

# MARIA LAURA BATTAGLIOLA

@mlbattagliola@gmail.com +52 5574571300  
https://laurabattagliola.com github.com/LauraBattagliola  
ORCID: 0009-0008-0278-233X

## EDUCATION

### University of Copenhagen

📍 Copenhagen, Denmark

📅 Awarded in 2021

### Politecnico di Milano

📍 Milan, Italy

📅 Awarded in 2017

### Politecnico di Milano

📍 Milan, Italy

📅 Awarded in 2014

### Ph.D. in Statistics

Doctoral Thesis: *Quantile Regression for Scalar and Functional Clustered Data and Data Analysis with Phase-Amplitude Separation*

Supervisors: Prof. Helle Sørensen and Prof. Ana-Maria Staicu (North Carolina State University)

### M.Sc. in Mathematical Engineering, Specialization in Applied Statistics

Master's Thesis: *A Nonparametric Local Method for Inference on Functional Time Series and Its Application to Bike Sharing Data*

Supervisors: Prof. Simone Vantini, Prof. Alessia Pini, Prof. Helle Sørensen (University of Copenhagen)

Grade: 108/110

### B.Sc. in Mathematical Engineering

## ACADEMIC POSITIONS

### Instituto Tecnológico Autónomo de México (ITAM)

📍 Mexico City, Mexico

📅 Aug 1, 2024 - Present

### Assistant Professor C (Tenure-Track)

Department of Statistics

### École Polytechnique Fédérale de Lausanne (EPFL)

📍 Lausanne, Switzerland

📅 Oct 1, 2021 - May 31, 2024

### Postdoctoral Researcher

Statistical Data Science Laboratory, Department of Mathematics

### University of Copenhagen

📍 Copenhagen, Denmark

📅 Aug 1, 2021 - Aug 31, 2021

### Research Assistant

Section of Statistics and Probability Theory, Department of Mathematical Sciences

## RESEARCH VISITS

### Vrije Universiteit Amsterdam

📍 Amsterdam, Netherlands

📅 Feb 2026

### Visiting Researcher

Guest of Prof. Jan O. Bauer, Department of Econometrics and Data Science

### University of Copenhagen

📍 Copenhagen, Denmark

📅 Sep 2023

### Visiting Researcher

Guest of Prof. Martin Bladt, Department of Mathematical Sciences

### Columbia University

📍 New York, NY, USA

📅 Oct 2019 - Dec 2019

### Visiting Researcher

Ph.D. visiting student under Prof. Todd R. Ogden, Department of Biostatistics

### North Carolina State University

📍 Raleigh, NC, USA

📅 May 2018, Oct 2018

### Visiting Researcher

Ph.D. visiting student under Prof. Ana-Maria Staicu, Department of Statistics

### University of Copenhagen

📍 Copenhagen, Denmark

📅 Mar 2017 - Jun 2017

### Visiting Researcher

Master's visiting student under Prof. Helle Sørensen, Department of Mathematical Sciences

## PUBLICATIONS

### Published or Accepted

- M. L. Battagliola, H. Sørensen, A. Tolver, and A.-M. Staicu.  
**A Bias-Adjusted Estimator in Quantile Regression for Clustered Data.**  
*Econometrics and Statistics*, Volume 23, Pages 165–186, 2022.  
<https://doi.org/10.1016/j.ecosta.2021.07.003>
- M. L. Battagliola, H. Sørensen, A. Tolver, and A.-M. Staicu.  
**Quantile Regression for Longitudinal Functional Data with Application to Feed Intake of Lactating Sows.**  
*Journal of Agricultural, Biological and Environmental Statistics*, Volume 30, Pages 211–230, 2025.  
<https://doi.org/10.1007/s13253-024-00601-5>
- M. L. Battagliola and S. C. Olhede.  
**Modeling Spatio-Temporal Transport: From Rigid Advection to Realistic Dynamics.**  
*Environmetrics*, Volume 37, Pages e70079, 2026.  
<http://dx.doi.org/10.1002/env.70079>
- M. L. Battagliola and M. Bladt.  
**Extremile Scalar-on-Function Regression.**  
Preprint, 2025. Available at <https://arxiv.org/abs/2405.20817>.  
Accepted by *Canadian Journal of Statistics*.

### Submitted

- Y. Fahmy, M. L. Battagliola, and J. Guinness  
**Estimating Velocity Vector Fields of Atmospheric Winds using Transport Gaussian Processes.**  
Preprint, 2025. Available at <https://arxiv.org/abs/2505.10898>.  
Submitted to *Annals of Applied Statistics*.
- M. L. Battagliola and J. O. Bauer.  
**Localized Functional Principal Component Analysis based on Covariance Structure.**  
Preprint, 2025. Available at <https://arxiv.org/abs/2506.02836>.  
Submitted to *Statistics and Computing*.
- M. L. Battagliola, L. J. Benoit, S. Canetta, S. Zhang, and R. T. Ogden.  
**Functional Modeling of Learning and Memory Dynamics in Cognitive Disorders**  
Preprint, 2025. Available at <http://arxiv.org/abs/2512.18760>.  
Submitted to *JRSS C*.
- H. Albrecher, M. L. Battagliola, M. Bladt, A. J. A. Müller, and T. Swierczynski.  
**Spatio-Temporal Non-Stationarity of Flood Risk in the European Alps over the Last 1,450 Years.**  
Preprint, 2026. Submitted to *Natural Hazards and Earth System Sciences*.

### In Progress

- M. L. Battagliola and M. Bladt.  
**General Sampling of Copulas with Dirichlet Processes Mixture Models** (Expected submission: March 2026).
- M. L. Battagliola, S. Elipot, J. P. Grainger, and S. C. Olhede.  
**Isotropic Spectral Estimation Applied to Oceanic Currents Velocities** (Expected submission: April 2026).
- M. L. Battagliola, O. Peralta, and J. Yslas.  
**Thinning and Thickening Discrete Phase-Type Counts.**
- M. L. Battagliola and J. Yslas.  
**Anomaly Detection for Functional Data.**
- M. L. Battagliola and O. Angtuncio.  
**Tree-Elastic LDDMM: Riemannian Registration of Hierarchical Manifolds.**
- M. L. Battagliola, A. Pini, and H. Sørensen  
**Interval-wise Testing for Functional Time Series.**
- M. L. Battagliola, O. Peralta, L. Rojas-Nandayapa, and J. Yslas.  
**Interval Phase-Type Distributions.**
- M. L. Battagliola and J. O. Bauer.  
**Fast Inference for High-Dimensional Covariance Splits via Subsampling.**

### Software Contributions

Consistent with my commitment to Open Science, all research submissions are accompanied by documented code. My GitHub portfolio ([github.com/LauraBattagliola](https://github.com/LauraBattagliola)) features 5 public repositories, including the R packages **ExtrFunReg**, **LFPCA**, and **fQGAM**.

## TEACHING EXPERIENCE

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Graduate courses are indicated with \*.

### Lecturer

Instituto Tecnológico Autónomo de México

Lecturing, tutoring and grading

- 2025-2026 *Simulation*
- 2024-2025 *Applied Statistics III - Multivariate Methods* (2 times)
- 2024-2026 *Applied Statistics II - Linear Models* (4 times)

### Teaching Assistant

École Polytechnique Fédérale de Lausanne

Tutoring and grading

- 2023-2024 *Probability and Statistics II*
- 2022-2023 *Statistics for Data Science\**
- 2021-2022 *Linear Models*

University of Copenhagen

Lecturing, tutoring and grading

- 2018-2021 *Regression\** (4 times)
  - 2019-2020 *Graphical Models\**
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## SUPERVISION AND MENTORING

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Students of whom I am or was main supervisor are indicated with \*. The concluded projects are indicated with †

### Ph.D. Students

- **Alaric Müller**<sup>†</sup> (University of Lausanne) on paper *Flood Occurrence in the European Alps: A Generalized Additive Mixed Model Approach Based on Lake Sediments of the last 1500 Years.* .
- **Youssef Fahmy**<sup>†</sup> (Cornell University) on paper *Estimating Velocity Vector Fields Using Transport Gaussian Processes.*

### Master's Students

- **Sonia Mancera**<sup>\*,†</sup> (ITAM) on thesis *Detection of the "Hit the Wall" Phenomenon in Marathon Records via Change Point Analysis.*
- **Shizhe Zhang**<sup>†</sup> (Columbia University) on paper *Functional Modeling of Learning and Memory Dynamics in Cognitive Disorders.* .
- **Zineb Agnaou**<sup>\*,†</sup> (EPFL) on semester project *Stock Trading: Prediction of Auction Volumes.*
- **Qayis Beji**<sup>\*,†</sup> (EPFL) on thesis *Spline-Based Estimation for Spectra of Isotropic Random Fields.*

### Bachelor's Students

- **Lars Daniel Johansson Niño**<sup>\*</sup> (ITAM) on thesis *Efficient Bayesian Inference on Mixed Effects Functional-on-Scalar Models.*
  - **Armando Sanchez Lopez**<sup>\*</sup> (ITAM) on thesis *Simulation of Space and Space-Time Processes using Bayesian Nonparametric Methods.*
  - **Guillermo Arana**<sup>\*</sup> (ITAM) on thesis *Supervised and Unsupervised Classification Methods for Functional Data.*
  - **Raymundo Luna Peña**<sup>\*,†</sup> (ITAM) on thesis *Analysis of the Yearly Evolution of PM2.5 over the Continental US.*
  - **Monika Stoilova**<sup>\*,†</sup> (EPFL) on semester project *Bootstrap Methods for Time Series.*
  - **Valentin Piquerez**<sup>\*,†</sup> (EPFL) on semester project *Exploring Bootstrap Methods for Stationary Time Series.*
  - **Salya Diallo**<sup>\*,†</sup> (EPFL) on semester project *Exploring Representation and Analysis of Functional Data.*
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## INTERNATIONAL COLLABORATIONS

- Prof. Hansjörg Albrecher, University of Lausanne and Swiss Finance Institute, Switzerland
  - Dr. Osvaldo Angtuncio, CIMAT, Mexico
  - Prof. Jan O. Bauer, Vrije Universiteit Amsterdam, Netherlands
  - Prof. Martin Bladt, University of Copenhagen, Denmark
  - Prof. Sarah Canetta, Columbia University, USA
  - Prof. Shane Elipot, University of Miami, USA
  - Dr. Jake Grainger, EPFL, Switzerland
  - Prof. Joseph Guinness, Washington University in St. Louis, USA
  - Prof. Todd R. Ogden, Columbia University, USA
  - Prof. Sofia C. Olhede, EPFL, Switzerland
  - Prof. Oscar Peralta, ITAM, Mexico
  - Prof. Alessia Pini, Università Cattolica del Sacro Cuore of Milano, Italy
  - Prof. Helle Sørensen, University of Copenhagen, Denmark
  - Prof. Ana-Maria Staicu, North Carolina State University, USA
  - Prof. Jorge Yslas, University of Liverpool, UK
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## PRESENTATIONS

- *TBD*. Invited talk at IIMAS, Mexico City, March 2026.
  - *Predicting Extreme Weather Conditions via Extremile Scalar-on-Function Regression*. Invited talk to the Department of Econometrics and Data Science at Vrije Universiteit Amsterdam, Amsterdam, February 2026.
  - *An Integrated Frameworks for Simulating and Estimating Complex Spatio-Temporal Transport*. Invited talk at UNAM, Mexico City, February 2026.
  - *Extremile Scalar-on-Function Regression with Application to Climate Scenarios*. Invited presentation at the Institute for Financial and Actuarial Mathematics, University of Liverpool, Liverpool, October 2025.
  - *Functional Modeling of Learning and Memory Dynamics in Cognitive Disorders*. Invited presentation to the Functional Data Analysis Unit at Columbia University, New York, September 2025.
  - *Localized Functional Principal Component Analysis and Identification of Compactly-Supported Functional Processes*. Invited talk at CIMAT, Guanajuato, February 2025.
  - *Extremile Scalar-on-Function Regression with Application to Climate Scenarios*. Invited talk at CMStatistics 2024, London, December 2024.
  - *Flexible and Efficient Simulation of Spatio-Temporal Processes with Advection*. Contributed talk at Joint Statistical Meetings, Toronto, August 2023.
  - *Flexible and Efficient Simulation of Spatio-Temporal Processes with Advection*. Invited talk at CNRS-Imperial Workshop on Waves and Imaging, London, March 2023.
  - *Quantile Regression for Longitudinal Functional Data with Application to Feed Intake of Lactating Sows*. Invited talk at CMStatistics 2022, London, December 2022.
  - *Modeling Learning Curves of Mice*. Invited presentation to the Functional Data Analysis Unit at Columbia University, New York, December 2019.
  - *A Bias-Adjusted Estimator in Quantile Regression for Clustered Data*. Invited presentation to the Functional Data Analysis Unit at Columbia University, New York, October 2019.
  - *Quantile Regression for Longitudinal Data*. Presentation to the Section of Statistics and Probability at the University of Copenhagen, November 2018.
  - *Quantile Regression for Longitudinal Data*. Poster session at Data Science Summer School, Paris, June 2018.
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## COORDINATION OF ACADEMIC VISITS

- Prof. Jan O. Bauer (ITAM, November 2024)
  - Dr. Osvaldo Angtuncio (ITAM, October 2025)
  - Prof. Jorge Yslas (ITAM, November 2025)
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## GRANTS AND FUNDING

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École Polytechnique Fédérale de  
Lausanne

📍 Lausanne, Switzerland

📅 2023

**Bernoulli Center for Fundamental Studies Grant**

**Amount:** CHF 23,000

**Purpose:** Funding for the *Discrete Random Structures Workshop*  
(<https://drs23.epfl.ch/workshop-on-discrete-random-structures/>)

**Role:** Organizer with Dr. Anda Skeja (Uppsala University)

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## REVIEWER FOR JOURNALS

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Canadian Journal of Statistics

Biostatistics

Scandinavian Journal of Statistics

Journal of Agricultural, Biological and Environmental Statistics

Journal of the Royal Statistical Society: Series C

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## LANGUAGES

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- **Danish:** Elementary Proficiency
  - **English:** Full Professional Proficiency
  - **Italian:** Native Speaker
  - **Spanish:** Professional Competence
  - **French:** Elementary Proficiency
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## SOFTWARE SKILLS

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R

Python

C/C++

Matlab

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