

# Antonia Hadjimichael

ASSISTANT PROFESSOR · THE PENNSYLVANIA STATE UNIVERSITY

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## Appointments

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- 2022-... **Assistant Professor**, Department of Geosciences, The Pennsylvania State University  
2022-... **Faculty Associate**, Earth and Environmental Systems Institute (EESI), The Pennsylvania State University  
2017-2021 **Postdoctoral Associate**, School of Civil and Environmental Engineering, Cornell University  
2014-2015 **Visiting Researcher**, Waterschap de Dommel, The Netherlands

## Education

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- 2012 - 2016 **PhD Water Science and Technology**, Universitat de Girona, Spain  
2011 - 2012 **MSc Environmental Modelling**, University College London (UCL), United Kingdom  
2008 - 2011 **BSc Mathematics**, University of Leicester, United Kingdom

## Awards and Fellowships

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- 2025 - 2028 **Wilson Faculty Fellow**, College of Earth & Mineral Sciences, The Pennsylvania State University

## Publications

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PEER-REVIEWED JOURNAL ARTICLES n=20; \* denotes Hadjimichael advisee

- Li, M., Najjar, R., Kaushal, S., Mejia, A., Chant, R., Ralston, D., Burchard, H., **Hadjimichael, A.**, Lassiter, A., Wang, X., 2025. The emerging global threat of salt contamination of water supplies in tidal rivers. *Environmental Science & Technology Letters* <https://doi.org/10.1021/acs.estlett.5c00505>
- Eyni A., Zaitchik B.F., **Hadjimichael, A.**, Hobbs, B., Shi, R., 2025. Distributional outcomes of urban heat island reduction pathways under climate extremes. *Scientific Reports* 15, 9594. <https://doi.org/10.1038/s41598-025-93896-4>
- Hadjimichael, A.**, Schlumberger, J., Haasnoot, M., 2024. Data visualization for decision making under deep uncertainty: Current challenges and opportunities. *Environmental Research Letters* 19(11), 111011. <https://doi.org/10.1088/1748-9326/ad858b>
- Hadjimichael, A.**, Reed, P.M., Quinn, J.D., Vernon, C.R., Thurber, T., 2024. Scenario storyline discovery for planning in multi-actor human-natural systems confronting change. *Earth's Future*, 12(9), e2023EF004252. <https://doi.org/10.1029/2023EF004252>
- Zeff, H.B., **Hadjimichael, A.**, Reed, P.M., Characklis, G.W., 2024. Using financial contracts to facilitate informal leases within a Western United States water market based on prior appropriation. *Earth's Future* 12(5), e2023EF003739, <https://doi.org/10.1029/2023EF003739>
- Gupta, R.S., Vernon, C.R., Thurber, T.B., Gold, D.F., Hirsch, Z.M., **Hadjimichael, A.**, Reed, P.M., 2024. statemodify: a Python framework to facilitate accessible exploratory modeling for discovering drought vulnerabilities. *Journal of Open Source Software* 9(96), 6325, <https://doi.org/10.21105/joss.06325>
- Giang, A., Edwards, M.R., Fletcher, S.M., Gardner-Frolick, R., Gryba, R., Mathias, J.-D., Vernier-Cambron, C., Anderies, J. M., Berglund, E., Carley, S., Erickson, J., Grubert, E., **Hadjimichael, A.**, Hill, J.D., Mayfield, E., Nock, D., Pikok, K. K., Saari, R. K., Lezcano, C.M.S., Siddiqi, A., Skerker, J. B., Tessum, C. W., 2024. Equity and modeling in sustainability science: examples and opportunities throughout the modeling process. *Proceedings of the National Academy of Sciences* Special Feature: Modeling Dynamic Systems for Sustainability Science. <https://doi.org/10.1073/pnas.2215688121>
- Taberna A., Filatova T., **Hadjimichael, A.**, Noll, B., 2023. Uncertainty in boundedly-rational households adaptation to environmental shocks. *Proceedings of the National Academy of Sciences* Special Feature: Modeling Dynamic Systems for Sustainability Science. <https://doi.org/10.1073/pnas.2215675120>

- Hadjimichael, A.** Yoon, J., Reed, P.M., Voisin, N., Xu, W., 2023. Exploring the Consistency of Water Scarcity Inferences between Large-Scale Hydrologic and Node-Based Water System Model Representations of the Upper Colorado River Basin. *Journal of Water Resources Planning and Management* 149, 04022081. <https://doi.org/10.1061/JWRMD5.WRENG-5522> **Journal Reproducibility Award**
- Fletcher S., **Hadjimichael, A.**, Quinn J.D., Osman K., Giuliani M., Gold D., Figueiroa A. J., Gordon B., 2022. Equity in water resources planning: a path forward for decision-support modelers. *Journal of Water Resources Planning and Management* 148, 7. [https://doi.org/10.1061/\(ASCE\)WR.1943-5452.0001573](https://doi.org/10.1061/(ASCE)WR.1943-5452.0001573), **Editor's Choice Paper** and **2024 Best Policy Oriented Paper Award**
- Reed, P.M., **Hadjimichael, A.**, Moss, R.H., Brelsford, C., Burleyson, C.D., Cohen, S., Dyreson, A., Gold, D.F., Gupta, R.S., Keller, K., Konar, M., Monier, E., Morris, J., Srikrishnan, V., Voisin, N., Yoon, J., 2022. MultiSector Dynamics: Advancing the Science of Complex Adaptive Human-Earth Systems. *Earth's Future*, e2021EF002621. <https://doi.org/10.1029/2021EF002621>
- Moss, R.H., Reed, P.M., **Hadjimichael, A.**, Rozenberg, J., 2021. Planned relocation: Pluralistic and integrated science and governance. *Science* 372, 1276–1279. <https://doi.org/10.1126/science.abh3256>
- Hadjimichael, A.**, Quinn, J.D., Reed, P.M., 2020. Advancing diagnostic model evaluation to better understand water shortage mechanisms in institutionally complex river basins. *Water Resources Research*, e2020WR028079. <https://doi.org/10.1029/2020WR028079>
- Quinn, J.D., **Hadjimichael, A.**, Reed, P.M., Steinschneider, S., 2020. Can exploratory modeling of water scarcity vulnerabilities and robustness be scenario neutral? *Earth's Future*. <https://doi.org/10.1029/2020EF001650>
- Hadjimichael, A.**, Reed, P.M., Quinn, J.D., 2020. Navigating Deeply Uncertain Tradeoffs in Harvested Predator-Prey Systems. *Complexity*, Special Issue: Complexity, Dynamics, Control, and Applications of Nonlinear Systems with Multistability. e4170453. <https://doi.org/10.1155/2020/4170453>
- Hadjimichael, A.**, Quinn, J.D., Wilson, E., Reed, P.M., Basdekas, L., Yates, D., Garrison, M., 2020. Defining Robustness, Vulnerabilities, and Consequential Scenarios for Diverse Stakeholder Interests in Institutionally Complex River Basins. *Earth's Future* 8, e2020EF001503. <https://doi.org/10.1029/2020EF001503>
- Hadjimichael, A.**, Gold, D., Hadka, D., Reed, P.M., 2020. Rhodium: Python Library for Many-Objective Robust Decision Making and Exploratory Modeling. *Journal of Open Research Software* 8, 12. <https://doi.org/10.5334/jors.293>
- Hadjimichael, A.**, Comas, J., Corominas, L., 2016. Do machine learning methods used in data mining enhance the potential of decision support systems? A review for the urban water sector. *AI Communications* 29, 747–756. <https://doi.org/10.3233/AIC-160714>
- Hadjimichael, A.**, Morera, S., Benedetti, L., Flameling, T., Corominas, L., Weijers, S., Comas, J., 2016. Assessing urban wastewater system upgrades using integrated modeling, life cycle analysis and shadow pricing. *Environmental Science & Technology*. <https://doi.org/10.1021/acs.est.5b05845>
- Garcia, X., Barceló, D., Comas, J., Corominas, L., **Hadjimichael, A.**, Page, T.J., Acuña, V., 2016. Placing ecosystem services at the heart of urban water systems management. *Science of The Total Environment* 563–564, 1078–1085. <https://doi.org/10.1016/j.scitotenv.2016.05.010>

#### BOOKS, REPORTS AND OTHER PUBLICATIONS n=4

- Monier, E., Reed, P. M., Vernon, C. R., **Hadjimichael, A.**, Brelsford, C., Burleyson, C. B., Dyerson, A., Fletcher, S., Giang, A., Gupta, R. S., Jackson, N. D., Jones, A., Lamontagne, J., McCollum, D., Morris, J., Moss, R., Peng, W., Saari, R., Srikrishnan, V., Szinai, Julia, Yoon, J. (2024). MultiSector Dynamics: 2023 Inaugural Workshop Report. <https://doi.org/10.57931/2371710>
- Reed, P.M., **Hadjimichael, A.**, Moss, R., Monier, E., Alba, S., Brelsford, C., Burleyson, C., Cohen, S., Dyreson, A., Gold, D., Gupta, R., Keller, K., Konar, M., Macknick, J., Morris, J., Srikrishnan, V., Voisin, N., Yoon, J., 2022. MultiSector Dynamics: Scientific Challenges and a Research Vision for 2030, A Community of Practice Supported by the United States Department of Energy's Office of Science. <https://doi.org/10.5281/zenodo.5825889>
- Reed, P.M., **Hadjimichael, A.**, Malek, K., Karimi, T., Vernon, C.R., Srikrishnan, V., Gupta, R.S., Gold, D.F., Lee, B., Keller, K., Rice, J.S., Thurber, T.B. 2022. Addressing Uncertainty in Multisector Dynamics Research [e-book]. <https://doi.org/10.5281/zenodo.6110623>
- Voisin, N., Keller, K., **Hadjimichael, A.**, Monier, E., Reed, P.M., Moss, R.H. 2022. A two-way street: Interdependence of climate variability and change with human systems. US CLIVAR Variations. Online, Washington. US CLIVAR Variations, 20(1), 22-31. <https://doi.org/10.5065/9mn8-1p50>

## Teaching Experience

2022-2025	Risk Analysis in the Earth Sciences (GEOSC 450), Instructor	Penn State
2025	Data Visualization for DMDU (DMDU Summer School), Instructor	Utrecht, NL
2023-2025	Water and Society (EARTH 111), Instructor	Penn State
2024	Data Visualization for DMDU (DMDU Summer School), Instructor	Abuja, Nigeria
2023	Data Visualization for DMDU (DMDU Summer School), Instructor	Mexico City, Mexico
2023-2024	Data Visualization for Scientists and Engineers (GEOSC 497), Instructor	Penn State
2018-2019	Interdisciplinary Master of Engineering Project (CEE 5050), Co-Instructor	Cornell University
2018	Engineering Management Methods (CEE 5930), Instructor	Cornell University

## Grants

Total directed to Hadjimichael Group: **\$1,363,642**

### **The Baltimore Social-Environmental Collaborative IFL**

DEPARTMENT OF ENERGY, OFFICE OF SCIENCE, EARTH AND ENVIRONMENTAL SYSTEM SCIENCE  
DIVISION

Sep. 2022 - Aug. 2027

Co-PI (\$586,973); PI: Benjamin Zaitchik (Johns Hopkins); Total award amount: \$24,511,753

### **Coastal Observations, Mechanisms, and Predictions Across Systems and Scales - Great Lakes Modeling (COMPASS-GLM): Phase 1**

DEPARTMENT OF ENERGY, OFFICE OF SCIENCE, EARTH AND ENVIRONMENTAL SYSTEM SCIENCE  
DIVISION

Sep. 2022 - Jan. 2026

Subcontract (\$281,125)

### **Integrated Multisector Multiscale Modeling (IM3): Phase 2**

DEPARTMENT OF ENERGY, OFFICE OF SCIENCE, EARTH AND ENVIRONMENTAL SYSTEM SCIENCE  
DIVISION

Jan. 2022 - Sep. 2025

Subcontract (\$400,907)

### **Navigating the Complexity of Earth System Risks Through Cross-Class Interdisciplinary Collaboration and Experiential Learning**

COLLEGE OF EARTH AND MINERAL SCIENCES, THE PENNSYLVANIA STATE UNIVERSITY; GLADYS  
SNYDER EDUCATION GRANT PROGRAM

Feb. 2024 - Dec. 2024

PI; Total award amount: \$5,000

### **Track K: Prototyping decision support and monitoring tools for equitable management of salt contamination of water supplies in tidal rivers**

NSF CONVERGENCE ACCELERATOR

Jan. 2024 - Nov. 2024

Senior Investigator (\$51,960); PI: Ming Li (University of Maryland); Total award amount: \$650,000

### **Empowering Interdisciplinary Scholars for Future Challenges**

U.S. GEOLOGICAL SURVEY, 104B PROGRAM

Sep. 2023 - Aug. 2024

Co-PI (\$14,769); PI: Elizabeth Boyer (Penn State); Total award amount: \$14,769

### **Understanding compound stressors and stakeholder tradeoffs of agricultural adaptation to climate change in the Colorado River**

INSTITUTES OF ENERGY AND THE ENVIRONMENT, THE PENNSYLVANIA STATE UNIVERSITY

Sep. 2023 - Jun. 2024

PI; Total award amount: \$22,908

# Professional Service

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## LEADERSHIP

- 2025 - ... **Society for Decision Making under Deep Uncertainty (DMDU)**, Chair of Fundraising
- 2022 - ... **Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI)**, Penn State Representative
- 2019 - ... **MultiSector Dynamics Community of Practice Facilitation Team**, Member
- 2022 - 2024 **Penn State Water Council**, Member
- 2021 - 2024 **Society for Decision Making under Deep Uncertainty (DMDU)**, Chair of Communications and Outreach

## CONTRIBUTIONS TO ASSESSMENT REPORTS

- 2024 - 2025 **Sixth National Climate Assessment, Climate Effects on US International Interests chapter**, Graphics Development Lead and Contributing Author

## JOURNAL EDITORSHIP & PEER REVIEW

- 2024 - ... **Environmental Research: Water**, Editorial Board Member

### *Reviewer for:*

Journal of the American Water Resources Association, Earth's Future, Journal of Environmental Engineering, Environmental Modelling and Software, Environmental Research Letters, Journal of Environmental Studies and Sciences, Frontiers in Water, Journal of Hydrology, Hydrology and Earth System Sciences, Nature Water, Proceedings of the National Academy of Sciences, Regional Environmental Change, Science of the Total Environment, Journal of Water Resources Planning and Management, Water Resources Research

## FUNDING AGENCY PEER REVIEW

### *Panel Reviewer for:*

Department of Energy (DOE) Office of Science

### *Ad-hoc Reviewer for:*

BARD US-Israel Agricultural Research and Development Fund, Department of Energy (DOE) Office of Science, National Science Foundation (NSF) Hydrologic Sciences Program