 2012 Bremerhaven, 8.-10.5.2012.

Wächter, M.; Milan, P.; Rinn, P.; Peinke, J.: The Langevin power curve used for performance monitoring of wind turbines (Vortrag) Dynamics Days Europe 2012, Gothenburg, Sweden, 2.-7.9.2012 .

Morales, A.; Peinke, J.: Intermittency in the atmospheric boundary layer and its relationship with homogeneous isotropic turbulence (Talk), iTi 2012 Conference on Turbulence, Bertinoro, 30. September - 03. October 2012.

Wächter, M.; Hölling, M.; Morales, A.; Mücke, T.; Reinke, N.; Peinke, J. The Relevance of Atmospheric Turbulence for Wind Energy Research (Vortrag) The Science of Making Torque from Wind 2012 Oldenburg, 9.-11.10.2012.

Milan, P.; Wächter, M.; Peinke, J.: Modeling the Turbulent Power Output of a Wind Farm (Talk) DEWEK 2012, Bremen, 7.-8.11.2012.

Würth, I.; Rettenmeier, A.; Schlipf, D.; Cheng, P. W.; Wächter, M.; Rinn, P.; Peinke, J.: Determination of Stationary and Dynamical Power Curves Using a Nacelle-Based Lidar System (Talk), DEWEK 2012, Bremen, 7.-8.11.2012.

### **Vorträge (an auswärtigen Instituten und Universitäten) / Presentations (at foreign institutions and universities)**

Peinke, J. : Turbulenz und Windenergie Seminarvortrag, Deutscher Wetterdienst, Meteorologisches Observatorium Lindenberg, 20.03.2012.

Peinke, J. : Windenergie - eine turbulente Sache Physikalisches Kolloquium der Universität Bayreuth, 05.06.2012.

Peinke, J. : How much can we learn from homogeneous isotropic turbulence for everyday flows like wind situations? Symposium zur Turbulenz; Max-Planck-Institute for Dynamics and Self-Organization, Göttingen, 17.06. - 18.06.2012.

Peinke, J. : Windenergie und die Auswirkungen atmosphärischer Turbulenzen BayCEER Kolloquium, Vortragsreihe Ökologie und Umweltforschung, Universität Bayreuth, 21.06.2012 .

Peinke, J. : Turbulence driving wind energy, Kolloquium, Ecole Normale Superior, Lyon, Frankreich, 24.20.2012.

## **Weitere Vorträge / Further presentations**

Peinke, J.: Windenergie - eine turbulente Sache, DPG- Frühjahrstagung - öffentlicher Abendvortrag, Berlin Urania, 28.03. 2012.

Hölling, M.; Wächter, M.; Morales, A.; Milan, P.; Peinke, J.: Wind energy - Characterization and modeling of short-term fluctuations in incoming wind and power output, DPG Frühjahrstagung der Sektion Kondensierte Materie (eingeladener Vortrag), Berlin, 25. - 30. March 2012.

Peinke, J.: Turbulence driving wind energy, Experimental Chaos and Complexity Conference 2012, Ann Arbor MI USA, 16.-19.05.2012.

Peinke, J.: Stochastic models for turbulence and turbulent driven systems, Symposium "Self- Organization in Complex Systems: The Past, Present and Future of Synergetics" Hanse Wissenschafts Kolleg, Delmenhorst, 13.-16.11.2012.

Wächter, M.; Hölling, M.; Morales, A.; Mücke, T.; Milan, P.; Peinke, J.: The impact of natural hazards such as turbulent wind gusts on the wind energy conversion process (Invited Talk), 45th Annual Fall Meeting of the American Geophysical Union, San Francisco, USA, 3.-7.12.2012.

## **Poster / Posters**

Dörenkämper, M., Tambke, J.: Influence of marine boundary layer characteristics on power curves of Multi-Mega Watt wind turbines, METTOOLS VIII, Leipzig, Deutschland, 2012.

Stütz, E. Steinfeld, G., G., Heinemann, D., Peinke, J.: Parametrisierung von Windparks in COSMO-LM, METTOOLS VIII, Leipzig, Deutschland, 2012.

Stütz, E. Steinfeld, G., G., Heinemann, D., Peinke, J.: Parameterization of wind farms in COSMO-LM, EGU 2012, Wien, Österreich, 2012.