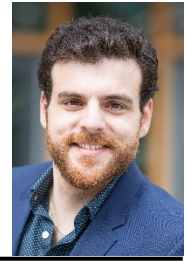


# Dr. Antonios Mamalakis



Assistant Professor at the University of Virginia

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## Education:

**University of California, Irvine (UCI) (Sep. 2016 – Sep. 2020)**

*Irvine, California, USA*

PhD in Civil and Environmental Engineering.

Dissertation title: *Links of climate variability and change with regional hydroclimate: Predictability, trends, and physical mechanisms on seasonal to decadal scales*

Advisor: Prof. Efi Foufoula-Georgiou

GPA: 4.0/4.0

**University of Patras (UPatras) (Sep. 2014 - Feb. 2016)**

*Patras, Greece*

MSc in Water Resources and Environmental Engineering.

Thesis title: *Modeling Rainfall statistics in a changing climate: Comparing and improving existing approaches.*

Advisor: Prof. Andreas Langousis

GPA: 9.54/10

**University of Patras (UPatras) (Sep. 2008 - Feb. 2014)**

*Patras, Greece*

Diploma in Civil Engineering (5-year degree)

Thesis title: *Parameter Estimation in Groundwater models based on PEST algorithm* (in Greek)

Advisor: Prof. Vassilios Kaleris

GPA: 7.93/10 (2<sup>nd</sup> in the class of 2014)

## Academic Appointments:

**Assistant Professor (2023 – present)**

*Charlottesville, Virginia, USA*

Department of Environmental Sciences, University of Virginia

School of Data Science, University of Virginia

**Graduate Faculty (2023 – present)**

*Texas, USA*

College of Engineering and Computer Science, Texas A&M University

**Research Scientist I (2022 – 2023)**

*Fort Collins, Colorado, USA*

Department of Atmospheric Science, Colorado State University

Supervisors: Prof. Elizabeth Barnes and Prof. James W. Hurrell

**Postdoctoral Researcher (2020 – 2022)**

*Fort Collins, Colorado, USA*

Department of Atmospheric Science, Colorado State University

Supervisors: Prof. Elizabeth Barnes and Prof. Imme Ebert-Uphoff

**Graduate Research Assistant (2016 – 2020)**

*Irvine, California, USA*

Department of Civil and Environmental Engineering, University of California, Irvine.

Supervisor: Prof. Efi Foufoula-Georgiou

**Graduate Research Assistant (2014 – 2016)**

*Patras, Greece*

Department of Civil and Environmental Engineering, University of Patras.

Supervisor: Prof. Andreas Langousis

## Teaching experience:

### University of Virginia, Charlottesville (2025)

Charlottesville, Virginia, USA

Primary Instructor, Fall 2025

Course: *Communicating with Data* (undergraduate studies)

### University of Virginia, Charlottesville (2025)

Charlottesville, Virginia, USA

Primary Instructor, Fall 2025

Course: *Statistical Methods in Environmental Sciences* (undergraduate studies)

### Online Workshop (2025)

Co-Organizer, May 2025

1-day online workshop: [Broadening Access to Climate AI Innovation](#)

### University of Virginia, Charlottesville (2025)

Charlottesville, Virginia, USA

Primary Instructor, Spring 2025

Course: *Deep Learning in Environmental Science* (graduate studies)

### University of Virginia, Charlottesville (2024)

Charlottesville, Virginia, USA

Primary Instructor, Fall 2024

Course: *Objective Analysis in Environmental Science* (undergraduate studies)

### Environmental Institute, UVA, Charlottesville (2024)

Charlottesville, Virginia, USA

Primary Instructor, September 2024

2-day workshop: [AI for climate research](#)

### University of Virginia, Charlottesville (2024)

Charlottesville, Virginia, USA

Primary Instructor, Spring 2024

Course: *Capstones* (graduate studies)

### University of Virginia, Charlottesville (2024)

Charlottesville, Virginia, USA

Primary Instructor, Spring 2024

Course: *Environmental Data Science* (graduate studies)

### TAI4ES Summer School (2022)

virtual

Lecturer, June 2022

4-day school: *Trustworthy Artificial Intelligence for Environmental Science*

### Colorado State University, Fort Collins (2022)

virtual

Lecturer, May 2022

2-day course: *Tutorial: Applied Machine Learning for Earth Scientists*

### Colorado State University, Fort Collins (2022)

Fort Collins, Colorado, USA

Teaching Assistant, Winter 2022

Course: *Objective Analysis* (graduate studies)

### University of California, Irvine (2020)

Irvine, California, USA

Teaching Assistant, Fall 2020

Course: *Stochastic Hydrology* (graduate studies)

### University of Patras (2014-2015)

Patras, Greece

Teaching Assistant, Fall 2014, Fall 2015

Course: *Hydraulic Structures* (5<sup>th</sup> year of undergraduate studies)

## Funding and Projects:

### • Colab Program, Environmental Institute, UVA

USA, 2025

Role: *Co-Investigator*

Project title: ClimateAgent: LLM-Driven Multimodal AI Agents for Enhanced Climate Forecasting.

Funds: \$100,000

Environmental Institute, UVA (internal funds)

- Climate Fellowship Program, Environmental Institute, UVA** USA, 2024  
*Role: Co-Investigator*  
 Project title: Using Explainable Artificial Intelligence and Counterfactual Reasoning to Attribute Observed Precipitation Extremes to Global Warming and Improve Policy Making  
 Funds: \$112,500  
 Environmental Institute, UVA (internal funds)
- Spark Program, Environmental Institute, UVA** USA, 2024  
*Role: Co-Investigator*  
 Project title: Blueprints for AI Equity and Transparency in Climate Science  
 Funds: \$31,700  
 Environmental Institute, UVA (internal funds)
- Climate Fellowship Program, Environmental Institute, UVA** USA, 2023  
*Role: Principal Investigator*  
 Project title: Using Advanced AI for Simultaneous Bias-Correction and Downscaling of Climate Model Projections for Localized Policy Relevance  
 Funds: \$112,500  
 Environmental Institute, UVA (internal funds)
- TRIPODS+X:RES: Data Science Frontiers in Climate Science** USA, 2019  
*Role (uncredited):*  
 I participated in the proposal preparation and was an active researcher in the project  
 Funds: \$300,000  
 Awarded by NSF; DMS-1839336
- Doctoral Fellowship in UCI (Henry Samueli Endowed Fellowship)** USA, 2018  
 Funds: *award amounts vary*
- Research Seed Funding in UCI** USA, 2017  
*Role (uncredited):*  
 I participated in the proposal preparation and was an active researcher in the project  
 Funds: \$150,000

## Professional Activities:

### Editorial Service

Associate Editor, *Artificial Intelligence for the Earth Systems* (2022 – present)

Associate Editor, *Stochastic Environmental Research and Risk Assessment* (2020 – present)

### Referee Service

Proposal Reviewer/Panelist: *National Science Foundation (NSF)*

Journal Reviewer: *Nature, Nature Communications, Nature Climate Change, Nature Machine Intelligence, Scientific Reports, Science Advances, Geophysical Research Letters, Earth's Future, Journal of Climate, Water Resources Research, Artificial Intelligence for the Earth Systems, Journal of Advances in Modeling Earth Systems, Advances in Water Resources, Journal of Hydrology, Journal of Hydrometeorology, Stochastic Environmental Research and Risk Assessment, Hydrology and Earth System Sciences, Remote Sensing, Weather and Forecasting*

### Outstanding Student Presentation Award; OSPA Judge

*AGU Fall Meeting 2022*

## Honors and Awards:

- Best Paper award in Health and Environment Category (IEEE, SIEDS, 2024)
- Most engaging data story award in a capstone project (mentor; Capstones course in SDS, UVA, 2024)
- Most innovative analytical solution award in a capstone project (mentor; Capstones course in SDS, UVA, 2024)
- Paper included in [Editors' highlights](#) (Nature Communications, 2023)
- Top downloaded article (Geophysical Research Letters; 2021)
- Paper included in [the 50 most read articles](#) (Nature Communications, 2018)
- Henry Samueli Endowed [Fellow](#) (2018-2019)
- Outstanding Reviewer, Journal of Hydrology (January 2018)
- Paper included in [Editors' highlights](#) (Water Resources Research, 2017)

## Science communication – Media and press coverage:

- Participation in Panel Discussion: “Environment and Artificial Intelligence” at the [Environmental Futures Forum](#), University of Virginia, October 2025. (invited)  
In the same event five of my students presented research posters.
- Participation in Mini Documentary: [Progress at a Price](#), April 2025.
- Participation in Panel Discussion: PFF (Preparing Future Faculty) Graduates Panel at University of California Irvine, May 2024. (virtual; invited)
- Participation in Panel Discussion: College foundation board session on AI, UVA, Oct 2023.
- Participation in Panel Discussion: Model Interpretability in the Earth and Space Sciences, 10<sup>th</sup> International Conference on Learning Representations (ICLR), April 2022.
- Interview with the AGU precipitation technical committee: [Precip Folks, January 2022](#).
- Media coverage for the study “Zonally contrasting shifts of the tropical rain belt in response to climate change” by Mamalakis et al. (2021).

*Climate change could shift Earth's tropical rain belt, threatening food security for billions, [Science alert](#), January 2021.*

*Climate Change will cause a shift in Earth's tropical rain belt – threatening water and food supply for billions, study says, [CBS News](#), January, 2021.*

*Climate Change will alter the position of the Earth's tropical rain belt, [Science Daily](#), January 2021.*

*Food Security for billions threatened by shifting tropical rain belt, climate change to blame, [Energi Media](#), February 2021.*

Full list of all (43) news outlets can be found [here](#).

Video summary of the study can be found [here](#).

- Media coverage for the study “A new interhemispheric teleconnection increases predictability of winter precipitation in southwestern US” by Mamalakis et al. (2018).

*To forecast winter rainfall in Los Angeles, look to New Zealand in the summer, [NSF News Release](#), June 2018.*

*To forecast winter rainfall in the Southwest, look to New Zealand in the summer, [UCI News](#), June 2018.*

Full list of all (13) news outlets can be found [here](#).

## Publications:

### Under review or in revision

**A., Mamalakis**, W. Chapman, K. Mayer, Expanding the limits of Explainable AI Tools in Generating Physical Insights, *IEEE Transactions on Pattern Analysis and Machine Intelligence* (under review). preprint: <https://www.techrxiv.org/doi/full/10.36227/techrxiv.176221224.44249956>

**A., Mamalakis**, Unraveling winter precipitation predictability over CONUS via deep learning and explainable artificial intelligence, *AI2ES AMS* (in revision).

Singh, S., S.M. Papalexiou, H.M. Abdelmoaty, T. Hartvigsen, **A. Mamalakis**, Correcting Dry/Wet Classification Bias in Precipitation Downscaling via Generative Adversarial Networks, *Environmental Data Science* (in revision)

Singh, S., S.M. Papalexiou, H.M. Abdelmoaty, T. Hartvigsen, **A. Mamalakis**, Comprehensive Inter-Comparison of Generative AI Models for Super-Resolution Precipitation Downscaling Across Hydroclimatic Regimes, *JAMES AGU* (under review)

Singh, S. and **A. Mamalakis**, Climate Downscaling: A Leap Forward with Generative AI (book chapter, under review)

Abdelmoaty, H.M., S.M. Papalexiou, **A. Mamalakis**, S. Singh, V. Coia, M. Hairabedian, P. Szeftel, P. Grover (2025) Does Non-Stationarity Affect GAN-Based Downscaling? Insights from High-resolution WRF Simulations over the Canadian Prairies, *AI2ES AMS* (in revision).

Higgins, T., C. Agarwal, **A. Mamalakis**, SynopticBench: Evaluating Vision-Language Models on Generating Weather Forecast Discussions of the Future, (under review)

Walters, A., **A. Mamalakis**, N.R. Pradhan, I. Floyd, V. Lakshmi, Estimating Soil Burn Severity: A Comparison of Machine Learning Models Following the 2021 Dixie Fire (under review)

Z. Zhang, **et al.**, Reinterpreting Asian speleothem isotope records: the hidden role of atmospheric updraft, *Nature Communications*, (in revision)

P.J. Borah, **A. Mamalakis**, C. Guilloteau, A. Tejedor, E. Foufoula-Georgiou, The three causal pathways of ENSO teleconnections to high Mountain Asia winter precipitation, *Climate Dynamics* (under review)

## Journal articles and Book Chapters

26. Abdelmoaty, H.M., S.M. Papalexiou, **A. Mamalakis**, S. Singh, V. Coia, M. Hairabedian, P. Szeftel, P. Grover (2025) Generative adversarial networks for downscaling hourly precipitation in the Canadian Prairies, *Journal of Geophysical Research: Machine Learning and Computation*, 2, e2025JH000678.
25. Papalexiou, S. M. and **A. Mamalakis**, (2025) Machine Unlearning: Bias correction in Neural Network Downscaled Storms, *Journal of Hydrology*, 665, <https://doi.org/10.1016/j.jhydrol.2025.134689>.
24. Krell, E., **A. Mamalakis**, S. A. King, P. Tissot, I. Ebert-Uphoff (2025) The influence of correlated features on neural network attribution methods in geoscience, *Environmental Data Science*, doi:10.1017/eds.2025.19.
23. Navarra G. G., C. Deutsch, **A. Mamalakis**, A. Margolskee, G. MacGilchrist (2025) Forecasting Southern Ocean Surface Nutrients Using Explainable Neural Networks, *Journal of Geophysical Research - Machine Learning and Computation*, 2, e2024JH000268.
22. Mamalakis, M., **A. Mamalakis**, et al. (2024), Solving the enigma: Enhancing faithfulness and comprehensibility in explanations of deep networks, *AI Open*, (accepted).
21. Papalexiou, S. M., **et al.** (2024), Sustainability Nexus AID: storms, *Sustainability Nexus Forum*, 33(1), <https://doi.org/10.1007/s00550-024-00544-y>.
20. Materia, S., **et al.** (2024), Artificial Intelligence for climate prediction of extremes: State of the art, challenges and future perspectives, *WIREs Climate Change*, 15(6), e914.

19. **Mamalakis, A.**, E.A. Barnes and J.W. Hurrell, (2023) Using eXplainable Artificial Intelligence to Quantify “climate distinguishability” after Stratospheric Aerosol Injection, *Geophysical Research Letters*, <https://doi.org/10.1029/2023GL106137>.
18. McGovern, A., **et al.** (2023) Trustworthy Artificial Intelligence for Environmental Sciences: Summer School Meeting Report, *BAMS*, **104**(6), <https://doi.org/10.1175/BAMS-D-22-0225.1>.
17. Le, V.V.P., **et al.** (2023) Climate-driven changes in the predictability of seasonal precipitation, *Nature Communications*, **14**, 3822, <https://doi.org/10.1038/s41467-023-39463-9>. (included in [Editors' highlights](#))
16. **Mamalakis, A.**, E.A. Barnes and I. Ebert-Uphoff, (2023) Carefully choose the baseline: Lessons learned from applying XAI attribution methods for regression tasks in geoscience, *Artificial Intelligence for the Earth Systems*, **2**(1), <https://doi.org/10.1175/AIES-D-22-0058.1>.
15. **Mamalakis, A.**, E.A. Barnes and I. Ebert-Uphoff, (2022) Investigation of the fidelity of explainable artificial intelligence methods in applications of convolutional neural networks in geoscience, *Artificial Intelligence for the Earth Systems*, **1**(4), <https://doi.org/10.1175/AIES-D-22-0012.1>.
14. **Mamalakis, A.**, I. Ebert-Uphoff and E.A. Barnes, (2022) “Explainable Artificial Intelligence in Meteorology and Climate Science: Model fine-tuning, calibrating trust and learning new science” in *Beyond explainable Artificial Intelligence* by Holzinger et al. (Editors), Springer Lecture Notes on Artificial Intelligence, open access at: [https://link.springer.com/chapter/10.1007/978-3-031-04083-2\\_16](https://link.springer.com/chapter/10.1007/978-3-031-04083-2_16)
13. **Mamalakis, A.**, I. Ebert-Uphoff and E.A. Barnes, (2022) Neural network attribution methods for problems in Geoscience: A novel synthetic benchmark dataset, *Environmental Data Science*, DOI: 10.1017/eds.2022.7.
12. **Mamalakis, A.**, A. AghaKouchak, J.T. Randerson and E. Foufoula-Georgiou, (2022) Hotspots of Predictability: Identifying regions of high precipitation predictability at seasonal timescales from limited time series observations, *Water Resources Research*, **58**(5), e2021WR031302.
11. Le, V.V.P., C. Guilloteau, C., **A. Mamalakis** and E. Foufoula-Georgiou (2021) Underestimated MJO variability in CMIP6 models, *Geophysical Research Letters*, **48**, e2020GL092244, <https://doi.org/10.1029/2020GL092244> (**Top downloaded article, 2021**)
10. **Mamalakis, A.**, J.T. Randerson, J.-Y. Yu, M.S. Pritchard, G. Magnusdottir, P. Smyth, P.A. Levine, S. Yu and E. Foufoula-Georgiou (2021) Zonally contrasting shifts of the tropical rain belt in response to climate change, *Nature Climate Change*, **11**, 143-151. <https://doi.org/10.1038/s41558-020-00963-x>
9. Guilloteau, C., **A. Mamalakis**, L. Vulis, T. Georgiou and E. Foufoula-Georgiou (2020) Rotated spectral principal component analysis (rsPCA) for identifying dynamical models of variability in climate systems, *J. Climate*, doi: <https://doi.org/10.1175/JCLI-D-20-0266.1>.
8. Stevens A., R. Willett, **A. Mamalakis**, E. Foufoula-Georgiou, J. Randerson, P. Smyth, S. Wright and A. Tejedor (2020) Graph-guided regularized regression of Pacific Ocean climate variables to increase predictive skill of southwestern winter US precipitation, *J. Climate*, doi: <https://doi.org/10.1175/JCLI-D-20-0079.1>.
7. **Mamalakis, A.**, J.-Y. Yu, J.T. Randerson, A. AghaKouchak, and E. Foufoula-Georgiou (2019) Reply to: A critical examination of a newly proposed interhemispheric teleconnection to Southwestern US winter precipitation, *Nature Communications*, <https://doi.org/10.1038/s41467-019-10531-3>
6. **Mamalakis, A.** and V. Kaleris (2019) Estimation of seawater retreat timescales in homogeneous and confined coastal aquifers based on dimensional analysis, *Hydrological Sciences Journal*, doi:10.1080/02626667.2018.1552787

5. **Mamalakis, A.** and E. Foufoula-Georgiou (2018) A multivariate probabilistic framework for tracking the intertropical convergence zone: Analysis of recent climatology and past changes, *Geophysical Research Letters*, doi:10.1029/2018GL079865
4. **Mamalakis, A.**, J.-Y. Yu, J.T. Randerson, A. AghaKouchak, and E. Foufoula-Georgiou (2018) A new interhemispheric teleconnection increases predictability of winter precipitation in southwestern US, *Nature Communications*, doi: 10.1038/s41467-018-04722-7 ([50 most read articles](#))
3. **Mamalakis A.**, A. Langousis, R. Deidda and M. Marrocu (2017) A parametric approach for simultaneous bias correction and high-resolution downscaling of climate model rainfall, *Water Resour. Res.*, doi: 10.1002/2016WR019578 ([included in Editors' highlights](#)).
2. Langousis A., **A. Mamalakis**, M. Puliga and R. Deidda (2016) Threshold detection for the generalized Pareto distribution: Review of representative methods and application to the NOAA NCDC daily rainfall database *Water Resour. Res.*, doi: 10.1002/2015WR018502.
1. Langousis A., **A. Mamalakis**, R. Deidda and M. Marrocu (2016) Assessing the relative effectiveness of statistical downscaling and distribution mapping in reproducing rainfall statistics based on climate model results, *Water Resour. Res.*, doi:10.1002/2015WR017556.

### White papers, datasets, tutorials, etc

Sloane, M., A. Birdwell, **A. Mamalakis**, and C. Nyelele (2025) “Broadening Access to Climate AI Innovation.”, University of Virginia, <https://doi.org/10.18130/npqy-pk55>

Arcodia, M., **et al.** (2022) Applied Machine Learning Tutorial for Earth Scientists, Zenodo: <https://doi.org/10.5281/zenodo.6686879>. Github: [https://github.com/eabarnes1010/ml\\_tutorial\\_csu](https://github.com/eabarnes1010/ml_tutorial_csu).

**Mamalakis A.**, I. Ebert-Uphoff and E. A. Barnes (2022) CSU Synthetic Attribution Benchmark Dataset, Version 1.0, Radiant MLHub. <https://doi.org/10.34911/rdnt.8snx6c>

### Invited talks or Lectures

**Mamalakis, A.**, (2025) Do AI Models Know What They Know? How Explainable AI can help us trust what machines learn, AI for Good Webinar Series, November, 2025 ([webinar](#); invited talk).

**Mamalakis, A.**, (2025) When Do Explanations Explain? A Controlled Study of XAI Under Varying Signal-to-Noise, 2<sup>nd</sup> Workshop on Correctness and Reproducibility for Earth System Software, NCAR, Mesa Lab, Boulder, CO, USA, November, 2025 (invited talk).

**Mamalakis, A.**, (2025) Artificial Intelligence for Climate Signal Detection: A Data-Driven Framework for Quantifying Signal-to-Noise, IJCNN 2025, Rome, Italy, June, 2025 (invited talk).

**Mamalakis, A.**, (2025) AI Attribution Benchmarks for Geosciences: Are we Gaining the Right insights from Explainable AI? Sapienza University of Rome, Rome, Italy, June, 2025 (invited talk).

**Mamalakis, A.**, (2024) [AI for climate research](#), 2-day workshop, Environmental Institute, UVA, Charlottesville, VA, USA, September, 2024 (invited).

**Mamalakis, A.,** (2024) AI Attribution Benchmarks: Do we gain the correct insights when employing Explainable AI tools?, SIAM, Conference on Mathematics of Planet Earth, MEP24, Portland, Oregon, USA, June, 2024 (invited talk).

Participation in Panel Discussion: PFF (Preparing Future Faculty) Graduates Panel at University of California Irvine, May 2024. (virtual; invited)

Participation in panel discussion: College foundation board session on AI, UVA, Oct 2023.

**Mamalakis, A.,** (2023) Explainable Artificial Intelligence for Hydroclimatic Research, Institute of Science and Technology Austria (ISTA), Vienna, Austria, April, 2023 (invited job talk).

**Mamalakis, A.,** (2023) Introduction to explainable artificial intelligence for climate applications, National Renewable Energy Laboratory, (virtual) April, 2023.

**Mamalakis, A.,** (2023) Explainable Artificial Intelligence for Hydroclimatic Research, Massachusetts Institute of Technology, MIT, USA, March, 2023 (invited job talk).

**Mamalakis, A.,** (2023) Explainable Artificial Intelligence for Hydroclimatic Research, University of Virginia, UVA, USA, March, 2023 (invited job talk).

**Mamalakis, A.,** (2023) Explainable Artificial Intelligence for Hydroclimatic Research, University of Oklahoma, UO, USA, February, 2023 (invited job talk).

**Mamalakis, A.,** (2023) A brief introduction to explainable artificial intelligence, KI-Forum Deutscher Wetterdienst, (virtual) February, 2023.

**Mamalakis, A.,** (2022) Best practices and pitfalls of for explainable artificial intelligence in climate research, Vrije Universiteit Amsterdam, Netherlands, December, 2022 (invited job talk).

**Mamalakis, A.,** (2022) Explainable Artificial Intelligence for Deep Learning, Trustworthy Artificial Intelligence for Environmental Science (TAI4ES), Summer School, (virtual) June, 2022.

**Mamalakis, A.,** (2022) Explainable Artificial Intelligence for Environmental Science: Using idealized attribution benchmarks to derive best practices, Seminar at the journal club for LEAP, Columbia University, (virtual) June, 2022.

Participation in Panel Discussion: Model Interpretability in the Earth and Space Sciences, 10<sup>th</sup> International Conference on Learning Representations (ICLR), April 2022.

**Mamalakis, A.,** (2022) Lecture on: Methods of Explainable Artificial Intelligence (XAI) for Artificial Neural Networks (ANNs), Lecture for Course ATS 780A7: Machine Learning for Atmospheric Sciences, Colorado State University, March, 2022.

**Mamalakis, A.,** (2021) [Assessing methods of explainable artificial intelligence \(XAI\) by using attribution benchmark datasets](#), 2<sup>nd</sup> Workshop on Knowledge Guided Machine Learning (KGML2021, virtual), August, 2021.

**Mamalakis, A.,** (2021) [Tutorial: A benchmark for Explainable AI method](#), Trustworthy Artificial Intelligence for Environmental Science (TAI4ES), Summer School (virtual) July, 2021.

**Mamalakis, A.,** (2021), [Explainable AI for Environmental Science: Insights on strengths and weaknesses of different neural network attribution maps](#), Follow-up lecture on the XAI for Environmental Science short course (virtual), June, 2021.

Foufoula-Georgiou, E. and **A. Mamalakis** (2020) SWUS Seasonal Precipitation Prediction & the New Zealand Index (NZI), 2020 Colorado River Hydrology Research Symposium webinar series, October, 2020.

**Mamalakis, A.**, J.-Y. Yu, J.T. Randerson, A. AghaKouchak, and E. Foufoula-Georgiou (2019) Drivers of winter precipitation variability over the southwestern US: Interdecadal changes and new physical mechanisms, Data Analytics for Climate and Earth (DANCE): Causality, patterns and prediction, March, 27-29, 2019, Arrowhead, CA (USA).

**Mamalakis, A.**, J.-Y. Yu, J.T. Randerson, A. AghaKouchak, and E. Foufoula-Georgiou (2018) Interdecadal changes in the climatic drivers of regional hydroclimatology in southwestern US: A new inter-hemispheric teleconnection increases predictability of winter precipitation, American Geophysical Union, AGU Fall Meeting, Washington D.C., USA, December 2018.

**Mamalakis, A.** (2018) A newly identified inter-hemispheric teleconnection increases predictability of winter precipitation, Water Student Forum, UCI, October 2018.

## Conferences

P.J. Borah, **A. Mamalakis**, C. Guilloteau, A. Tejedor, E. Foufoula-Georgiou (2025). The three causal pathways of ENSO teleconnections to high Mountain Asia winter precipitation, American Geophysical Union, AGU Fall Meeting, USA, December 2025.

Abdelmoaty, H.M., S.M. Papalexiou, **A. Mamalakis**, S. Singh, V. Coia, M. Hairabedian, P. Szeftel, P. Grover (2025) GAN-Powered Downscaling: Capturing Regional-Scale Hourly Precipitation Patterns in the Canadian Prairies, American Geophysical Union, AGU Fall Meeting, USA, December 2025.

Singh, S., S.M. Papalexiou, H.M. Abdelmoaty, T. Hartvigsen, **A. Mamalakis** (2025). Generative Models for Super-Resolution Precipitation Downscaling Across U.S. Hydroclimatic Regimes, American Geophysical Union, AGU Fall Meeting, USA, December 2025.

Corner, J., **A. Mamalakis** and K. Schiro (2025). Investigating and Attributing Nonlinear Drivers of Extreme Precipitation Events through Deep-Learning Approaches, American Geophysical Union, AGU Fall Meeting, USA, December 2025.

P.J. Borah, E. Foufoula-Georgiou, **A. Mamalakis**, (2025). Tropical Pacific Influence on the Winter Precipitation in High Mountain Asia, SoCal CEE research symposium, USC, 2025.

Singh, S., S.M. Papalexiou, H.M. Abdelmoaty, T. Hartvigsen, **A. Mamalakis** (2025), Enhancing Climate Downscaling with GANs: Improving Realism and Physical Consistency in Storm Prediction, 6th Summer School on Theory, Mechanisms and Hierarchical Modelling of Climate Dynamics: Artificial Intelligence and Climate Modelling, ICTP, Italy, May 05-16, 2025

Singh, S., S.M. Papalexiou, H.M. Abdelmoaty, T. Hartvigsen, **A. Mamalakis** (2025), Addressing Dry/Wet Bias in Precipitation Downscaling Using a GAN Framework, UVA Postdoc Symposium, May 21, 2025 (**2<sup>nd</sup> award in research showcase competition**)

Connolly, C., E. A. Barnes, **A. Mamalakis**, and J.W. Hurrell (2025) Machine learning emulators to predict the atmospheric response to stratospheric aerosol injection scenarios, American Meteorological Society, 105<sup>th</sup> AMS Annual Meeting, USA, January 2025.

Krell, E., **A. Mamalakis**, S. King, P. Tissot, and I. Ebert-Uphoff (2025) Hierarchical Superpixel Explanations Improve XAI attribution Methods for Geospatial Models, American Meteorological Society, 105<sup>th</sup> AMS Annual Meeting, USA, January 2025.

Krell, E., **A. Mamalakis**, S. King, P. Tissot, and I. Ebert-Uphoff (2024) Influence of correlated features in geospatial data on neural network attribution methods, American Geophysical Union, AGU Fall Meeting, USA, December 2024.

Zhang, S., **A. Mamalakis** and S. Pusede (2024). Downscaling OMI NO<sub>2</sub> using TROPOMI and a suite of generative adversarial networks to describe multi-year trends in neighborhood-level NO<sub>2</sub> inequalities, American Geophysical Union, AGU Fall Meeting, USA, December 2024.

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