Shahine Bouabid

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Education

PhD in Statistics — University of Oxford, Oxford, UK **2020 – 2024**
Advisor : Dino Sejdinovic

MSc in Machine Learning (MVA) — ENS Paris-Saclay, Paris, France **2018 – 2019**

MSc in Applied Mathematics — École Centrale Paris, Paris, France **2015 – 2019**

Classes préparatoires — Lycée Saint-Louis, Paris, France **2013 – 2015**

Research experiences

Postdoctoral Associate — MIT EAPS, Cambridge, Massachusetts **2024 – now**

Visiting Researcher — CISPA, Saabrücken, Germany **2023**

Visiting Researcher — University of Valencia, Valencia, Spain **2023**

Grants and Fellowships

Postdoctoral Research Grant, MIT Grand Challenge **2024**
Awarded a fully funded postdoctoral position on the "Bringing computation to the climate challenge" program at MIT with Profs. Noelle Selin and Raffaele Ferrari

Helmholtz Visiting Researcher Grant **2023**
Awarded €10,000 to fund research at CISPA with Dr. Krikamol Muandet

European Comission Marie-Skłodowska Curie Fellowship **2020**
Awarded a fully funded place on the iMiracli Innovative Training Network at the University of Oxford, covering tuition, stipend, travel and research grant (Approx. €180,000)

Publications

In review

N. Mankovich, **S. Bouabid**, P. Nowack, D. Bassotto, G. Camps-Valls, Analyzing Climate Scenarios with Dynamic Mode Decomposition with Control

M. Zhang, **S. Bouabid**, C.S. Ong, S. Flaxman, D. Sejdinovic, Indirect Query Bayesian Optimization with Integrated Feedback

In press

S. Bouabid, D. Sejdinovic, D. Watson-Parris, FaIRGP : A Bayesian Energy Balance Model for Surface Temperature Emulation, *Journal of Advances in Modelling Earth Systems*, **2024**

A. Singh, S. L. Chau, **S. Bouabid**, K. Muandet, Domain Generalisation via Imprecise Learning, *International Conference on Machine Learning*, **2024 (3% top submissions)**

S. Bouabid, D. Watson-Parris, S. Stefanovic, A. Nenes, D. Sejdinovic, Aerosol optical depth disaggregation : toward global aerosol vertical profiles, *Environmental Data Science*, **2024**

S. Bouabid*, J. Fawkes*, D. Sejdinovic, Returning the Favour : When Regression Benefits from Probabilistic Causal Knowledge, *International Conference on Machine Learning*, **2023 (2.4% top submissions)**

D. Watson-Parris, Y. Rao, D. Olivié, Ø. Seland, P. Nowack, G. Camps-Valls, P. Stier, **S. Bouabid**,..., ClimateBench v1. 0: A Benchmark for Data-Driven Climate Projections, *Journal of Advances in Modelling Earth Systems*, **2022**

S. L. Chau*, **S. Bouabid***, D. Sejdinovic, Deconditional Downscaling with Gaussian processes, *Advances in Neural Information Processing Systems*, **2021**

Contributed presentations

2024

MIT Center for Sustainability Science and Strategy Seminar **Talk**
Developing emulators with Gaussian processes

ICLR Workshop on Tackling Climate Change with Machine Learning **Poster**
Calibrating Earth System Models with Bayesian Optimal Experimental Design

EGU General Assembly Meeting **Poster**
Analyzing Climate Scenarios Using Dynamic Mode Decomposition with Control

2023

EGU General Assembly Meeting **Talk**
Probabilistic climate emulation with physics-constrained Gaussian processes

International Conference on Machine Learning **Talk**
Returning the Favour : When Regression Benefits from Probabilistic Causal Knowledge

Helmholtz Center for Information Security **Invited Talk**
Opportunities for Data-driven Modelling in Climate Science

2022

University College London **Invited Talk**
Deconditional Downscaling with Gaussian processes

NeurIPS Workshop on Tackling Climate Change with Machine Learning **Poster**
Bayesian inference for aerosol vertical profiles

iMiracli Summer School **Talk**
A simple Bayesian model to reconstruct aerosol vertical profiles

2021

Neural Information Processing Systems **Poster**
Deconditional Downscaling with Gaussian processes

ICML Workshop on Tackling Climate Change with Machine Learning **Poster**
Reconstructing aerosol vertical profiles with aggregate output learning

2020

NeurIPS Workshop on Tackling Climate Change with Machine Learning **Poster**
Predicting Landsat reflectance with deep generative fusion

Diversity & Outreach Efforts

Nechfate **2022–present**
Co-founded Nechfate, the first online media that popularizes climate change, its impacts, and adaptation solutions in Morocco. Through short, illustrated, and data-driven articles, our goal is to inform readers about Morocco's challenges in terms of climate change, water & agriculture, and governance & society.

Oxford Stats Green Team **2022–2023**
Assisted in developing guidelines for department members to assess and reduce their carbon footprints. Raised awareness about aviation-related carbon emissions, encouraging environmentally responsible actions.

European Researchers Night **2022**
Organised an outreach session at the Stockholm Bolin Center to introduce high school students to the mechanisms of aerosol-cloud interactions and their significance for climate.

OxCSML Equality, Diversity & Inclusion Committee **2020–2022**
Organised the department's first student-led EDI group, which aims to develop and sustain a diverse, inclusive, and equitable academic environment and community. Activities included organising student-only seminars, arranging accessible social events and setting up a safe feedback system for students.

Academic Service

Peer reviewer for *Journal of Advances in Modeling Earth Systems, Geophysical Research Letters, Earth System Dynamics, Workshop on Tackling Climate Change with Machine Learning*

Teaching

Co-supervising Master research project **2023–2024**
Supervision of a Master's student studying Bayesian inference for climate sensitivity

Teaching Assistant: Applied Statistics, Computational Statistics, Applied Probability **2022**

Tutor: Part A Statitics **2021–2022**

Oxford StatML Center for Doctoral Training **2021**
Organised an introductory workshop on automatic differentiation with PyTorch

Professional experiences

Research Intern — Met Office, Exeter, UK **2023**
Developed and implemented a simple Bayesian methodology to perform quality control over a large dataset of heterogeneous and corrupted citizen weather stations measurement.

Research Intern — Cervest, London, UK **2020**
Developed and implemented deep generative adversarial model to predict daily high resolution reflectance satellite observations by fusing MODIS and Landsat retrievals.

Research Intern — Deepomatic, Paris, France **2019**
Developed a novel sample interpolation methodology to enhance the robustness of convolutional object detection neural networks and demonstrated its performance on benchmark computer vision datasets.

Data Science Intern — Jumia PTC, Porto, Portugal **2018**
Implemented a deep self-supervised learning algorithm to learn latent representations of the product descriptions and facilitate product matching and duplicates removal.

Computer and Language skills

Technical Skills

Python, Julia, Unix, LaTeX — Fully Proficient
PyTorch, Xarray, Matplotlib — Fully Proficient
Java, R — Working Knowledge

Language

French, Arabic — Native Language
English — Fully Proficient
Spanish — Good Working Knowledge