



**Kostas Karatzas** is a Professor for Environmental Informatics at the [School of Mechanical Engineering](#) (MechEng), [Aristotle University of Thessaloniki](#) (AUTH), Greece, where he founded and is leading the [Environmental Informatics Research Group](#).

Kostas Karatzas is currently teaching *Informatics, Environmental Informatics* and *Air Pollution* at a graduate level (MechEng). He also teaches (i) *Computational Methods in Environmental Physics*, (ii) *Environmental Data Modelling and Information Service Development* (iii) *Air Pollution* and (v) *Biomedical engineering and global environmental challenges* at an MSc level, at the School of Physics, the School of Civil Engineering and the School of Electrical and Computer Engineering at AUTH. In the past Kostas has lectured at MSc and PhD courses as well as at industry seminars and summer schools, in Denmark, Finland, Germany, Italy, Russia and Spain, and served as a visiting research professor at the Finnish Meteorological Institute.

Kostas holds a Diploma and a Doctor degree in Mechanical Engineering, and works mainly in the field of (a) environmental informatics, (b) computational intelligence methods and tools for mechanical engineering and health (with applications including environment, energy, tribology, aeromechanics, exhaust aftertreatment modelling, allergy, aerobiology, etc.), (c) urban air quality management and information systems, (d) quality of life - environment related – ICT services, (e) air quality microsensor with emphasis on their computational calibration and improvement (f) citizen science. His research is interdisciplinary and cross domain: Kostas has participated (and led) more than 30 research projects in the aforementioned domains in the last 25 years, has authored/co-edited 5 books, published more than 250 papers in international scientific journals and conference proceedings (Google scholar [link](#)) and served as guest editor to scientific publications. He served as a member of the International Scientific Advisory Board of [CLEEN's Measurement, Monitoring and Environmental Efficiency Assessment \(MMEA\)](#) research programme, as a member of the board of the [International Environmental Modelling & Software Society](#), and as an Associate Member of the [Open Geospatial Consortium](#). Kostas has a long experience as a member of COST actions for the last 20 years, including positions of MC member and vice-chairman. In addition, he has been serving as a member of various programme committees, scientific and advisory boards in international conferences in Environmental Informatics and Computational Intelligence for more than 20 years and has/is supervising several PhD and MSc theses in Environmental Informatics-environmental information analysis and modeling in various countries. Among other activities he is the co-founder and co-editor of a Springer book series titled ["Environmental Informatics and Modelling"](#) and he was one of the lecturers of the International training course on [Low-cost Environmental Monitoring – from sensor principles to novel services](#). Currently he is also a member of the Task Force on ["Definition of clinical-relevant thresholds of allergen-exposure for analysis of outcomes in AIT"](#) of the European Academy of Allergy and Clinical Immunology and of the Air Pollution working group of the [European Citizen Science Association](#). He has also been newly appointed as a governing board member of the [Citizen Science Hub of the Aristotle University of Thessaloniki](#).

## Publications (only for 2022-23, in alphabetic order)

1. Bagkis E., Kassandros Th., Karatzas K., (2022). Learning calibration functions on the fly: Hybrid batch-online stacking ensembles for the calibration of low-cost air quality sensor networks in the presence of concept drifts, *Atmosphere*, **13**(3), 416. <https://doi.org/10.3390/atmos13030416>
2. Bagkis, E., Kassandros, T., Karatzas, K. (2022). Distribution Guided Neural Disaggregation of PM10 and O3 Hourly Concentrations from Daily Statistics and Low-Cost Sensors. In: Maglogiannis, I., Iliadis, L., Macintyre, J., Cortez, P. (eds) Artificial Intelligence Applications and Innovations. AIAI 2022. IFIP Advances in Information and Communication Technology, vol 647. Springer, Cham. pp. 182-193, [https://doi.org/10.1007/978-3-031-08337-2\\_16](https://doi.org/10.1007/978-3-031-08337-2_16)
3. Bagkis E., Kassandros T., Karatzas K. (2022), Real time calibration challenges for low-cost air quality sensor networks (<https://iac2022.gr/>, poster presentation)
4. De Vito S., Karatzas K., Bartonova A., Fattoruso G. (Editors), 2022, **Air Quality Networks. Data Analysis, Calibration & Data Fusion**. Series title: Environmental Informatics and Modelling. Springer, Cham, Switzerland. ISBN: 978-3-031-08475-1.
5. Gavros A. and Karatzas K. (2022). Air pollution due to central heating of a city-centered university campus. In: **Advances and New Trends in Environmental Informatics: A Bogeyman or Saviour for the UN Sustainability Goals?** (Wohlgemuth V., Naumann, S., Behrens, G., Arndt, H.K., eds.), Progress in IS series, Springer AG, Switzerland, pp. 117-133, ISBN: 978-3-030-88062-0
6. Gavros A., Hsu Y.C., Karatzas K. (2022). Forecast Smell Events in a Regional Pittsburgh Industrial Area with Machine Learning, <https://iced.eap.gr/proceedings/>, Athens, Greece (accepted)
7. Gkalonaki S., Karatzas K. (2022). Assessing the environmental impacts of renewable energy sources with emphasis on wind energy, <https://iced.eap.gr/proceedings/>, Athens, Greece (accepted).
8. Kassandros T., Bagkis E., Johansson L., Kontos Y., Katsifarakis K.L., Karppinen A., Karatzas K. (2023), Machine learning-assisted dispersion modelling based on genetic algorithm-driven ensembles: An application for road dust in Helsinki, *Atmospheric Environment* **307**, 119818, <https://doi.org/10.1016/j.atmosenv.2023.119818>
9. Kassandros Th., Bagkis E., Karatzas K. (2022), Data fusion for the improvement of Low-Cost Air Quality Sensors. In: **Air Pollution Modelling and its Application XXVIII** (Mensink C., Jorba O., eds), Springer Proceedings in Complexity Series, Springer Cham. ISSN: 2213-8684, in press (ITM 2021: International Technical Meeting on Air Pollution Modelling and its Application, 18 - 22 October 2021, Barcelona)
10. Kassandros T., Bagkis E., Karatzas K., (2022), Data fusion for the improvement of the spatial resolution of air quality modelling, 13th International Conference on Air Quality, Thessaloniki, 27 June - 1 July 2022.
11. Kassandros T., Bagkis E., Cheristanidis S., Melas D., Karatzas K., Salanova J.M., Margaritis D., Aifandopoulou G., Tzenos P. (2022), SMART MOBILITY ESTIMATIONS AND INTELLIGENT AQ MONITORING FOR THE SUPPORT OF GREEN MOBILITY, 13th International Conference on Air Quality, Thessaloniki, 27 June - 1 July 2022.
12. Katsalis P., Bagkis E., Karatzas K. (2022), Remote sensing data analysis via machine learning for land use estimation in the Greater Thessaloniki Area, Greece ([enviroinfo2022](https://enviroinfo2022.org/), accepted)
13. Kontos Y.N., Kassandros T., Perifanos K., Karampasis M., Katsifarakis K.L., Karatzas K. (2022), Machine Learning for Groundwater Pollution Source Identification and Monitoring Network Optimization, *Neural Computing and Applications* **34**, 19515-19545, <https://doi.org/10.1007/s00521-022-07507-8>
14. Mar Viana, Kostas Karatzas, Thanos Arvanitis, Cristina Reche, Miguel Escribano, Edurne Ibarrola, Paolo Adami, Stéphane Bermon (2022). Air Quality Monitoring in Athletics Stadiums: Can low-cost sensor technologies support guidance for international competitions? Air Sensors International Conference (ASIC), May 11-13, 2022
15. Milagros Ródenas García\*, Sofia I.V. Sousa, Andrea Spinazzé, Pedro T.B.S. Branco, Francesca Borghi, Guillermo Villena, Andrea Cattaneo, Alessia de Gilio, Victor G. Mihucz, Elena Gómez Álvarez, Sérgio Ivan Lopes, Benjamin Bergmans, Cezary Orłowski, Kostas Karatzas, Gonçalo Marques, John Saffell

- (2022), Review of Low-Cost Sensors for Indoor Air Quality: Features and Applications, *Applied Spectroscopy Reviews*, DOI: 10.1080/05704928.2022.2085734
16. Nikolis D., Karatzas K., Kuula J., Timonen H. (2022), Analysis and modelling of an optical particulate matter sensor data towards its performance improvement. **Air Quality Networks - Data Analysis, Calibration & Data Fusion** (de Vito S., Karatzas K., Bartonova A., Fattoruso G., ets), Environmental Informatics and Modeling book series, Springer, in press
  17. Panourgias M. and Karatzas K. (2022), Analysis and improvement of two low-cost air quality sensor measurements' uncertainty ([enviroinfo2022](#), accepted)
  18. Papakonstantinou E., Kassandra Th., Kosmidis E., Koutsakas Ph., Karatzas K. (2022) Air pollution in a school environment under varying COVID-19 related operational conditions, Protection and restoration of the Environment XVI, Proceedings of an International Congress, Kalamata, Greece
  19. Reis J., Lopes D., Lopes M., Karatzas K. (2022), Intercomparison between air quality microsensors and conventional monitoring data, 12th Ibero-American Congress on Sensors - A look at sensors in the Iberian Peninsula and Latin America: year 2022 (Gomes M.t.S.R. and Veríssimo M.I.S., eds), <http://dx.doi.org/10.48528/h76t-t092>
  20. Ródenas García M., Sousa S.I.V., Spinazzé A., Branco PT.B.S., Borghi F., Villena G., Cattaneo A., de Gilio A., Mihucz V.G., Gómez Álvarez E., Ivan Lopes S., Bergmans B., Orłowski C., Karatzas K., Marques G., Saffell J. (2022), Review of Low-Cost Sensors for Indoor Air Quality: Features and Applications, *Applied Spectroscopy Reviews* **57**, Nos9-10, 747-779, <https://doi.org/10.1080/05704928.2022.2085734>
  21. Russell H.S., Kappelt N., Fessa D., Frederickson L.B, Bagkis E., Apostolidis P., Karatzas K., Schmidt J., Hertel O., Johnson M.S. (2022). Particulate Air Pollution in the Copenhagen Metro Part 2: Low-Cost Sensors and Micro-Environment Classification. *Environment International* **170**, 107645, <https://doi.org/10.1016/j.envint.2022.107645>
  22. Skarzauskiene A., Maciuliene M., Wildevuur S., van den Berg M., Bakratsas T., Psaltoglou A., Stylianidis E., Tavantzis I. and Karatzas K. (2023). Developing citizen science ecosystem: critical factors for quadruple helix stakeholders engagement, *Journal of Enterprising Communities: People and Places in the Global Economy*, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/JEC-08-2022-0116>
  23. Tasioulis Th., Karatzas K. Charalampopoulos A., Damialis A., Vokou D. (2022). Five ways to define a pollen season: exploring congruence and disparity in its attributes and their long-term trends, *Aerobiologia*, <https://doi.org/10.1007/s10453-021-09735-2>
  24. Skarzauskiene, Aelita; Mačiulienė, Monika; Bakratsas, Thomas; Psaltoglou, Artemis; Wildevuur, Sabine; Van den Berg, Maya; Stylianidis, Efstratios; Tavantzis, Ioannis; Karatzas, Konstantinos (2022), Developing citizen science ecosystem for social change: critical factors for quadruple helix stakeholders' engagement, *Technological Forecasting & Social Change*, submitted
  25. Viana, M.; Karatzas, K.; Arvanitis, T.; Reche, C.; Escribano, M.; Ibarrola-Ulzurrun, E.; Adami, P.E.; Garrandes, F.; Bermon, S (2022), Air Quality Sensors Systems as Tools to Support Guidance in Athletics Stadia for Elite and Recreational Athletes. *Int. J. Environ. Res. Public Health* **2022**, *19*(6), 3561; <https://doi.org/10.3390/ijerph19063561>

### Selected international collaborations:

- [Finnish Meteorological Institute](#)
- [Charité – Universitätsmedizin Berlin](#)
- [Institute of Environmental Assessment and Water Research](#), Spain
- [Department of Environmental Science, Aarhus University, Denmark](#)
- [Norwegian Institute of Air Research](#)
- [World Athletics](#)
- [Kunak](#) Sensing Anywhere