CURRICULUM VITAE

ILIAS SIARKOS

Dr. Civil Engineer

ASSISTANT PROFESSOR

LABORATORY OF ENGINEERING GEOLOGY & GROUNDWATER RESEARCH

SECTOR OF GEOTECHNICAL ENGINEERING

DEPARTMENT OF CIVIL ENGINEERING, DEMOCRITUS UNIVERSITY OF THRACE

XANTHI, FEBRUARY 2025

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PERSONAL INFORMATION

Full name:	Ilias Siarkos
Father's name:	Dimitrios
Place of birth:	Thessaloniki, Greece
Year of birth:	1981
Academic position:	Assistant Professor,
	Department of Civil Engineering, Democritus University of Thrace (D.U.Th)
Work address:	Building B', University Campus - Kimmeria, 67100, Xanthi, Greece
Phone number:	+30 25410-79693 (work)
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Research profiles:	ResearchGate, LinkedIn, GoogleScholar

EDUCATION

Ph.D. in Civil Engineering (2015)
School of Civil Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece

Dissertation: *"Development of a methodological framework using mathematical simulation models in order to investigate the operation of coastal aquifer systems: application to the aquifer of Nea Moudania"* (link)

M.Sc. in *'Environmental Protection & Sustainable Development'* (2008)
School of Civil Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece

Grade: *9.29/10 ('EXCELLENT')*

Thesis: *"A methodological approach for the protection of groundwater resources"* (link)

Diploma in Civil Engineering (2007)
School of Civil Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece

Grade: *7.58/10 ('VERY GOOD')*

Thesis: *"Investigation of quality parameters in urban public transportation"*

RESEARCH INTERESTS

- Groundwater hydrology and hydraulics - Well hydraulics - Hydrological and hydrogeological investigations of groundwater systems.
- Coastal aquifers and seawater intrusion.
- Managed aquifer recharge (MAR) - Planning of artificial recharge schemes.
- Groundwater quality and pollution.
- Groundwater resources protection and remediation - Wellhead protection zones - Groundwater vulnerability assessment.
- Development of hydrogeological conceptual models - Groundwater modeling - Groundwater flow and mass transport simulations.
- Surface water hydrology - Watershed modeling and study/simulation of hydrological processes.
- Water resources planning and management - Surface water/groundwater interaction and conjunctive use - Hydrological system optimization.
- River flow simulation - Flood risk assessment - Drought risk assessment.

RESEARCH ACTIVITY

Post-doctoral research (2020 - 2022)
Department of Marine Sciences, University of the Aegean, Mytilene, Greece

Title: "*Development of an integrated artificial recharge model for controlling seawater intrusion in coastal areas*"

Research Projects
A1) Impact study and expert report on addressing issues in the fire-damaged areas of Vrisa, Vatera, and Stavros, Lesvos, following the July 23, 2022 fire – Vrisiis 2022, University of the Aegean (2022 - 2024).
Principal Researcher: Konstantinos Kalabokidis (Professor)

A2) Coastal environment observatory and crisis management in island regions (AEGIS+), University of the Aegean (2020 - 2023).
Principal Researcher: Vasileios Zervakis (Professor)

A3) Environmental awareness raising program to protect the natural environment of Reception and Identification Center (RIC) of Lesvos (ENVIRIC), Chios (Vial), and Samos (MPRIC/Vathy), University of the Aegean (2021).
Principal Researcher: Ourania Tzoraki (Assoc. Professor)

A4) Science4Refugees in Aegean Archipelago (SCIREA), University of the Aegean (2018 - 2020).
Principal Researcher: Ourania Tzoraki (Assoc. Professor)

A5) Groundwater nitrate contamination - Development of management plan through the combined use of numerical modeling and Geographic Information Systems (GIS), Aristotle University of Thessaloniki (2013 - 2014).
Principal Researcher: Zisis Mallios (Assoc. Professor)

Publications (19) in peer-reviewed journals
B1) **Siarkos I.**, Mallios Z., Tzoraki O. and Latinopoulos P. (2025) A methodological framework for the optimal design of injection barriers against seawater intrusion in coastal-rural regions, *Science of the Total Environment,* 966(1), 178679. (link)

B2) Papasarafianou S., **Siarkos I.**, Gkaifyllia A., Sahtouris S., Varra G., Chatzipavlis A., Chasiotis T. and Tzoraki O. (2024) A holistic approach for coastal-watershed management on tourist islands: A case study from Petra-Molyvos coast, Lesvos Island (Greece), *Geosciences,* 14(12), 326. (link)

B3) **Siarkos I.**, Mallios Z. and Latinopoulos P. (2024) An integrated framework to assess the environmental and economic impact of fertilizer restrictions in a nitrate-contaminated aquifer, *Hydrology,* 11(1), 8. (link)

B4) Botsis D., **Siarkos I.**, Diamantaras K., Mallios Z. and Latinopoulos P. (2023) Comparative evaluation of different machine learning models for simulating the effect of injection barriers against seawater intrusion: a case study from Nea Moudania aquifer, Greece, *European Water*, 83/84, pp. 3-20. (link)

B5) **Siarkos I.**, Arfaoui M., Tzoraki O., Zammouri M. and Hamzaoui-Azaza F. (2023) Implementation and evaluation of different techniques to modify DRASTIC method for groundwater vulnerability assessment: A case study from Bouficha aquifer, Tunisia, *Environmental Science and Pollution Research*, 30, pp. 89459-89478. (link)

B6) Christaki M., Vasilakos C., Papadopoulou E., Tataris G**., Siarkos I.** and Soulakellis N. (2022) Building change detection based on a gray level co-occurrence matrix and artificial neural networks, *Drones*, 6(12), 414. (link)

B7) Mallios Z., **Siarkos I.**, Karagiannopoulos P. and Tsiarapas A. (2022) Pumping energy consumption minimization through simulation-optimization modelling, *Journal of Hydrology*, 612, 128062. (link)

B8) **Siarkos I.**, Sevastas S., Mallios Z., Theodossiou N. and Ifadis I. (2021) Investigating groundwater vulnerability variation under future abstraction scenarios to estimate optimal pumping reduction rates, *Journal of Hydrology*, 598, 126297. (link)

B9) Tzoraki O., Lagou M., Gavalas V., Petracou E., **Siarkos I.** and Di Pasquale E. (2021) Educational profile of refugee scientists trapped in waiting asylum demanding procedures in Greece, *Journal of Identity and Migration Studies*, 15(1), pp. 50-68. (link)

B10) **Siarkos I.**, Sevastas S. and Latinopoulos D. (2018) Using a hydroeconomic model to evaluate alternative methods applied for the delineation of protection zones, *Desalination and Water Treatment*, 133, pp. 315-326. (link)

B11) Sevastas S., **Siarkos I.**, Theodossiou N. and Ifadis I. (2018) Evaluating the use of measured and/or open access data in watershed modeling through an integrated modeling procedure, *Desalination and Water Treatment*, 133, pp. 268-282. (link)

B12) Sevastas S., Gasparatos D., Botsis D., **Siarkos I.**, Diamantaras K.I. and Bilas G. (2018) Predicting bulk density using pedotransfer functions for soils in the Upper Anthemountas basin, Greece, *Geoderma Regional*, 14, e00169. (link)

B13) Sevastas S., **Siarkos I.**, Theodossiou N. and Ifadis I. (2017) Establishing wellhead protection areas and managing point and non-point pollution sources to support groundwater protection in the aquifer of Upper Anthemountas, Greece, *Water Utility Journal*, 16, pp. 81-95. (link)

B14) **Siarkos I.**, Latinopoulos D., Mallios Z. and Latinopoulos P. (2017) A methodological framework to assess the environmental and economic effects of injection barriers against seawater intrusion, *Journal of Environmental Management*, 193, pp. 532-540. (link)

B15) **Siarkos I.** and Latinopoulos P. (2016) Development of constant and variable density models to study groundwater flow and seawater intrusion in the aquifer of Nea Moudania, Greece, *European Water*, 55, pp. 53-66. (link)

B16) **Siarkos I.** and Latinopoulos P. (2016) Modeling seawater intrusion in overexploited aquifers in the absence of sufficient data: application to the aquifer of Nea Moudania, northern Greece, *Hydrogeology Journal*, 24(8), pp. 2123-2141. (link)

B17) Matiaki M., **Siarkos I.** and Katsifarakis K.L. (2015) Numerical modeling of groundwater flow to delineate protection zones. The case of Krokos aquifer, Greece, *Desalination and Water Treatment*, 57(25), pp. 11572-11581. (link)

B18) **Siarkos I.**, Latinopoulos D. and Katirtzidou M. (2014) Delineating cost-effective wellhead protection zones in a rural area in Greece, *Water and Environment Journal*, 28(1), pp. 72-83. (link)

B19) **Siarkos I.** and Latinopoulos P. (2012) Delineation of wellhead protection zones for the control of point pollution sources in the aquifer of N. Moudania, Greece, *European Water*, 40, pp. 3-17. (link)

Publications (1) in Edited Volumes

C1) Latinopoulos D. and **Siarkos I.** (2014) Modelling the groundwater flow to assess the long-term economic cost of irrigation water: Application in the Moudania Basin, Greece, In: Giannino M. (ed), *Drinking Water and Water Management: New Research*, New York: Nova Publishers, pp. 249-274. (link)

Publications (21) in peer-reviewed Conferences

D1) Elias E., Stamataki M.D., **Siarkos I.** and Tzoraki O. (2024) Crowdwater photo-sampling and photographic data analysis: Application to the Evergetoulas River, Lesvos (Greece), *5th International Congress on Applied Ichthyology, Oceanography & Aquatic Environment*, 30 May - 2 June, Mytilene, Greece.

D2) Papasarafianou S., Gkaifyllia A., Iosifidi A., Sahtouris S., Wulf N., Culibrk A., Stamataki M., Chatzivasileiou T., **Siarkos I.** et al. (2023) Vulnerability of small rivers coastal part due to floods: The case study of Lesvos North - West coast, *Environmental Science Proceedings*, 25(1), 44. (link)

D3) Botsis D., **Siarkos I.**, Diamantaras K., Mallios Z. and Latinopoulos P. (2022) Modeling the effect of artificial recharge on seawater intrusion applying machine learning methods, *Proceedings of the 15th Conference of Hellenic Hydrotechnical Association*, 2-3 June, Thessaloniki, Greece.

D4) **Siarkos I.**, Katirtzidou M., Sevastas S. and Tzoraki O. (2021) Evaluation of potential preventive measures against seawater intrusion in Nea Moudania aquifer, Greece, *4th International Congress on Applied Ichthyology, Oceanography & Aquatic Environment*, 4-6 November, Online.

D5) Mallios Z., Karagiannopoulos P. and **Siarkos I.** (2021) Pumping cost minimization with the use of an iterative algorithm in Simantra settlement, Chalkidiki, Greece, *4th International Congress on Applied Ichthyology, Oceanography & Aquatic Environment*, 4-6 November, Online.

D6) Katirtzidou M., Latinopoulos P. and **Siarkos I.** (2019) Investigation of alternative water management scenarios under climate change conditions, *Proceedings of the 14th Conference of Hellenic Hydrotechnical Association*, 16-17 May, Volos, Greece.

D7) **Siarkos I.**, Katirtzidou M., Latinopoulos D. and Latinopoulos P. (2018) Investigating groundwater flow and seawater intrusion in Nea Moudania aquifer under various management scenarios, *Proceedings of the 14th International Conference on Protection and Restoration of the Environment*, 3-6 July, Thessaloniki, Greece.

D8) **Siarkos I.**, Sevastas S., Botsis D. and Theodossiou N. (2018) Developing an integrated surface water-groundwater modeling system for Upper Anthemountas basin, Greece, *Proceedings of the 14th International Conference on Protection and Restoration of the Environment*, 3-6 July, Thessaloniki, Greece.

D9) **Siarkos I.**, Terzanidou E., Sevastas S. and Latinopoulos D. (2017) Comparison and economic appraisal of various methods used for the delineation of wellhead protection zones, *Proceedings of the 6th International Conference on Environmental Management, Engineering, Planning and Economics (CEMEPE) and SECOTOX Conference*, 25-30 June, Thessaloniki, Greece.

D10) Sevastas S., **Siarkos I.**, Theodossiou N., Ifadis I. and Kaffas K. (2017) Comparing hydrological models built upon open access and/or measured data in a GIS environment, *Proceedings of the 6th International Conference on Environmental Management, Engineering, Planning and Economics (CEMEPE) and SECOTOX Conference*, 25-30 June, Thessaloniki, Greece.

D11) **Siarkos I.** and Latinopoulos P. (2015) Simulation of seawater intrusion through constant and variable density models, *Proceedings of the 3rd Common Conference of HHA-GCWRM-HWA*, 10-12 December, Athens, Greece.

D12) Sevastas S., **Siarkos I.**, Theodossiou N. and Ifadis I. (2015) Application of Geographic Information Systems to compare various methods used for the delineation of wellhead protection zones, *Proceedings of the 3rd Common Conference of HHA-GCWRM-HWA*, 10-12 December, Athens, Greece.

D13) Kasapaki M., Latinopoulos D., **Siarkos I.** and Latinopoulos P. (2015) A methodological framework to explore the long-term effects of seawater intrusion on groundwater quality and agricultural productivity, *Proceedings of the 14th International Conference on Environmental Science and Technology*, 3-5 September, Rhodes, Greece.

D14) Sevastas S., **Siarkos I.**, Theodossiou N. and Ifadis I. (2014) Simulating groundwater flow in the Upper Anthemountas basin in Chalkidiki applying Modflow and Geographic Information System, *Proceedings of the 10th International Hydrogeological Congress*, 8-10 October, Thessaloniki, Greece.

D15) Matiaki M., **Siarkos I.** and Katsifarakis K. (2014) Investigation of groundwater flow in Krokos aquifer, Greece, to protect a springs' area, *Proceedings of the 12th International Conference on Protection and Restoration of the Environment*, 29 June - 3 July, Skiathos, Greece.

D16) **Siarkos I.**, Kakoudakis K. and Latinopoulos D. (2013) Modelling the groundwater flow for estimating the pumping cost of irrigation in the aquifer of N. Moudania, Greece, *Proceedings of the 13th International Conference on Environmental Science and Technology*, 5-7 September, Athens, Greece.

D17) **Siarkos I.**, Kouvaritaki D., Charcharidou A. and Theodossiou N. (2013) Modelling the effect of agricultural activities on groundwater quality in the aquifer of N. Moudania, Greece, *Proceedings of the 13th International Conference on Environmental Science and Technology*, 5-7 September, Athens, Greece.

D18) **Siarkos I.** and Latinopoulos P. (2012) Modeling the delineation of protection zones for domestic water-supply wells in the aquifer of N. Moudania, Greece, *Proceedings of the 11th International Conference on Protection and Restoration of the Environment*, 3-6 July, Thessaloniki, Greece.

D19) **Siarkos I.**, Katirtzidou M. and Latinopoulos D. (2011) Establishing cost-effective wellhead protection zones to control nitrate pollution from agriculture activities, *Proceedings of the 12th International Conference on Environmental Science and Technology*, 8-10 September, Rhodes, Greece.

D20) **Siarkos I.**, Latinopoulos P. and Darakas E. (2011) Groundwater quality investigation in Moudania basin, Halkidiki peninsula, Greece, *Proceedings of the 12th International Conference on Environmental Science and Technology*, 8-10 September, Rhodes, Greece.

D21) **Siarkos I.** and Latinopoulos P. (2009) Protection of water-supply wells in the N. Moudania basin through the delineation of protection zones and the detection of point pollution sources, *Proceedings of the 2nd National Conference of Urban Planning, Land Planning and Regional Development*, 24-27 September, Volos, Greece.

Extended abstracts (2) in peer-reviewed Conferences

E1) Papasarafianou S., Chatzivasileiou T., Koutsovili E.-I., Rusjan S., **Siarkos I.** and Tzoraki O. (2021) Ecohydrological status of three intermittent flow Mediterranean rivers (Cyprus, Slovenia and Greece), *ENVIRO 21 - 25th International Scientific Conference*, 3-4 June, Online. (link)

E2) **Siarkos I.**, Tzoraki O. and Kalabokidis K. (2021) Development of a drought management tool for the island of Lesvos, *Geography Conference*, 2-4 June, Online.

Research impact
- Scopus: 127 citations, h-index: 7 (link)
- Google Scholar: 248 citations, h-index: 9, i10-index: 9 (link)

Reviewer in Scientific Journals
- Journal of Hydrology
- Environmental Science and Pollution Research
- Environmental Monitoring and Assessment
- Hydrology [MDPI]
- Earth Science Informatics
- Acta Geophysica
- Hydrotechnics

TEACHING EXPERIENCE

Assistant Professor (2024 - today)
Department of Civil Engineering, Democritus University of Thrace, Xanthi, Greece

Under-graduate courses:
- *Groundwater Hydrology* (4th Semester)
- *Geoenvironmental Engineering* (8th Semester)
- *Groundwater Hydraulics* (8th Semester)

Post-graduate courses in 'Hydraulic Engineering & Environment':
- *Special Topics in Research and Management of Groundwater and Geothermal Energy* (1st Semester)
- *Techniques and Tools for Developing Methods of Water Resources Protection and Natural Disaster Prevention* (2nd Semester)

Teaching Fellow (2017 - 2024)
Department of Geography, University of the Aegean, Mytilene, Greece

Under-graduate courses:
- *Environmental Geology* (4th Semester)
- *Hydro-geography* (5th Semester)
- *Water Resources Management* (7th Semester)

Post-graduate courses in 'Natural Hazards & Disaster Mitigation':
- *Environmental Changes and Natural Risks* (1st Semester)
- *Floods - Drought* (2nd Semester)

Post-graduate courses in 'Geography & Applied Geoinformatics':
- *Environmental Changes and Risks* (1st Semester)
- *Geo-informatics and Environmental Risk Management* (2nd Semester)

Teaching Assistant (2010 - 2015)
Innovation and Entrepreneurship Unit & School of Civil Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece

Under-graduate courses:
- *Innovation and Entrepreneurship in Civil Engineering* (9th Semester)

Teaching Assistant (2011 & 2012)
School of Civil Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece

Under-graduate courses:
- *Water Resources Management* (9th Semester)

Co-supervisor of under-graduate and post-graduate theses
• Katirtzidou M. (2010) Alternative strategies for protecting water-supply wells against contamination caused by various land use practices, Main supervisor: Pericles Latinopoulos.
• Kakoudakis K. (2012) Simulating transient groundwater flow to estimate the costs of pumping water for irrigation purposes, Main supervisor: Pericles Latinopoulos.
• Kouvaritaki D. and Charcharidou A. (2012) Applying mathematical models to simulate groundwater contamination from agricultural activities: application to the aquifer of Nea Moudania, Chalkidiki, Main supervisor: Nicolaos Theodossiou.
• Matiaki M. (2013) Assessing water quality in Krokos, Kozani and developing strategies to protect the water springs area, Main supervisor: Konstantinos Katsifarakis.
• Kasapaki M. (2014) Simulating seawater intrusion in a coastal aquifer to assess its impact on agricultural production, Main supervisor: Pericles Latinopoulos.
• Terzanidou E. (2016) Comparative assessment and economic evaluation of various methos used to delineate wellhead protection areas, Main supervisor: Pericles Latinopoulos.
• Toziopoulos K. (2016) Investigating the operation of aquifer systems in Iperia-Orfana, western Thessaly, Main supervisor: Zisis Mallios.
• Karydas K. (2018) Comparative assessment and economic evaluation of various measures applied against seawater intrusion in the coastal aquifer of Nea Moudania, Main supervisor: Zisis Mallios.
• Karagiannopoulos P. (2021) Pumping cost minimization using an iterative optimization algorithm in the Nea Moudania aquifer, Main supervisor: Zisis Mallios.
• Iosifidi A. (2024) Hydraulic simulation of the Petra stream in Lesvos, Main supervisor: Ourania Tzoraki.

PROFESSIONAL EXPERIENCE

Civil Engineer (2013 - 2024)
• Freelancer
• A' class professional (engineering) license in categories:
  - Hydraulic Design and Water Resources Management (No. 13)
  - Environmental Impact Assessment (No. 27)
• Energy Performance Certificates (A' Class)

COMMITTEE MEMBER

Journals:
- Guest Editor in Special Issue *"Groundwater Pollution: Sources, Mechanisms, and Prevention (Second Edition)"* of "Hydrology" [MDPI]. (link)

Conferences:

- Member of the Organizing and Scientific Committee of the *"16th Conference of Hellenic Hydrotechnical Association"*, Xanthi, Greece, 29-30 May, 2025.

- Member of the Scientific Committee of the *"15th Conference of Hellenic Hydrotechnical Association"*, Thessaloniki, Greece, 2-3 June, 2022.

- Member of the Scientific Committee of the *"Protection and Restoration of the Environment XIV"*, Thessaloniki, Greece, 3-6 July, 2018.

AWARDS - SCHOLARHIPS

• Post-doctoral scholarship, State Scholarships Foundation (IKY), Greece, February 2020 - February 2022.

• Doctoral scholarship of excellence, Research Committee, Aristotle University of Thessaloniki, Thessaloniki, Greece, 2012.

• Reciprocal scholarship, Department of Studies, Aristotle University of Thessaloniki, Thessaloniki, Greece, September 2012 - November 2012.

• Young Scientist Award, 11th International Conference on Protection and Restoration of the Environment, Thessaloniki, Greece, July 2012.

COMPUTER SKILLS

• **Operating systems:** Microsoft Windows

• **Programming languages:** Python

• **Modeling software:** MODFLOW, MODPATH, MT3DMS, SEAWAT, FloPy, WhAEM, HEC-RAS, HEC-HMS, ArcSWAT, HBV

• **Engineering software:** ArcGIS, AutoCAD, AutoMap, Surfer

• **Database/Statistics:** MS-Excel, MS-Access, SPSS

• **Others:** DrinC, LogPlot, AquaChem