Antonia Hadjimichael

ASSISTANT PROFESSOR · THE PENNSYLVANIA STATE UNIVERSITY

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Appointments

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

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

Publications

PEER-REVIEWED JOURNAL ARTICLES n=17; 8 as first author

Hadjimichael, A., Reed, P.M., Quinn, J.D, Vernon, C.R., Thurber, T., Scenario storyline discovery for planning in multi-actor human-natural systems confronting change. *Earth's Future* (In Press)

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`

Fletcher S., **Hadjimichael, A.**, Quinn J.D., Osman K., Giuliani M., Gold D., Figeuroa 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`, **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* 2020, 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, Ll., 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, Ll., **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`

In popular media n=5

Sliman, K., Growing Impact: Climate, crops, and the Colorado River *Growing Impact Podcast*, January 2024, `https://iee.psu.edu/news/podcast/growing-impact-climate-crops-and-colorado-river`

Hadjimichael, A., Weaving Data Viz Into Science and Engineering Education. *Nightingale*, June 2023, `https://nightingaledvs.com/weaving-data-viz-into-science-and-engineering-education/`

Thomson, J., When will the megadrought gripping southwestern states end? *Newsweek*, February 2023, `https://www.newsweek.com/megadrought-southwest-states-climate-change-1780833`

Thomson, J., America's drought-hit lakes and rivers in sobering before and after photos, 2002, *Newsweek*, December 2022, `https://www.newsweek.com/drought-lakes-rivers-us-climate-change-1765637`

Hadjimichael, A., What is a flash drought? An earth scientist explains, *The Conversation*, November 2022, `https://theconversation.com/what-is-a-flash-drought-an-earth-scientist-explains-194141`

Teaching Experience

Year	Course	Location
2024	**Data Visualization for DMDU (DMDU Summer School)**, Instructor	*Abuja, Nigeria*
2023-2024	**Water and Society (EARTH 111)**, Instructor	*Penn State*
2023-2024	**Data Visualization for Scientists and Engineers (GEOSC 497)**, Instructor	*Penn State*
2022-2023	**Risk Analysis in the Earth Sciences (GEOSC 450)**, Instructor	*Penn State*
2023	**Data Visualization for DMDU (DMDU Summer School)**, Instructor	*Mexico City, Mexico*
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: **$1,143,546**

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
PI; Total award amount: $5,000
Feb. 2024 - Dec. 2024

Track K: Prototyping decision support and monitoring tools for equitable management of salt contamination of water supplies in tidal rivers
NSF Convergence Accelerator
Senior Investigator ($51,960); PI: Ming Li (University of Maryland); Total award amount: $750,000
Jan. 2024 - Nov. 2024

Empowering Interdisciplinary Scholars for Future Challenges
U.S. Geological Survey, 104B Program
Co-PI ($14,769); PI: Elizabeth Boyer (Penn State); Total award amount: $14,769
Sep. 2023 - Aug. 2024

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
PI; Total award amount: $22,908
Sep. 2023 - Jun. 2024

The Baltimore Social-Environmental Collaborative IFL
Department of Energy, Office of Science, Earth and Environmental System Science Division
Co-PI ($586,973); PI: Benjamin Zaitchik (Johns Hopkins); Total award amount: $24,511,753
Sep. 2022 - Aug. 2027

Coastal Observations, Mechanisms, and Predictions Across Systems and Scales - Great Lakes Modeling (COMPASS-GLM): Phase I
Department of Energy, Office of Science, Earth and Environmental System Science Division
Subcontract ($161,724)
Sep. 2022 - Sep. 2024

Integrated Multisector Multiscale Modeling (IM3), Phase 2
Department of Energy, Office of Science, Earth and Environmental System Science Division
Subcontract ($300,212)
Jan. 2022 - Sep. 2024

Professional Service

LEADERSHIP

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

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