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Nationality: French

Born: September 1, 1989

Current position: Associate professor

Etienne Cheynet

Education

2013-2016 **PhD**, *University of Stavanger (UiS)*, Stavanger, Norway

2009-2012 **MSc**, *École Nationale Supérieure de Mécanique et d'Aérotechnique (ISAE-ENSMA)*, Futuroscope technopole, France

PhD thesis

Title Wind-induced vibrations of a suspension bridge: A case study in full-scale
Supervisors Prof. Jasna B. Jakobsen and Prof. Jónas Snæbjörnsson
Description The thesis examines the full-scale wind-induced vibrations of the Lysefjord Suspension Bridge in Rogaland, Norway. Since 2013, the bridge has been equipped with a wind and structural health monitoring system. In May 2014, Doppler wind lidar systems were installed at the bridge site to analyze the wind flow around the structure. This thesis presents a comprehensive validation of the buffeting theory through the integration of wind measurements and operational modal analysis.

Experience

2022- **Associate professor**, *University of Bergen*, Bergen, Norway

2019-2022 **Post-doctoral researcher**, *University of Bergen*, Bergen, Norway

- Processed velocity records from synchronized long-range lidars (COTUR campaign).
- Analysed two years of records from 25 sonic anemometers in Norwegian fjords.
- Proposed a method to simulate unfrozen atmospheric turbulence as a random process.
- Revisited the atmospheric data from the offshore wind park Vindeby.
- Explored full-scale offshore wind turbine vibration data from the RAVE initiative.

2016-2019 **Post-doctoral researcher**, *University of Stavanger*, Stavanger, Norway

- Characterized atmospheric turbulence in the marine atmospheric boundary layer.
- Assessed the potential of synchronized long-range wind lidars in a wide fjord.
- Studied wind conditions in complex terrain using anemometer data and numerical methods.
- Proposed a data-driven approach to identify characteristics of vehicles crossing a bridge.
- Examined the combined wind and wave-induced response of a floating long-span bridge.
- Highlighted the flow distortion of sonic anemometers mounted on a bridge.
- Wrote a guideline to study the damping of long-span suspension bridges.
- Created the website <https://windengineeringis.github.io/>.

2013-2016 **PhD student**, *University of Stavanger*, Stavanger, Norway

- Demonstrated the potential of the UiS-made wind and structural monitoring system.
- Assessed the potential of a wind lidar to characterize wind turbulence at a bridge site.
- Opened up the use of short-range synchronized wind lidar instruments in wind engineering.
- Proposed a new method to estimate the wind coherence with a single lidar instrument.
- Conducted the first systematic validation of the buffeting theory in full-scale.

Teaching experience

- 2023-present: Course responsible: ENERGI230 Energy and environment (UiB)
- 2023-present: Course responsible: ENERGI321 Offshore Wind Energy -part 1 (UiB)
- 2022-present: Lecturer: ENERGI322 Offshore Wind Energy -part 2 (UiB)
- 2022-present: Lecturer: SDG310 Introduction to energy transition and climate change (UiB)
- 2022-present: Lecturer: ENERGI210 Wind Turbine Technology (UiB)
- 2020-2021: Teaching assistant: ENERGI230 Energy and environment (UiB)
- 2020: Course responsible: ENERGI101 Introduksjon til energikjelder og forbruk (UiB)
- 2019: Teaching assistant: OFF905-1 Environmental loads on structure (UiS)
- 2018: Teaching assistant: BYG520-1 Environmental load (UiS)
- 2017: Teaching assistant: BYG550-1 Mechanical vibrations (UiS)
- 2017: Teaching assistant: OFF905-1 PhD project in civil and offshore structural engineering (UiS)

PhD supervision

2021- **Mauro Ghirardelli**, *PhD*, Co-supervisor

Development and test of a drone-based sonic anemometer system.

2018-2022 **Rieska Putri**, *PhD*, Co-supervisor

Influence of a non-neutral atmospheric stratification on the wind-induced response of an offshore wind turbine.

2018-2022 **Nicolò Daniotti**, *PhD*, Co-supervisor

Full-scale investigation of the aerodynamic properties of a suspension bridge.

Msc supervision

2023-2024 **Hedda Wallestad**, *Msc*, main supervisor

Wind farm layout assessment in Sørilige Nordsjø II using the FLORIS framework and the NORA3 database

2023-2024 **Mali Ones**, *Msc*, main supervisor

The potential of a vertically-pointing scanning wind lidar to characterize turbulence

2023-2024 **Elias Villamil Fernandez**, *Msc*, main supervisor

Offshore Wind Development Suitability in NVE's 20 Proposed Norwegian Coastal Areas

2022-2023 **Paulius Kavaliauskas**, *Msc*, main supervisor

Can a dual pulsed lidar system measure the lateral coherence of turbulence?

2022-2023 **Fahim Masud Ahmed**, *Msc*, Co-supervisor

Low-level jet height's impact on wind turbine loads: A case study

2018-2019 **Julie-Ann Marie Knight**, *Msc*, Co-supervisor

The Influence of an Unstable Turbulent Wind Spectrum on the Loads and Motions on a Floating Offshore Wind Turbine.

PhD Evaluation Committees

- 2023 **Wei Fu (DTU, Denmark)**, *External examiner*
Characterization of atmospheric turbulence using nacelle lidar measurements and applications
- 2022 **Astrid Nybø (UiB, Norway)**, *Internal examiner*
The impact of turbulence modelling on large offshore wind turbine response

Msc Evaluation Committees

- 2023 **Alexander Arvid Flem (UiB, Norway)**, *Internal examiner*
Experimental Characterization of Propeller Induced Flow (PIF) Around a Multi-Rotor Drone
- 2023 **Gunnar England Midtbø (UiB, Norway)**, *Internal examiner*
Limiting the carbon dioxide emission aboard an offshore salmon farm by introducing a wind and battery system
- 2023 **Siren Charleen Krebs (UiB, Norway)**, *Internal examiner*
Breaking out of the Loop: Mitigating short-termism in the building and construction industry, by moving beyond sustainable strategies and developing a sustainable pathway
- 2023 **Einar Kleppenes (UiB, Norway)**, *Internal examiner*
Development of advanced tools in computational nonlinear aeroelasticity
- 2022 **Sunniva Petersen Jikiun (UiB, Norway)**, *Internal examiner*
Public Acceptance of Hydrogen Production from Onshore Wind in Norway
- 2022 **Prindapan Santhakumaran (UiB, Norway)**, *Internal examiner*
Study of Power Quality Improvement for Grid-Connected PV plant in Kilinochchi

Service and institutional responsibilities

- 2022-present: Working group member, GenderAct - A Project for Cultural Change and Gender Balance, UiB, Norway.
- 2022-present: Member of the steering committee for the master in sustainability, UiB, Norway.
- 2022-present: member of the Scientific Committee for the EERA DeepWind conference, Trondheim, Norway.
- 2022: Member of the organizing committee for Havvindkonferansen Science Meets Industry, Bergen, Norway.
- 2017-2019: member of the Scientific Committee for the COTech conference, Stavanger, Norway.

Peer reviewing activities

I have 48 Verified peer reviews on Web Of Science. I have been peer reviewer for Scientific Reports, Engineering structures, Remote sensing, Journal of Bridge Engineering, Applied Science, Sensors, Boundary layer meteorology, Journal of wind engineering and Industrial Aerodynamic, Meteorology and Atmospheric Physics, Journal of Applied Remote Sensing, Atmospheric Measurement Techniques, Atmospheric Chemistry and Physics, Wind Energy Science, IOP journal of physics conference series, Science progress.

Scientific projects and grants

- 2021-2024(2027): NFR FRIPRO program (12 mNOK). Large Offshore Wind Turbines (LOWT): structural design accounting for non-neutral wind conditions. Participants: UiS, UiB, SINTEF

- 2021-2022: COTUR II (900 kNOK). Analyse of the COTUR database. participants: UiB, Equinor.
- 2020-2021: UH-nett Vest (249 kNOK). Estimering av langsiktig kraftproduksjon til flytende vindparker. Participants: UiA, UiB, UiS.

Awards and Honours

- 2020: L. Meltzer University Fund Travel Stipend, University of Bergen, Norway.
- 2019: Thomas A. Wyatt Best Paper Award, Norwegian Public Road Administration.
- 2013: Best poster Award at DeepWind 2013:10th Deep-Sea Offshore Wind R&D Conference

Dissemination and communication

- 2023: Lecturer at the ImpactWind summer school
- 2022-present: Lecturer for the free online course Introduction to offshore wind energy at the University of Bergen Continuing Education,
- 2018: Forskerstandup in Stavanger (Norway). Title: Hvordan kan vi se vinden i en fjord?

Professional affiliations and societies

- 2022-present: Member, International Society for Atmospheric Research using Remotely-piloted Aircraft (ISARRA).
- 2018-2020: Member, Italian Association for Wind Engineering (ANIV).

Languages

French	Mother tongue	
English	Proficient user (C1)	<i>cf. European reference framework for Language Levels</i>
Norwegian	Independent User (B2-C1)	
German	Basic user (A2)	

Computer skills

Programming	Matlab, Python
FE software	Abaqus CAE, LS-DYNA
Miscellaneous	L ^A T _E X, Microsoft Office, HTML

References

Reference 1	Reference 2	Reference 3
Prof. Jasna B. Jakobsen University of Stavanger jasna.b.jakobsen@uis.no	Prof. Jónas Snæbjörnsson University of Reykjavík jonasthor@ru.is	Prof. Joachim Reuder University of Bergen Joachim.Reuder@uib.no

Publications

Peer-reviewed articles

- [1] M. Ghirardelli, S. T. Kral, N. C. Müller, R. Hann, E. Cheynet, and J. Reuder. Flow structure around a multicopter drone: A computational fluid dynamics analysis for

- sensor placement considerations. *Drones*, 7(7):467, 2023.
- [2] R. M. Putri, E. Cheynet, C. Obhrai, and J. B. Jakobsen. Turbulence in a coastal environment: the case of vindeby. *Wind Energy Science*, 7(4):1693–1710, 2022.
- [3] E. Cheynet, N. Daniotti, J. Bogunović Jakobsen, J. Snæbjörnsson, and J. Wang. Unfrozen skewed turbulence for wind loading on structures. *Applied Sciences*, 12(19):9537, 2022.
- [4] Z. Midjiyawa, E. Cheynet, J. Reuder, H. Ágústsson, and T. Kvamsdal. Potential and challenges of wind measurements using met-masts in complex topography for bridge design: Part II–Spectral flow characteristics. *Journal of Wind Engineering and Industrial Aerodynamics*, 211:104585, 2021.
- [5] Z. Midjiyawa, E. Cheynet, J. Reuder, H. Ágústsson, and T. Kvamsdal. Potential and challenges of wind measurements using met-masts in complex topography for bridge design: Part I–Integral flow characteristics. *Journal of Wind Engineering and Industrial Aerodynamics*, 211:104584, 2021.
- [6] N. Daniotti, J. B. Jakobsen, J. Snæbjörnsson, E. Cheynet, and J. Wang. Observations of bridge stay cable vibrations in dry and wet conditions: A case study. *Journal of Sound and Vibration*, 503:116106, 2021.
- [7] E. Cheynet, M. Flügge, J. Reuder, J. B. Jakobsen, Y. Heggelund, B. Svardal, P. Saavedra Garfias, C. Obhrai, N. Daniotti, J. Berge, et al. The COTUR project: Remote sensing of offshore turbulence for wind energy application. *Atmospheric Measurement Techniques*, 14:6137–6157, 2021.
- [8] E. Cheynet, S. Liu, M. C. Ong, J. B. Jakobsen, J. Snæbjörnsson, and I. Gatin. The influence of terrain on the mean wind flow characteristics in a fjord. *Journal of Wind Engineering and Industrial Aerodynamics*, 205:104331, 2020.
- [9] E. Cheynet, N. Daniotti, J. B. Jakobsen, and J. Snæbjörnsson. Improved long-span bridge modeling using data-driven identification of vehicle-induced vibrations. *Structural Control and Health Monitoring*, 27(9):e2574, 2020.
- [10] E. Cheynet, J. B. Jakobsen, and J. Snæbjörnsson. Flow distortion recorded by sonic anemometers on a long-span bridge: Towards a better modelling of the dynamic wind load in full-scale. *Journal of Sound and Vibration*, 450:214–230, 2019.
- [11] J. Wang, E. Cheynet, J. Snæbjörnsson, and J. B. Jakobsen. Coupled aerodynamic and hydrodynamic response of a long span bridge suspended from floating towers. *Journal of Wind Engineering and Industrial Aerodynamics*, 177:19–31, 2018.
- [12] E. Cheynet, J. B. Jakobsen, and J. Reuder. Velocity spectra and coherence estimates in the marine atmospheric boundary layer. *Boundary-layer meteorology*, 169(3):429–460, 2018.
- [13] E. Cheynet, J. B. Jakobsen, J. Snæbjörnsson, J. Reuder, V. Kumer, and B. Svardal. Assessing the potential of a commercial pulsed lidar for wind characterisation at a

bridge site. *Journal of Wind Engineering and Industrial Aerodynamics*, 161:17–26, 2017.

- [14] E. Cheynet, J. B. Jakobsen, J. Snæbjörnsson, J. Mann, M. Courtney, G. Lea, and B. Svardal. Measurements of surface-layer turbulence in a wide norwegian fjord using synchronized long-range Doppler wind lidars. *Remote Sensing*, 9(10):977, 2017.
- [15] E. Cheynet, J. B. Jakobsen, J. Snæbjörnsson, N. Angelou, T. Mikkelsen, M. Sjöholm, and B. Svardal. Full-scale observation of the flow downstream of a suspension bridge deck. *Journal of Wind Engineering and Industrial Aerodynamics*, 171:261–272, 2017.
- [16] E. Cheynet, J. B. Jakobsen, and C. Obhrai. Spectral characteristics of surface-layer turbulence in the North Sea. *Energy Procedia*, 137:414–427, 2017.
- [17] E. Cheynet, J. B. Jakobsen, and S. Jonas. Damping estimation of large wind-sensitive structures. *Procedia engineering*, 199:2047–2053, 2017.
- [18] E. Cheynet, J. B. Jakobsen, B. Svardal, J. Reuder, and V. Kumer. Wind coherence measurement by a single pulsed Doppler wind lidar. *Energy Procedia*, 94:462–477, 2016.
- [19] E. Cheynet, J. B. Jakobsen, J. Snæbjörnsson, T. Mikkelsen, M. Sjöholm, J. Mann, P. Hansen, N. Angelou, and B. Svardal. Application of short-range dual-Doppler lidars to evaluate the coherence of turbulence. *Experiments in Fluids*, 57(12):1–17, 2016.
- [20] E. Cheynet, J. B. Jakobsen, and J. Snæbjörnsson. Buffeting response of a suspension bridge in complex terrain. *Engineering Structures*, 128:474–487, 2016.
- [21] J. B. Jakobsen, E. Cheynet, J. Snæbjörnsson, T. Mikkelsen, M. Sjöholm, N. Angelou, P. Hansen, J. Mann, B. Svardal, V. Kumer, et al. Assessment of wind conditions at a fjord inlet by complementary use of sonic anemometers and lidars. *Energy Procedia*, 80:411–421, 2015.

Conference proceedings and book chapters

- [1] E. Cheynet, I. M. Solbrette, J. M. Diezel, and J. Reuder. A one-year comparison of new wind atlases over the North Sea. In *Journal of Physics: Conference Series*, volume 2362, page 012009. IOP Publishing, 2022.
- [2] M. Nafisifard, J. B. Jakobsen, E. Cheynet, J. Snæbjörnsson, M. Sjöholm, and T. Mikkelsen. Dual lidar wind measurements along an upstream horizontal line perpendicular to a suspension bridge. In *IOP Conference Series: Materials Science and Engineering*, volume 1201, page 012008. IOP Publishing, 2021.
- [3] I. Kusano, E. Cheynet, J. B. Jakobsen, and J. Snæbjörnsson. Aerodynamic study of a suspension bridge deck by cfd simulations, wind tunnel tests and full-scale observations. In *IOP Conference Series: Materials Science and Engineering*, volume 1201, page 012007. IOP Publishing, 2021.

- [4] N. Daniotti, J. B. Jakobsen, J. Snæbjörnsson, and E. Cheynet. Observations of the turbulent near wake of a bridge deck. In *6th American Association for Wind Engineering Workshop (online)*, 2021.
- [5] E. Cheynet, J. Snæbjörnsson, and J. B. Jakobsen. Identifying traffic-induced vibrations of a suspension bridge: A modelling approach based on full-scale data. In *Dynamics of Civil Structures, Volume 2*, pages 93–101. Springer, 2020.
- [6] N. Daniotti, E. Cheynet, J. B. Jakobsen, and J. Snæbjörnsson. Damping estimation from full-scale traffic-induced vibrations of a suspension bridge. In *ASCE International Conference on Computing in Civil Engineering 2019. American Society of Civil Engineers*, 2019.
- [7] E. Cheynet, J. B. Jakobsen, and J. Snæbjörnsson. Flow distortion recorded by sonic anemometers on a long-span bridge. In *Lecture Notes in Civil Engineering*, volume 27, pages 192–206. Springer, 2019.
- [8] E. Cheynet. Influence of the measurement height on the vertical coherence of natural wind. In *Lecture Notes in Civil Engineering*, volume 27, pages 207–221. Springer, 2019.
- [9] E. Cheynet, J. Jakobsen, J. Snæbjörnsson, H. Ágústsson, and K. Harstveit. Complementary use of wind lidars and land-based met-masts for wind measurements in a wide fjord. In *Journal of Physics: Conference Series*, volume 1104, page 012028. IOP Publishing, 2018.
- [10] J. Wang, E. Cheynet, J. B. Jakobsen, and J. Snæbjörnsson. Time-domain analysis of wind-induced response of a suspension bridge in comparison with the full-scale measurements. In *ASME 2017 36th International Conference on Ocean, Offshore and Arctic Engineering*. American Society of Mechanical Engineers, 2017.
- [11] J. Snæbjörnsson, J. Jakobsen, E. Cheynet, and J. Wang. Full-scale monitoring of wind and suspension bridge response. In *IOP Conference Series: Materials Science and Engineering*, volume 276, page 012007. IOP Publishing, 2017.
- [12] E. Cheynet, J. Snæbjörnsson, and J. B. Jakobsen. Temperature effects on the modal properties of a suspension bridge. In *Dynamics of Civil Structures, Volume 2*, pages 87–93. Springer, Cham, 2017.
- [13] J. Snæbjörnsson, E. Cheynet, and J. Bogunovic Jakobsen. Performance evaluation of a suspension bridge excited by wind and traffic induced action. In *8th European Workshop On Structural Health Monitoring (EWSHM 2016)*, 2016.
- [14] E. Cheynet, J. B. Jakobsen, and J. Snæbjörnsson. Wind-induced vibrations monitoring with satellite navigation. In *19th Congress of IABSE, Challenges in Design and Construction of an Innovative and Sustainable Built Environment*, pages 57–64. International Association for Bridge and Structural Engineering (IABSE)., 2016.
- [15] E. Cheynet, J. B. Jakobsen, and J. Þór Snæbjörnsson. Full scale monitoring of wind and traffic induced response of a suspension bridge. In *MATEC Web of Conferences*, volume 24, page 04003. EDP Sciences, 2015.

Others

- [1] J. Reuder, E. Cheynet, A. Clifton, M. F. van Dooren, J. Gottschall, J. B. Jakobsen, J. Mann, J. Palma, D. Schlipf, M. Sjøholm, et al. Recommendation on use of wind lidars. Technical Report H2020-MSCA-ITN-2019, Grant no. 858358, 2021.
- [2] E. Cheynet. *Wind-induced vibrations of a suspension bridge: A case study in full-scale*. PhD thesis, University of Stavanger, Norway, 2016.