

Youssef Saliba

Doctoral Research in Hydroclimatic Variability, Spatial Prediction, and Time Series Modelling

✉ youssefsaliba@gmail.com ☎ +96181130885 📍 Beirut, Lebanon 🎓 Google Scholar

Academic Profile

Doctoral candidate in hydroclimatology specializing in the statistical analysis of precipitation and temperature series in Dobrogea, Romania. My research examines the spatial and temporal structure of hydroclimatic variability through changepoint analysis and homogenization, regionalization of monitoring networks, spatial prediction of monthly precipitation, and probabilistic characterization of precipitation–temperature interaction. This work combines statistical inference with computational modelling to address problems of nonstationarity, spatial heterogeneity, and compound hydroclimatic risk.

Education

PhD Candidate (thesis submitted)

Current

Technical University of Civil Engineering Bucharest (UTCB), Bucharest, Romania

Doctoral research centered on hydroclimatic assessment, dependence-aware time-series analysis, spatial interpolation, and multivariate dependence modeling.

MSc in Physics

2020 – 2022

Lebanese University, Faculty of Science, Fanar

Specialization in Nanoscience and Functional Materials. Master's project: tailoring the thermal profile in a Physical Vapor Transport reactor for SiC growth through numerical modeling, under the supervision of Prof. Ziad Herro.

BSc in Physics

2011 – 2015

Université de Montréal, Montreal, Canada

Developed a Python program to verify the spherical symmetry of stellar wind in Wolf–Rayet stars using Levenberg–Marquardt fitting, under the supervision of Prof. Nicole St-Louis.

Doctoral Research Themes

- Hydroclimatic regionalization of the Dobrogea station network using clustering, principal-component reduction, and comparative validation.
- Dependence-aware changepoint detection and homogenization for monthly hydroclimatic series using MDL-based model selection and periodic autoregressive representations.
- Spatial prediction of monthly precipitation through benchmarking of deterministic, geostatistical, and graph neural network approaches.
- Copula-based assessment of precipitation–temperature dependence, with emphasis on compound warm-dry, cold-wet, warm-wet, and cold-dry events.

Research Areas

Hydroclimatology
Statistical climatology
Change-point detection
Homogenization
Spatial interpolation
Graph neural networks
Copula modeling
Compound events

Programming & Tools

R
Rcpp / C++
Python
LaTeX
PyTorch Geometric
COMSOL Multiphysics
OriginLab

Languages

Arabic
French
English

Expertise

Time-series modeling
Periodic autoregressive models
Graph-based learning
Copula

Publication Summary

4 Web of Science journal articles directly related to the thesis
1 Scopus-indexed conference proceedings paper
5 conference presentations
1 upcoming conference presentation
2 manuscripts under review
4 related peer-reviewed publications

Academic References

Prof. Dr. Habil. Eng. Alina Bărbulescu

Transilvania University of Braşov, Romania
alina.barbulescu@unitbv.ro

Assoc. Prof. Dr. Habil. Eng. Cristian Ştefan Dumitriu

Technical University of Civil Engineering Bucharest, Romania
cristian.dumitriu@utcb.ro

Selected Publications

- A Multi-Method Approach to Analyzing Precipitation Series and Their Change Points in Semi-Arid Climates: The Case of Dobrogea** 2025
Water, 17, 391
- Genetic-algorithm based changepoints detection and homogenization of precipitation series** 2026
Stochastic Environmental Research and Risk Assessment, 40, 8
- Copula-based assessment of compound warm-dry climate risk: a 55-year analysis of dependence structure stability in Tulcea, Romania** 2026
Stochastic Environmental Research and Risk Assessment, 40, 59
- Homogenization of Monthly Precipitation Series: A Case Study from Romania** 2026
Romanian Journal of Physics, 71, 801
- A critical approach to clustering precipitation series in the Dobrogea region, Romania** 2025
E3S Web of Conferences, 608, 05027

Conference Presentations

- A critical approach to clustering precipitation series in the Dobrogea region, Romania** 29–31 Oct 2024
EU-CONEXUS EENVIRO Research Conference 2024, Bucharest, Romania
Conference presentation. This work was also published in the E3S Web of Conferences proceedings.
- Identifying Change Points in Seasonal Hydrological Data using a Genetic Algorithm Approach** 7–9 Jul 2025
MadeAI 2025 – Modelling, Data Analytics and AI in Engineering, Porto, Portugal
Conference presentation.
- A copula approach for analyzing the hydro-meteorological shocks** 6–7 Nov 2025
CIBv2025 International Scientific Conference: Civil Engineering and Building Services, Braşov, Romania
Conference presentation.
- Does a copula quantify compound temperature–precipitation risk in Tulcea, Romania?** 13 Nov 2025
8th Edition of the Doctoral School Conference (DSC 2025), Technical University of Civil Engineering Bucharest, Bucharest, Romania
Conference presentation.
- Detected Latent Seasonal Precipitation Patterns with Genetic Search and Fourier Compression** 21–23 Nov 2025
6th World Conference on Climate Change and Global Warming (CCGCONF 2025), Copenhagen, Denmark
Conference presentation.

Upcoming Conference Presentation

- Assessing the precipitation series variability at the regional scale in the Dobrogea region based on a long data series set** 22–24 Jul 2026
Hydroinformatics Conference (HIC 2026), Zaragoza, Spain
Upcoming conference presentation. Listed in the official programme for 23 July 2026.

Teaching Experience

- Instructor, Artificial Intelligence** 2024 – Present
Université Saint-Joseph de Beyrouth, Centre de Zahle et de la Bekaa
Teaching the Artificial Intelligence course to third-year Bachelor's students in Applied Mathematics.
- Teaching Physics and Mathematics for Syrian Refugees** 2019 – 2020

Lebanese Public School, Zahle, Lebanon

Taught classical mechanics, electricity, and calculus, while helping students overcome language-related barriers.

Physics, Mathematics, and Programming Tutor

2014 – 2019

Lebanese Maronite Order – St. Maron's Cathedral, Montreal, Canada

Tutored freshman students in classical mechanics, electromagnetism, introductory calculus, and programming.

Signature



Youssef Saliba
Doctoral Candidate