

NESTORAS ANTONIOU

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PROFILE

Visiting Lecturer at the University of Cyprus and MSCA alumnus (YUFE4Postdocs Fellow, University of Eastern Finland), working on urban microclimate and climate change adaptation by combining Computational Fluid Dynamics, wind-tunnel and field experiments, and physics-informed machine learning. Google Scholar citations: 526.

ACADEMIC APPOINTMENTS

Visiting Lecturer (Full time) **Sept 2026 — Present**
University of Cyprus, School of Engineering, Department of Civil and Environmental Engineering

- Teaching three courses: two at undergraduate level, including a newly developed course, and one postgraduate course in the School of Engineering's interdepartmental MSc programme "Energy Technologies and Sustainable Design"

MSCA Postdoctoral Researcher (Full time) **Mar 2024 — Sept 2026**
University of Eastern Finland, Faculty of Science, Forestry and Technology, School of Computing, Applied Statistics and Statistical Machine Learning Group

- Principal Investigator (individual MSCA fellowship) of the YUFE4Postdocs project on coupling machine learning and CFD for urban climate adaptation

Research Scientist (Full time) **Jan 2017 — Mar 2024**
University of Cyprus, School of Engineering, Department of Civil and Environmental Engineering

- Researcher on the project "Isle of Excellence – Urban Microclimate, and the Design of Sustainable Built Environments" (ERDF / Research and Innovation Foundation)
- Participated in academic and educational activities of the Environmental Fluid Mechanics Laboratory

Research Scientist (Full time) **Mar 2015 — Feb 2017**
Eindhoven University of Technology, Department of the Built Environment

- Performed research in the areas of urban physics and wind engineering
- Participated in conferences and PhD schools with oral presentations and conference papers
- Participated in various industrial projects in the areas of climate change, wind safety, wind-driven rain and thermal comfort

EDUCATION

PhD in Environmental Engineering (Joint degree) **Feb 2016 — May 2022**
Eindhoven University of Technology and University of Cyprus, School of Engineering, Department of Civil and Environmental Engineering

PhD thesis: Numerical and experimental investigation of urban microclimate in a real compact heterogeneous urban area (Grade: Honours)

MSc in Building Energy and Environmental Performance Modelling **Sept 2011 — Sept 2012**
Cardiff University, Welsh School of Architecture

MSc thesis: Evaluation of ventilation effectiveness using Computational Fluid Dynamics (Grade: Merit)

Diploma in Architectural Engineering **Sept 2005 — Sept 2010**
University of Patras, School of Engineering

Diploma thesis: Passive cooling strategies and Bioclimatic design (Grade: Merit)

JOURNAL PUBLICATIONS

- Alexandrou, G., **Antoniou, N.**, Mouzourides, P., Neophytou, M.K.-A. (2026). Urban Tree Cooling and Thermal Stress Mitigation in a Dry Mediterranean Climate: Coupled CFD–SOLWEIG Modelling with UTCI Assessment. *Urban Forestry & Urban Greening*, Art. Nr. 129519.

- **Antoniou, N.**, Montazeri, H., Blocken, B., Neophytou, M.K.-A. (2024). On the impact of climate change on urban microclimate, thermal comfort, and human health: multiscale numerical simulations. *Building and Environment* 260, Art. Nr. 111690. (Cited by: 51, Google Scholar)
- **Antoniou, N.**, Montazeri, H., Neophytou, M.K.-A., Blocken, B. (2019). CFD simulation of urban microclimate: Validation using high-resolution field measurements. *Science of the Total Environment* 695, Art. Nr. 133743. (Cited by: 262, Google Scholar)
- **Antoniou, N.**, Montazeri, H., Wigo, H., Neophytou, M.K.-A., Blocken, B., Sandberg, M. (2017). CFD and wind-tunnel analysis of outdoor ventilation in a real compact heterogeneous urban area: Evaluation using “air delay.” *Building and Environment* 126, 355–372. (Cited by: 212, Google Scholar)

CONFERENCE PRESENTATIONS AND ABSTRACTS

- Safi Ullah, M., Alexandrou, G., Cintolesi, C., Mouzourides, P., Sengupta, B., **Antoniou, N.**, Neophytou, M., Di Sabatino, S.: Impact of Street-Level Trees on Pollutant Dispersion in Real Urban Canyons: A Comparative Study of Bologna and Nicosia. In EMS Annual Meeting 2026, EMS2026-688, <https://doi.org/10.5194/ems2026-688>
- Alexandrou, G., **Antoniou, N.**, Mouzourides, P., Neophytou, M.: Quantifying the Cooling Effects of Urban Trees on Pedestrian Heat Stress in a Dense Mediterranean Urban Environment. In EMS Annual Meeting 2026, EMS2026-509, <https://doi.org/10.5194/ems2026-509>
- **Antoniou, N.**, Laakkonen, J., Mouzourides, P., Neophytou, M.K.-A., Hautamäki, V.: Meta-Learning Enhanced Physics-Informed Neural Networks for Predicting Urban Canyon Wind Flows. In 3rd ERCOFTAC “Machine Learning for Fluid Dynamics”, Amsterdam, Netherlands, 4–6 March 2026
- Alexandrou, G., Mouzourides, P., **Antoniou, N.**, Neophytou, M.K.-A.: Thermal Comfort in the Urban Environment of Nicosia: Validating Downscaled UTCI Predictions from UMEP with CFD. In 17th International Conference on Meteorology, Climatology & Atmospheric Physics (COMECAP 2025), Nicosia, Cyprus, 29 September – 1 October 2025
- **Antoniou, N.**, Montazeri, H., Neophytou, M.K.-A., Blocken, B.: Projections of climate change on microclimatic conditions of an urban area: CFD simulations and adaptation measures. In EMS Annual Meeting, Bratislava, Slovakia, 3–8 September 2023
- **Antoniou, N.**, Montazeri, H., Neophytou, M.K.-A., Blocken, B.: Projections of climate change on microclimatic conditions of an urban area: CFD simulations and adaptation measures. In 2nd World Congress on Climate Change (WCCC), Berlin, Germany, September 2019
- **Antoniou, N.**, Montazeri, H., Neophytou, M.K.-A., Blocken, B.: Urban microclimate analysis of a real compact urban area: CFD and on-site measurements. In 10th International Conference on Urban Climate / 14th Symposium on the Urban Environment (ICUC), New York, USA, August 2018
- **Antoniou, N.**, Montazeri, H., Neophytou, M.K.-A., Blocken, B.: CFD simulations and on-site measurements of urban microclimate in a real compact urban area. In 6th International Conference on Renewable Energy Sources & Energy Efficiency (RESEE), Nicosia, Cyprus, October 2018
- **Antoniou, N.**, Montazeri, H., Wigo, H., Neophytou, M.K.-A., Blocken, B.J.E., Sandberg, M.: Numerical and wind-tunnel evaluation of ventilation conditions in a real compact heterogeneous urban area. In 7th European and African Conference on Wind Engineering (EACWE), Liège, Belgium, July 2017
- **Antoniou, N.**, Montazeri, H., Neophytou, M.K.-A., Blocken, B.: CFD simulations and field measurements of urban microclimate in a real compact heterogeneous urban area. In International Conference on Urban Comfort and Environmental Quality (URBAN-CEQ), Genova, Italy, May 2017
- **Antoniou, N.**, Montazeri, H., Wigo, H., Neophytou, M.K.-A., Blocken, B., Sandberg, M.: Experimental and numerical evaluation of wind flow in a compact urban area: validation and sensitivity analysis. In 8th International Colloquium on Bluff Body Aerodynamics and Applications (BBAA), Massachusetts, USA, June 2016

RESEARCH FUNDING AND GRANTS

YUFE4Postdocs — Principal Investigator (individual MSCA fellowship) **Mar 2024 — Sept 2026**
 “Adapting urban microclimates to climate change: coupling of Machine Learning and Computational Fluid Dynamics”. Independent postdoctoral fellowship funded by Horizon Europe – Marie Skłodowska-Curie Actions COFUND (Grant Agreement No. 101081327); host: University of Eastern Finland

Isle of Excellence — Researcher **Jan 2017 — Mar 2024**
 “Isle of Excellence – Urban Microclimate, and the Design of Sustainable Built Environments”: a research initiative and hub of excellence in Cyprus focused on understanding and improving urban climates through sustainable design. Funded under the Isles of Excellence Programme (Grant Agreement No. EXCELLENCE/1216/0294), co-financed by the European Regional Development Fund and the Republic of Cyprus through the Research and Innovation Foundation; host: University of Cyprus

TEACHING EXPERIENCE

- Visiting Lecturer****Sept 2026 — Present**
University of Cyprus, School of Engineering, Department of Civil and Environmental Engineering
 - Undergraduate course “Energy and Climate Change”: newly introduced course; developed the course material, including lectures and assignments
 - Undergraduate course “Experimental Fluid Mechanics”
 - Postgraduate course “Advanced Project: Capstone Design and Research Project”, interdepartmental MSc programme “Energy Technologies and Sustainable Design” (taught since Sept 2023)
- Postgraduate Teaching Associate****Sept 2017 — Sept 2024**
University of Cyprus, School of Engineering, Department of Civil and Environmental Engineering
Undergraduate course of Experimental Fluid Mechanics
- Teaching Assistant****Jan 2013 — Feb 2015**
University of Cyprus, School of Engineering, Department of Civil and Environmental Engineering
Undergraduate courses of Fluid Mechanics and Experimental Fluid Mechanics

SUPERVISION

- Main Supervisor, MSc Thesis****Ongoing**
University of Eastern Finland, Faculty of Science, Forestry and Technology, School of Computing, Applied Statistics and Statistical Machine Learning Group
Student: Umar Farooque. Thesis: “Graph Neural Networks for Multi-Scale Flow Prediction”

AWARDS AND ACCREDITATIONS

- Young Scientist Award****Sept 2023**
European Meteorological Society and Tromp Foundation
Awarded at the EMS Annual Meeting 2023, Bratislava, Slovakia, for the presentation “Projections of climate change on microclimatic conditions of an urban area: CFD simulations and adaptation measures”
- Member of the Technical Chamber of Cyprus (ETEK)****Sept 2011**
Specialization of Architectural Engineers

ACADEMIC SERVICE

- Peer Reviewer**
Verified reviewer for the journals Building and Environment, Urban Climate, Sustainable Cities and Society, and Science of the Total Environment

SKILLS AND COMPETENCES

- Computational Fluid Dynamics:** ANSYS Fluent; urban microclimate, wind and thermal comfort simulation; validation against wind-tunnel and field measurements
- Machine learning for fluid dynamics:** physics-informed neural networks (PINNs), neural surrogate models (NVIDIA PhysicsNeMo / DoMINO), PyTorch
- High-performance computing:** large-scale CFD and ML training workflows on Linux HPC clusters
- Building and urban energy performance simulation:** EnergyPlus, DesignBuilder, Ladybug Tools / Honeybee, Radiance
- Programming and data analysis:** Python, MATLAB, R; post-processing and visualisation with ParaView and Tecplot
- Experimental methods:** wind-tunnel testing and on-site microclimate field measurements
- CAD:** AutoCAD, Rhino

LANGUAGES

Greek (native), English (fluent, full professional proficiency)