Portal	Content Description	Data Immediately Available	Has it been applied already? Where?	Stakeholder (governmental, industrial, research)	Note on reusability
DSWE datasets	Ten datasets, 150 MB real wind farm data and 440 MB synthetic data. Most of them ten-minute SCADA data. Multiple channels available. Multiple turbines and multiple years. Website provided a detailed dataset description.	Yes	See below	University/Research institute	Reuse permission: free to reuse once credit the data sources/book. Applicable to all data subsets
1. Wind time series data	One year, a single turbine, two resolutions (10-min, and hourly), both wind speed and power		Ding2019		
2. Wind spatial data	Ten turbines, two months, hourly data, wind speed only. Turbine coordinates provided.		Ding2019		
3. Wind Spatio-Temporal Dataset 1.	120 turbines. 2-year data. Hourly resolution. Wind speed only. Turbine corrdinates provided		Pourhabib2016, Ding2019		
4. Wind Spatio-Temporal Dataset 2	200 turbines. 2-year data. Hourly resolution. Both wind speed and wind power. Wind speed and power at turbines. Three mast towers. Wind direction data available at masts. Turbines and masts coordinates provided.		Ezzat2018, Ezzat2019, Ding2019, Ezzat2020, Papadopoulos2021		
5. Inland/Offshore Wind Farm Dataset 1	Six turbines. Four inland and two offshore. One year worth. Ten-minute data. Data channels include wind power, wind speed, direction, air density, TI, wind shears, and humidity.		Lee2015a, Ding2019, Li2021		
6. Inland/Offshore Wind Farm Dataset 2	Four turbines. Two inland and two offshore. Four years worth. Ten-minute data. Data channels include wind power, wind speed, direction, air density, TI, and wind shears.		Hwangbo2017, Niu2018, Ding2019, Prakash2021		
7. Turbine Upgrade Dataset	Two upgrade cases. Ten-minute data. Each upgrade case has a pair of turbines. For the vortex generator installation pair, there are 14 months' worth of data in the period before the upgrade and around eight weeks of data after the upgrade. For the pitch angle adjustment pair, there are about eight months of data before the upgrade and eight and a half weeks after the upgrade. Data channels similar to Dataset #5.		Lee2015b, Shin2018, Ding2019, Ding2021		
8. Wake Effect Dataset	Tewlve turbines forming six pairs. Each turbine can be in the wake of its pairing turbine, but free of other turbines' wake on the same wind farm. One year worth of data. Ten-minute data. Data channels include wind power, wind speed, direction, air density, TI, and wind shears.		Hwangbo2018, Ding2019		
9. Turbine Bending Moment Dataset.	Ten-minute data. Three turbines. Three sets of physically measured blade-root flapwise bending moments on three respective turbines, plus the simulated maximum bending moment for a total of 10,000,000 observations.		Lee2013, Yampikulsakul2014, Byon2016, Ding2019		
10. Simulated Bending Moment Dataset	Single turbine. Simulated wind speed, flapwise and edgewise bending moments. 10-min. 600 data pairs in the training subset and 10,000 in the test subset.		Cho2015, Ding2019, Ko2021		

Citation	Full Reference	Year
Lee2013	Lee, Byon, Ntaimo and Ding (2013) "Bayesian spline method for assessing extreme loads on wind turbines," Annals of Applied Statistics, 7: 2034-2061	2013
Yampikulsakul2014	Yampikulsakul, Byon, Huang, Sheng and You (2014) "Condition monitoring of wind turbine system with nonparametric regression-based analysis," IEEE Transactions on Energy Conversion, Vol. 29, pp. 288-299.	2014
Cho2015	Choe, Byon, and Chen (2015) "Importance sampling for reliability evaluation with stochastic simulation models." Technometrics, Vol. 57, pp. 351-361.	2015
Lee2015a	Lee, Ding, Genton, and Xie (2015a) "Power curve estimation with multivariate environmental factors for inland and offshore wind farms," Journal of the American Statistical Association, Vol. 110, pp. 56-67.	2015
Lee2015b	Lee, Ding, Xie and Genton (2015b) "Kernel Plus method for quantifying wind turbine upgrades," Wind Energy, 18: 1207-1219.	2015
Byon2016	Byon, Choe, and Yampikulsakul (2016) "Adaptive modeling and prediction in time-variant processes with application to wind power systems," IEEE Transactions on Automations Science and Engineering, Vol. 13, pp. 997-1007	2016
Pourhabib2016	Pourhabib, Huang, and Ding (2016) "Short-term wind speed forecast using measurements from multiple turbines in a wind farm," Technometrics, Vol. 58(1), pp. 138-147.	2016
Hwangbo2017	Hwangbo, Johnson, and Ding (2017) "A production economics analysis for quantifying the efficiency of wind turbines," Wind Energy, Vol. 20, pp. 1501-1513.	2017
Ezzat2018	Ezzat, Jun, Ding (2018) "Spatio-temporal asymmetry of local wind fields and its impact on short-term wind forecasting," IEEE Transactions on Sustainable Energy, Vol. 9(3), pp. 1437-1447.	2018
Hwangbo2018	Hwangbo, Johnson, and Ding (2018) "Spline model for wake effect analysis: characteristics of single wake and its impacts on wind turbine power generation." IISE Transactions, Vol. 50, pp. 112-125.	2018
Niu2018	Niu, Hwango, Zeng, and Ding (2018) "Evaluation of alternative efficiency metrics for offshore wind turbines and farms," Renewable Energy, Vol. 128, pp. 81-90.	2018
Shin2018	Shin, Ding, and Huang (2018). "Covariate matching methods for testing and quantifying wind turbine upgrades," Annals of Applied Statistics, 12: 1271-1292.	2018
Ding2019	Ding, Y. (2019) Data Science for Wind Energy, Chapman & Hall/CRC	2019
Ezzat2019	Ezzat, Jun, and Ding (2019) "Spatio-temporal short-term forecast: A calibrated regime-switching method," The Annals of Applied Statistics, Vol. 13(3), pp. 1484-1510.	2019
Ezzat2020	Ezzat (2020) "Turbine-specific short-term wind speed forecasting considering within-farm wind field dependencies and fluctuations." Applied Energy Vol. 269, pp. 115034.	2020
Ding2021	Ding, Kumar, Prakash, Kio, Liu, Liu, and Li (2021) "A case study of space-time performance comparison of wind turbines on a wind farm," Renewable Energy, Vol. 171, pp. 735-746	2021
Ko2021	Ko and Byon (2021) "Optimal budget allocation for stochastic simulation with importance sampling: exploration vs. replication, IISE Transactions, in-press.	2021

Li2021	Li, Ko and Byon (2021) "Nonparametric importance sampling for wind turbine reliability analysis with stochastic computer models", Annals of Applied Statistics, in-press.	2021
Papadopoulos2021	Papadopoulos, Coit, and Ezzat (2021) "Seizing Opportunity: Maintenance Optimization in Offshore Wind Farms Considering Accessibility, Production, and Crew Dispatch." arXiv preprint arXiv:2012.00213.	2021
Prakash2021	Prakash, Tuo, and Ding (2022) “Gaussian process aided function comparison using noisy scattered data,” Technometrics, Vol. 64, pp. 92-102.	2022