

## EFI FOUFOULA-GEORGIU (PhD, NAE)

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Distinguished Professor and Henry Samueli Endowed Chair in Engineering  
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### EDUCATION

- May 1985 **University of Florida**, Doctor of Philosophy in Environmental Engineering
- Dec. 1982 **University of Florida**, Master of Science in Environmental Engineering
- July 1979 **National Technical University of Athens, Greece**, Diploma in Civil Engineering

### POSITIONS HELD

- 2017- Associate Dean for Research and Innovation, Henry Samueli School of Engineering, UCI
- 2017- Professor (courtesy appointment), Department of Earth System Science, School of Physical Sciences, UCI
- 2016 - Distinguished Professor, Department of Civil and Environmental Engineering, Henry Samueli School of Engineering, University of California, Irvine
- 2016- Professor Emerita, University of Minnesota
- 2012 - Presidential Appointee to the Nuclear Waste Technical Review Board (NWTRB), Special Government Employee (SGE)
- 2008 - 2016 Joseph T. and Rose S. Ling Endowed Chair, Department of Civil Engineering, University of Minnesota, Minneapolis
- 2002 - 2016 McKnight Distinguished Professor, University of Minnesota
- 2008 - 2013 Director, National Center for Earth-surface Dynamics, University of Minnesota
- 1999 - 2003 Director, St. Anthony Falls Laboratory, University of Minnesota
- 1996 - 2016 Professor, Department of Civil Engineering, University of Minnesota
- 1989 - 1996 Associate Professor, Department of Civil Engineering, University of Minnesota
- 1986 - 1989 Assistant Professor, Department of Civil & Construction Engineering, Iowa State University, Ames
- 1985 - 1986 Research Associate, St. Anthony Falls Hydraulic Laboratory, University of Minnesota
- 1984 - 1985 Graduate Research Assistant, Department of Civil Engineering, University of Washington, Seattle
- 1980 - 1983 Graduate Research Assistant, Dept. of Environmental Engineering, University of Florida, Gainesville
- 1979 - 1980 Engineer, River Management and Urban Planning Division, Ministry of Public Works, Athens, Greece

### HONORS AND AWARDS

- 2019 Walter Langbein Lecturer, American Geophysical Union (AGU)
- 2018 Elected Member of the National Academy of Engineering (NAE)
- 2018 Elected Fellow, American Association for the Advancement of Science (AAAS)
- 2017 Hydrologic Sciences Medal, American Meteorological Society (AMS)
- 2017 Hydrology Days Award, Colorado State University
- 2016 Robert E. Horton Lecturer in Hydrology, American Meteorological Society (AMS)
- 2015 NASA Group Achievement Award – GPM Post-Launch Team
- 2012 Presidential Appointee to the Nuclear Waste Technical Review Board – NWTRB
- 2012 Kiesel Distinguished Lecturer, University of Arizona

2008 Joseph T. and Rose S. Ling Chair in Environmental Engineering, UMN  
 2008 Borland Distinguished Lecturer, Hydrology Days  
 2007 Hydrologic Sciences Award, American Geophysical Union (AGU)  
 2007 Honorary Professor, Sichuan University, China  
 2007 Moore Distinguished Lecturer, University of Virginia  
 2005 Fellow, American Meteorological Society (AMS)  
 2003 Elected Member, European Academy of Sciences  
 2002 Distinguished McKnight University Professor, University of Minnesota  
 2002 John Dalton Medal, European Geophysical Society  
 1999 Fellow, American Geophysical Union  
 1998 Fellow, Minnesota Supercomputer Institute  
 1995 Bush Sabbatical Fellow, University of Minnesota  
 1989 Presidential Young Investigator Award, National Science Foundation  
 1989 Editor's Citation for Excellence in Refereeing, Water Resources Research  
 1989 Certificate of Commendation for Contributions in Water Resources National Association of Water Institute Directors and National Association of State Universities  
 1988 Travel award from NATO (to present two lectures at the NATO Advanced Study Institute on Recent Advances in the Modelling of Hydrological Systems, Sintra, Portugal)  
 1986 National Science Foundation Engineering Initiation Award  
 1974 Outstanding Student Fellowship, National Technical University of Athens, Greece  
 1973 Second Honor, Nationwide Competition in Mathematics, Hellenic Mathematical Society

## **TEACHING EXPERIENCE**

Engineering Hydrology and Hydraulics (senior level)  
 Surface Water Hydrology (graduate level)  
 Stochastic Hydrology (graduate level)  
 Stochastic Geomorphology (graduate level)  
 Water Resources Systems (graduate level)  
 Hydrology and Hydrologic Design (senior level)  
 Advanced Topics in Hydrology (graduate level)  
 Multi-scale Analysis of Geophysical and Engineered Systems (graduate level)

## **PROFESSIONAL SOCIETY MEMBERSHIP**

American Geophysical Union (AGU)  
 European Geosciences Union (EGU)  
 American Meteorological Society (AMS)  
 American Association for the Advancement of Sciences (AAAS)  
 American Society of Civil Engineers (ASCE)  
 American Water Resources Association (AWRA)  
 Institute of Mathematical Statistics (IMS)  
 Society of Women Engineers (SWE)

## **PROFESSIONAL ACTIVITIES AND PUBLIC SERVICE**

### **Elected positions**

- President, Hydrology section, American Geophysical Union, (AGU): 2012-2014 President-elect; 2014-2016 President; 2016-2018 past-President
- Elected member, AGU Council Leadership Team, 2015-2017
- Elected Chair, Board of Directors, Consortium of Universities for the Advancement of Hydrologic Sciences (CUAHSI), 2007-2009
- Elected Trustee, Board of Trustees, University Corporation for Atmospheric Research (UCAR), 2007-2008, 2009-2010

## **National Academies/ National Research Council Committees**

- Member, Board of Atmospheric Sciences and Climate (BASC), National Academies, 2019-
- Member, European Research Council (ERC), Advanced Grants Expert Panel, 2019-
- Member, Community Advisory Committee for Water Prediction (CAC-WP), 2018-
- Board member, The Water Institute of the Gulf, 2019-
- Co-chair, Integrated Hydro-terrestrial Modeling (IHTM), 2019-2020
- U.S. Delegate to the International Association of Hydrological Sciences (IAHS), appointed by the NAS President to represent NAS at the 27<sup>th</sup> Scientific Assembly of IUGG (International Union of Geodesy and Geophysics), Montreal, Canada, July, 2019
- Member, U.S. National Committee for the International Union of Geodesy and Geophysics (IUGG), and U.S Representative to the International Association for Hydrologic Sciences (IAHS), 2016-
- Member, Panel on Global Hydrological Cycle and Water Resources, National Research Council Committee on Decadal Survey of Earth Observations from Space, 2016-2018
- Contributor to the Water Chapter of the Decadal Survey report “Thriving on our Changing Planet: A Decadal Strategy for Earth Observation from Space”, NRC National Academies Press Report, <https://doi.org/10.17226/24938>, 2016-2018
- Member, NRC Committee on Earth Science and Applications from Space (CESAS), Board of Earth Sciences and Resources, NAS, 2012-2016; re-appointed: 2017-2018
- Member, NRC Mapping Sciences Committee, Board of Earth Sciences and Resources, National Academies of Sciences, 2013-2017
- Member, NRC Committee on “Challenges and Opportunities in the Hydrologic Sciences”, 2010-2012
- Contributor to the report “Challenges and Opportunities in the Hydrologic Sciences:”, National Academies Press, <https://doi.org/10.17226/13293>, 2012
- Member Water Science and Technology Board (WSTB), National Academies, appointed member, 2000-2004
- Member, NRC Committee on “Progress and Priorities on US Weather Research and Research to Operations Activities”, 2009-2010
- Member, NRC Committee on “Assessment of the NWS Advanced Hydrologic Prediction System”, National Research Council, 2003-2005
- Member, NRC, Committee on “Risk-based Analysis Methods for Flood Damage Reduction Studies,” National Research Council, 1998-2000

## **Service on National/International Advisory Boards and Committees**

- Member, Board of Directors, Water Institute of the Gulf, 2020 –
- Member, AMS International Academic Volunteering Committee, 2020 --
- Panelist, NAS Roundtable on “Earth System Predictability Research and Development”, March 2020
- Member, Princeton Advisory Committee of the Department of Civil and Environmental Eng., 2020
- Member, US National Committee on Geodesy and Geophysics, second term, 2020-2024
- Co-chair and co-organizer, “Integrated Hydro-Terrestrial Modeling (IHTM): Development of a National Capability”, An interagency workshop, hosted by NSF, Sept. 2019
- Chair, Hydrological Sciences Medal Committee, American Meteorological Society, 2018--
- Member, Hydrology Research Awards (HRA) Committee, American Meteorological Society, 2018--
- Member, Awards Oversight Committee (AOC), American Meteorological Society, 2018--
- Member, Advisory Committee, “Proposal for a Center of Excellence (CoE) for NEOM Research at KAUST” (NEOM is a mega-city project), Office of Sponsored Research, London, March, 2018
- Technical Advisory Committee, CUAHSI workshop to “Envision a terrestrial modeling system to encode and formalize the knowledge from NSF WSC/INFEWS projects”, 2019 --
- Reviewer and Advisory Panel of Experts, European Research Council (ERC), Brussels, 2018 --

- Panelist, AGU-IUGG Centennial Symposium on “Disaster Science: Risk Reduction, Resilience, Response and Recovery”, Washington DC, Dec. 2018
- Panelist, Water Policy, Water and Society Technical Committee, AGU, Washington DC. Dec., 2018
- Reviewer, NAS Report on “Future Water Needs for the Nation: Water Science and Research at the U.S. Geological Survey”, Water Science and Technology Board, (WSTP), NAS, 2018
- Scientific Session Proposal Reviewer, Annual AAAS Meeting, 2018
- Community Advisory Committee for Water Prediction (CAC-WP), National Water Center, NOAA, 2018-
- Member, NSF Panel on CAREER awards, 2017--
- Vice chair of Hydrologic Sciences Medal, American Meteorological Society (AMS), 2017- 2018
- Member, Suomi Award Committee, American Meteorological Society, 2017- 2018
- Steering Committee, Community Surface Dynamics Modeling Systems (CSDMS), 2016 – 2020
- Advisory Committee, Earth and Biological Sciences (EBS) Directory, Pacific Northwest National Laboratory (PNNL), 2016 - 2020
- Advisory Committee, Annual Reviews of Earth and Planetary Sciences, Invited Member, 2017
- Member, Faculty Advisory Council, Institute on the Environment, Univ. of Minnesota, 2016 – 2017
- Stockholm Water Prize (SWP) Nominating Committee, Swedish Academy of Sciences, 2012-2018
- NASA Science Advisory Council -- Earth Sciences Subcommittee, 2011-2018
- Member, Hydrology Research Awards (HRA) Committee, American Meteorological Society, 2015-2016
- Member, Search committee for CUAHSI president, 2016-2017
- Search Committee, Executive Director of CUAHSI, 2015-2016
- NOAA Science Advisory Council -- Ecosystem Science and Management Working Group, 2011-2013
- NSF, Advisory Council for Geosciences Directorate, 2008-2011
- USGCRP (U.S. Global Change Research Program) Water Cycle Initiative Study Group (1999-2000)
- Helmholtz Research Programme on “Sustainable Water Resources Management and Perspective towards a Water Science Alliance”, Helmholtz Center for Environmental Research, Leipzig, Germany, Advisory Review Committee, 2009
- Argentinean Water Resources Advisory Board, Minister for Planning and Agriculture, 2010-2013
- EU (European Union)– Framework 7 Environmental Infrastructure and Collaboratories, Advisory Panel, Brussels, 2008
- NCAR, Member Nominating Committee, 2015- 2018
- Chair, AGU Fellows Committee - Hydrology section, 2012-2014
- Advisory Board, NSF Center, Sustainable Environment Actionable Data (SEAD), 2012-2016
- Scientific Council, CIMA Research Foundation, Savona, Italy, 2012-2016
- Review Editor, Third National Climate Assessment Report, Water Chapter, 2013
- Chair, Search committee, Editor-in-Chief of Water Resources Research, AGU, 2012
- Member, AGU Publications Committee, 2010-2012
- Advisory Board, EU Project DRIHM (Distributed Infrastructure for Hydrometeorology), 2011-2015
- Advisory Board, NSF Project NGCHC (Northern Gulf Coastal Hazards Collaboratory), 2011-2013
- APLU (Association of Public and Land-grant Universities), Board of Atmospheric Sciences and Climate (BOAC), Executive Committee, 2009-2012
- NCAR, Science Advisory Board, Research Applications Laboratory, (2005-2012)
- NASA/PMM, Precipitation Science Team (2007-present)
- Science Museum of Minnesota Water Planet Program, Science Advisory Board (2005-2010)
- Chair, Horton Medal Committee, AGU (2008-2010)
- Panelist, Water section, Midwest Climate Change Assessment Forum, Chicago, 2010
- EGU, European Geophysical Union, Member, Scientific Committee, Plinius Conference (2007)
- University of Illinois, Urbana, Scientific Advisory Board, Hydrologic Synthesis Activities (2007-2011)
- NSF, Proposal Evaluation Panel, Cyberinfrastructure for Environmental Observatories (2006)
- AGU Fellows Nomination Committee, Hydrology Section (2005-2010)
- CUAHSI, Member, Executive Committee (2003-2010)

- Chair, CUAHSI, Board of Directors (2003-2010)
- UCAR/URC Liaison with the Research Applications Laboratory of NCAR (2003-2006)
- CUAHSI, Search Committee for Executive Director (2003)
- UCAR/NCAR, University Relations Committee (URC) (2000-2007)
- U.S. Weather Research Program Science Steering Committee (1999-2003)
- AGU, Fellow Nomination Committee (1999-2002)
- University of Western Australia, Review Committee of Center for Water Research (CWR) (1999)
- NASA, Tropical Rainfall Measuring Mission (TRMM) Science Team (1998-present)
- European Commission, Proposal Evaluation Panel, Water and Climate Programme (1997)
- NOAA, Proposal Evaluation Panel, GCIP (1995, 1997)
- Global Energy and Water Cycle Experiment, Chair, Precipitation Principal Research Area (1994)
- NSF, Proposal Review Panel, Hydrologic Sciences (1993-1996)
- AGU, Chair, Precipitation Committee, Hydrology Section (1992-1996)

### **Editorial Duties**

- Editorial Board, Geography Compass (2006-2012)
- Guest Editor, Water Resources Research (2005)
- Editorial Board, Nordic Hydrology (2003-present)
- Editorial Board, Advances in Water Resources (2000-2012)
- Associate Editor, Hydrologic and Earth Systems Science, European Geophysical Society (1997-2010)
- Associate Editor, Journal of Geophysical Research-Atmospheres, AGU (1997-2005)
- Editor, Journal of Hydrometeorology, AMS (1999-2001)
- Associate Editor, Water Resources Research (1992-1995)

### **Initiatives/Meetings/Conference Organization**

- Co-Organizer, Integrated Hydro-terrestrial Modeling (IHTM) workshop, NSF, Oct. 2019
- Organizer, Special Collection of papers for IPC12, American Meteorological Society (AMS), 2018-2020
- Organizer, Union session on “Data Analytics Innovations for Climate and Earth Surface Processes”, AGU meeting, San Francisco, Dec. 2019
- Organizer, 12<sup>th</sup> International Precipitation Conference (IPC12), Irvine, CA, (200+ attendees), June 2019
- Organizer, “Data Analytics for Climate and Earth (DANCE)” Workshop, Arrowhead, CA, March 2019
- Organizer, First “LIFE-ECOPOTENTIAL” meeting on ecosystem management of protected areas, University of California, Irvine, November 2016
- Founder of the “Sustainable Deltas 2015” initiative endorsed by ICSU (International Council of Scientific Unions) and launched internationally, 2015
- Founder of the Paul Witherspoon Mid-career award, Hydrology Section of AGU (while President), 2014 - now
- Founder of the “Virtual Hydrologists” project, Hydrology Section of AGU (while President), 2015-  
<http://abouthydrology.blogspot.com/2016/04/the-virtual-hydrologists-project.html>
- Founder and co-organizer, NCED Summer Institute on Earth-surface Dynamics (SIESD), 2009 -- annually
- Founder and co-organizer, Working group on “Stochastic Transport and Emergent Scaling in Earth-surface Processes” (STRESS), Lake Tahoe, 2007, 2009, 2011, 2013
- Founder of “A Sip of Science: engaging the public in climate and environmental science”, Minneapolis, 2009-
- Organizer, Special session on “Predictability of Extreme Hydrometeorological Events”, EGU meeting, Vienna, April, 2009
- Organizer, Special session on “Stochastic Transport and Emergent Scaling on Earth’s Surface”, EGU meeting, Vienna, April, 2009

- Organizer, Special session on “Rainfall Downscaling”, EGU Plinius Conference, Cyprus, July 2008
- Organizer, AGU Fall meeting, Special session on “Stochastic Transport and Emergent Scaling in Earth-surface Processes”, Dec. 2008
- Organizer, Special session on “Precipitation Downscaling: Recent advances and hydro-geomorphic impacts”, EGU Plinius Conference, Lake Como, Italy (2007)
- Organizer, Special session on “Stochastic Geomorphology: The role of variability and uncertainty in prediction”, American Geophysical Union Spring Meeting, Baltimore (2006)
- Organizer, Special session on “Geomorphological organization and its physical basis,” American Geophysical Union Fall Meeting, San Francisco (2003)
- Organizer, “Stream Restoration Workshop”, NCED-NAS sponsored workshop to define challenges on the science and practice of stream restoration, Minneapolis (2003)
- Organizer, 5th International Conference on Precipitation, Elounda, Crete, Greece (1995)
- Organizer, Special session on “Applications of Wavelet Transforms in Geophysics,” American Geophysical Union Spring Meeting, Baltimore (1993)
- Organizer, Special session on “Self-Similarity in Hydrologic Processes: Identification, Estimation, and Use in Modeling/Measurement/Prediction” American Geophysical Union Fall Meeting, San Francisco (1991)
- Organizer, Conference on “Operational Precipitation Estimation and Prediction”, American Meteorological Society Annual Meeting, Anaheim (1990).
- Organizer, Special session on “Multisensor observations and space-time rainfall modeling,” American Geophysical Union Spring Meeting, Baltimore (1989)
- Organizer, Special session on “Extreme rainfall and hydrologic design,” American Geophysical Union Fall Meeting, San Francisco (1989)

### **University of Minnesota (UMN) Selected Committees**

- International Research Task Force, VP’s Office, University of Minnesota, 2014-2016
- Provost’s Grand Challenges Research Strategy Team, 2015-2016
- Search Committee, Director, Institute on the Environment, 2014-2015
- Institute on the Environment, Advisory Council, 2014 - 2016
- Search Committee, Gibson chair, Dept. of Earth Sciences, 2014-2015
- Search Committee, Transportation faculty, Civil Engineering, 2014-2015
- Science Advisory Committee, VP’s Office, 2007- 2010
- Distinguished McKnight University Professors, Selection Committee, 2007-2012
- Chair, Search committee for Founding Director of the Institute on the Environment, 2008
- Provost’s Advisory Committee on the new Institute on the Environment, University of Minnesota, 2006
- Science and Scholarly Advisory Board, University of Minnesota, 2006 - 2010
- Search Committee for Department Chair, Department of Geology and Geophysics, 2005
- Environmental Sciences and Engineering Initiative, Strategic Planning Committee, Institute of Technology, University of Minnesota, 2005
- Search Committee for a faculty hire, Department of Ecology and Evolutionary Behavior, University of Minnesota, 2003
- Promotion and Tenure Committee, Institute of Technology, University of Minnesota, 2002-2005
- Chair, Search committee for 3 new faculty hires, Department of Civil Engineering, University of Minnesota, 1999
- Chair, Research Fellow Selection Committee, Minnesota Supercomputer Institute (MSI), 1998- 2001
- Director of Graduate Studies, Department of Civil Engineering, University of Minnesota, 1997- 1999

## University of California, Irvine (UCI) Selected Committees

- Chair, Search Committee for faculty in Water, Dept. of Civil and Env. Engr., 2016-2017
- Member, Engineering Council, Samueli School of Engineering, 2017 -
- Member, Associate Deans Council, 2017 -
- Member, CalIT2 Division Council, 2017 -
- Member, Search Committee for faculty in Water, Dept. of Civil and Env. Engr., 2017-2018
- Member, Search Committee for faculty in Water, Dept. of Civil and Env. Engr., 2018-2019
- Member, Search Committee for faculty in Fluids, Dept. of Mech. and Aerospace Engr., 2018-2019
- Member, UCI Distinctions Committee, UCI, 2018 –
- Member, Internal Advisory Board, Institute for Clinical and Translational Science (ICTS), 2017-

**Journal Reviewer:** Water Resources Research (WRR), Journal of Hydrology (JH), Journal of Applied Meteorology (JAM), International Journal of Mathematical Geology, ASCE Journal of Hydraulic Engineering, ASCE Journal of Water Resources Management and Planning, ASCE Journal of Hydrologic Engineering, Canadian Meteorological and Oceanographical Society Journal, Journal of Stochastic Hydrology and Hydraulics, Hydrology and Earth System Sciences, Journal of Geophysical Research, Journal of Hydrometeorology (JHM), Journal of Climate, Nordic Hydrology, Hydrologic Processes, Physical Review E, Geophysical Review Letters (GRL), Reviews of Geophysics, Journal of Geophysical Research-Atmospheres (JGR-Atmo), Journal of Geophysical Research-Earth Surface (JGR-ES), Proceedings of the National Academies of Science (PNAS), Science, Nature Geosciences, Nature Climate Change, Nature Communications, Scientific Reports.

**Proposal reviewer:** National Science Foundation (NSF), European Union (EU, Horizon 2020), U. S. Geological Survey (USGS), National Aeronautics and Space Administration (NASA), Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA), Swiss National Science Foundation, Swedish National Science Foundation, Australian Science Foundation, Austrian Science Foundation, National Environmental Research Council (NERC) UK.

## **REFEREED JOURNAL PUBLICATIONS**

*(Italics indicates student or post-doc)*

### **Submitted and under review or revision:**

Guilloteau, C., A. Mamalakis, L. Vulis, T. Georgiou, and **E. Foufoula-Georgiou**, Rotated spectral principal component analysis (rsPCA) for identifying dynamical modes of variability in climate systems, *J. Climate*, under review, 2020.

Stevens, A. R. Willett, A. Mamalakis, **E. Foufoula-Georgiou**, A. Tejedor, J. Randerson, P. Smyth and S. Wright, Graph-guided regularized regression of Pacific ocean climate variables to increase predictive skill of southwestern US winter precipitation, *J. Climate*, under review, 2020

Chen, Y., J. Randerson, S. Coffield, **E. Foufoula-Georgiou**, P. Smyth, C. Graff, D. Morton, N. Andela, G van der Werf, L. Giglio, and L. Ott, Forecasting global fire emissions on sub-seasonal to seasonal (S2S) timescales, *J. Adv. in Modeling Earth Systems (JAMES)*, under review, 2020.

Keylock C. J., A. Singh, P. Passalacqua, and **E. Foufoula-Georgiou**, Hölder-conditioned Hypsometry: A Refinement to a Classical Approach For The Characterization of Topography, *Water Resources Research*, in revision, 2020.

*Hooshyar, M., S. Bonetti, A. Singh, E. Foufoula-Georgiou, and A. Porporato, The emergence of logarithmic mean-elevation profiles in landscape evolution, Physical Review Letters, under review, 2020.*

Mamalakis, A., J.T. Randerson, J.-Y. Yu, M.S. Pritchard, G. Magnusdottir, P. Smyth, P.A. Levine and E. Foufoula-Georgiou, Zonally diverging response of the intertropical convergence zone to climate change, in review, 2020.

Longjas, A., A. Tejedor, and E. Foufoula-Georgiou, Inferences on predator-prey vulnerabilities via spectral graph analysis of food webs, *Ecological Modeling*, submitted, 2020.

## Published:

### 2020

207. Vulis, L., A. Tejedor, J. Schwenk, A. Piliouras, J. C. Rowland, and E. Foufoula-Georgiou, Channel network control on seasonal lake area dynamism in arctic deltas *Geophysical Research Letters*, 46, doi:10.1029/2019GL086710, 2020

206. Graff C., S. Coffield, Y. Chen, E. Foufoula-Georgiou, J. Randerson, and P. Smyth, Machine learning to predict final fire size at the time of ignition, *IEEE Geoscience and Remote Sensing Letters*, to appear, 2020

205. Guilloteau, C., E. Foufoula-Georgiou, Multiscale evaluation of satellite precipitation products: effective resolution of IMERG, Chapter 3.5, in “*Satellite Precipitation Measurement*”, Springer Verlag, solicited, to appear, 2020.

204. Wu, Z., D. Furbish, and E. Foufoula-Georgiou, Generalization of hop distance-time scaling and particle velocity distributions via a two-regime formalism of bedload particle motions, *Water Resources Research*, 56, 1-14, doi:10.1029/2019WR025116, 2020.

203. Guilloteau, C., and E. Foufoula-Georgiou, Beyond the pixel: using patterns and multiscale spatial information to improve the retrieval of precipitation from space-borne passive microwave imagers, *J. Atmos. Oceanic Technol.*, doi:10.1175/JTECH-D-19-0067.1, 2020.

### 2019

202. Coffield, S., C. Graff, Y. Chen, P. Smyth, E. Foufoula-Georgiou, and J. Randerson, Machine learning to predict final fire size at the time of ignition, *International Journal of Wildland Fire*, doi:10.1071/WF19023, 2019.

201. Boardman, E., M. Danesh-Yazidi, E. Foufoula-Georgiou, C. L. Dolph, and J. C. Finlay, Fertilizer, landscape features and climate regulate phosphorus retention and river export in diverse Midwestern watersheds, *Biogeochemistry*, doi:10.1007/s10533-019-00623-z, 2019

200. Mamalakis, A., J.-Y. Yu, J.T. Randerson, A. AghaKouchak, and E. Foufoula-Georgiou, Reply to: A critical examination of a newly proposed interhemispheric teleconnection to Southwestern US winter precipitation, *Nature Communications*, 10, 2918, doi:10.1038/s41467-019-10528-y, 2019.

201. Hooshyar, M., A. Singh, D. Wang, and E. Foufoula-Georgiou, Climatic controls on landscape dissection and network structure in the absence of vegetation, *Geophysical Research Letters*, 46, 3216 - 3224 doi:10.1029/2019GL082043, 2019.

199. Gran, K., C. Dolph, A. Baker, M. Bevis, S. J. Cho, J. A. Czuba, B. Dalzell, M. Danesh-Yazdi, A. Hansen, S. Kelly, Z. Lang, J. Schwenk, P. Belmont, J. C. Finlay, P. Kumar, S. Rabotyagov, G. Roehrig, P. Wilcock, and E. Foufoula-Georgiou, The power of environmental observatories for advancing multidisciplinary research, outreach, and decision support: the case of the Minnesota River Basin, *Water Resources Research*, doi:10.1029/2018WR024211, 2019.

198. Takbiri Z., A. M. Ebtehaj, E. Foufoula-Georgiou, P. E. Kirstetter, and F. J. Turk, A Prognostic Nested K-Nearest Approach for Microwave Precipitation 2 Phase Detection over Snow Cover, *Journal of Hydrometeorology*, 124, 251 - 274, doi:10.1175/JHM-D-18-0021.1, 2019.



## 2018

197. *Mamalakis, A.* and **E. Foufoula-Georgiou**, A multivariate probabilistic framework for tracking the intertropical convergence zone: Analysis of recent climatology and past trends, *Geophysical Research Letters*, doi:10.1029/2018GL079865, 2018.
196. *Papalexiou, S. M.*, Y. Markonis, F. Lombardo, A. AghaKouchak, and **E. Foufoula-Georgiou**, Precise temporal Disaggregation Preserving Marginals and Correlations (DiPMaC) for stationary and non-stationary processes, *Water Resources Research*, 54, doi:10.1029/2018WR022726, 2018.
195. *Guo, L.*, M. Brand, B. F. Sanders, **E. Foufoula-Georgiou**, and E. D. Stein, Tidal asymmetry and residual sediment transport in a short tidal basin under sea level rise, *Advances in Water Resources*, 121, 1-8, doi.org/10.1016/j.advwatres.2018.07.012, 2018.
194. *Guilleteau, C.*, **E. Foufoula-Georgiou**, C. D. Kummerow, and V. Petković, Resolving Surface Rain from GMI High-Frequency Channels: Limits Imposed by the Three-Dimensional Structure of Precipitation, *J. Atmos. Oceanic Technol.*, 35, 1835-1847, doi:10.1175/JTECH-D-18-0011.1, 2018
193. Kumar, P., P.V.V. Le, A.N.T. Papanicolaou, B.L. Rhoads, A.M. Anders, A. Stumpf, C.G. Wilson, E.A. Bettis III, N. Blair, A.S. Ward, T. Filley, H. Lin, L. Keefer, D.A. Keefer, Y.-F. Lin, M. Muste, T.V. Royer, **E. Foufoula-Georgiou**, and P. Belmont, Critical Transition in Critical Zone of Intensively Managed Landscapes, *Anthropocene*, doi:10.1016/j.ancene.2018.04.002, 2018.
192. *Tejedor, A.*, *A. Longjas*, P. Passalacqua, Y. Moreno, and **E. Foufoula-Georgiou**, River deltas as Multiplex networks: A framework for studying multi-process multi-scale connectivity via coupled-network theory, *Geophysical Research Letters*, doi:10.1029/2018GL078355, 2018.
191. *Mamalakis A.*, J.-Y. Yu, J.T. Randerson, A. AghaKouchak, and **E. Foufoula-Georgiou**, A new inter-hemispheric teleconnection increases predictability of winter precipitation in southwestern US, *Nature Communications*, 9(1), 2332, doi:10.1038/s41467-018-04722-7, 2018.
190. *Papalexiou, S.*, A. AghaKouchak, and **E. Foufoula-Georgiou**, A diagnostic framework for understanding climatology of the tails of hourly precipitation extremes in the United States, *Water Resour. Res.*, 54, doi:10.1029/2018WR022732, 2018.
189. Wu, Z., **E. Foufoula-Georgiou**, G. Parker, A. Singh, X. Fu, and G. Wang, Analytical solution for anomalous diffusion of bedload tracers gradually getting buried in transport, *Journal of Geophysical Research: Earth Surface*, 124, doi:10.1029/2018JF004654, 2018.
188. Tejedor, A., A. Longjas, E. Foufoula-Georgiou, T. T. Georgiou, and Y. Moreno, Diffusion Dynamics and Optimal Coupling in Multiplex Networks with Directed Layers, *Physical Review X*, 8(3), 031071, doi:10.1103/PhysRevX.8.031071, 2018.
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## **PAPERS PRESENTED IN CONFERENCES**

There are over 500 papers that have been presented in major international conferences including American Geophysical Union (AGU), European Geosciences Union (EGU), Chapman Conferences, International Association of Hydrologic Sciences, International Conference on Precipitation, etc. Abstracts are published and available on the web.

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K. Droegeleier (Meteorology, U of Oklahoma), T. Georgiou (EE, U of California Irvine), P. Guttorp (Statistics, U of Washington), D. Koutsoyiannis (Hydrology, NTUA, Greece), G. Parker (Sediment transport, U of Illinois UC), C. Paola (Geomorphology, U of Minnesota), J. Stedinger (Statistical Hydrology, Cornell), E. Todini and M. Franchini (Hydrology, U of Bologna), F. Porté-Agel (Atmospheric Boundary Layer, EPFL), C. Kummerow (Atmospheric Sciences, Colorado State University), S. Yuter (Meteorology, NCSU), I. Zaliapin (Mathematics, U of Nevada, Reno), W. Dietrich (Geomorphology, U of California, Berkeley), A. Arneodo (Turbulence, Ecole Normale Superieure de Lyon, France), S. Roux (Turbulence, Ecole Normale Superieure de Lyon, France), C. Stark (Mathematical Geomorphology, University of Columbia), M. Power (Ecology, U of California, Berkeley), M. Ghil (Atmospheric Dynamics, Ecole Normale Superieure, Paris, France), M. Meerschaert (Mathematics, Michigan State University), G. Sapiro (EE, Duke University), M. Guala (University of Minnesota), P. Belmont (Utah State University), J. Randerson (UCI), P. Smyth (UCI), M. Pritchard (UCI), J-Y Yu (UCI), A. AghaKouchak (UCI), Brett Sanders (UCI), Tirtha Banerjee (UCI)

**GRADUATE ADVISORS:** Dennis P. Lettenmaier (U of Washington), Wayne C. Huber (U of Florida)

## GRADUATE and POSTGRADUATE ADVISEES:

### Former Advisees

PhD: Praveen Kumar (1993), Sanja Perica (1995), Alin Cârsteanu (1997), Venu Venugopal (1999), Deborah Nykanen (2000), Boyko Dodov (2003), Sukanta Basu (2004), Chandana Gangodagamage (2009), Paola Passalacqua (2009), Arving Singh (2011), Vamsi Ganti (2012), Mohammad Ebtehaj (2013), Jon Czuba (2016), Jon Schwenk (2016), Mohammad Danesh-Yazdi (2017), Zeinab Takbiri (2018) – *please see my web site for their current positions (<http://efi.eng.uci.edu>)*

M.S.: Larry Wilson (1989), Praveen Kumar (1989), Geoff Griffin (1991), Keith Helmlinger (1992), Igor Jankovic (1992), Thomas Rasmussen (1992), Venu Venugopal (1995), Deborah Nykanen (1997), Jesus Zepeda-Arce (2000), B. Tustison (2001), Jamie Smedsmo (2004), Rohit Gupta (2004), Lisa Tilman (2005), Paola Passalacqua (2005, co-advised with Fernando Porté-Agel), Nikos Theodoratos (2006), Birdoha Basu (2011)

Research Associates: Daniel Harris, Victor Sapozhnikov, Shuxia Zhang, Venu Venugopal, Boyko Dodov, Sukanta Basu, Rohan Shreshtha, Bruno Lashermes, Ion Iorgulescu, Kurt Fienberg, Arvind Singh, Stefano Zanardo, Diego Ponce de Leon Barido, Amy Hansen, Zi Wu (UCI), Yannis Dialynas (UCI), Anthony Longjas (UCI) Simon Papalexou (UCI), Alejandro Tejedor (UCI)

### Present Advisees (UCI)

PhD: Antonios Mamalakis, Lawrence Vulis

Post-doctoral Fellow: Clement Guilloteau, Janine Baijnath-Rodino

Visiting Scientist: Dr. Fengxia Li, Visiting Scholar at UCI; Lecturer, College of Architecture, Xi'an University of Architecture and Technology, Shaanxi Province.

Affiliate Scientist: Dr. Alejandro Tejedor, Senior Scientist at UCI; Scientist at the Max Planck Institute for the Physics of Complex Systems, Dresden, Germany

## Foreign PhD Student External Advisor/Examiner

Davide Ceresetti, University of Grenoble (PhD, 2005)

Athansios Paschalis, ETH (PhD, 2013)

Niannian Fan, Tsinghua University (PhD, 2014)

Nicola Durighetto (MS, 2018)

## THESES OF ADVISED GRADUATE STUDENTS:

**Kumar, Praveen.** MS, 1989 April, “*A Stochastic Simulation Model for Space-time Description of Rainfall*” Adv. E. Foufoula-Georgiou, Department of Civil Engineering, Iowa State University.

**Griffin, Geoffrey.** Master of Science, 1991 August, “*Reservoir Operation Optimization: A case Study for the Lake Zumbro Hydropower Facility*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Helmlinger, Keith.** MS, 1992 November, “*Estimation of Morphometric and Scaling Properties of River Networks from Digital Elevation Data*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Rasmussen, Thomas.** Master of Science, 1992 May, “*Analysis of Atrazene Levels in the Lower Missouri River*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Jankovic, Igor.** Master of Science, 1993 May, “*Numerical Simulation of Groundwater Recharge: Spatial and Temporal Analysis*”, Adv. R. Andricevic, E. Foufoula-Georgiou and R. Barnes, Department of Civil Engineering, University of Minnesota.

**Kumar, Praveen.** PhD, 1993 April, “*Multiscale Study of Rainfall Fields Via Wavelet Transforms for Identifying Scaling Characteristics*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Venugopal, Vuruptur.** Master of Science, 1995 November, “*Time-Frequency-Scale Analysis of Temporal Rainfall*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Carsteanu, Alin-Andrei.** PhD, 1997 December, “*Space-Time Rainfall Modeling: Considerations of Scaling and Dynamics*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Nykanen, Deborah.** MS, 1997 June, “*Study of the Morphology and Spatial Scaling of Braided Rivers Using Synthetic Aperture Radar Imagery*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Venugopal, Vuruptur.** PhD, 1999 January, “*Spatio-Temporal Organization and Space-Time Downscaling of Precipitation Fields*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Zepeda-Arce, Jesus.** Masters, 1999 February, “*Multiscale Statistical Measures for Assessment of Quantitative Precipitation Forecasts*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Nykanen, Deborah K.** PhD, 2000 November, “*Space-Time Variability of Rainfall and Soil Moisture in Coupled Land-Atmosphere Modeling: Issues of Scale and Effect on Predicted Water and Energy Fluxes*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Tustison, Benjamin T.** MS, 2001 May, “*Multiscale Techniques for the Verification of Quantitative Precipitation Forecasts*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Dodov, Boyko A.** PhD, 2003 August, “*Analysis of the Effects of Channel Morphometry and Network Topology on the Nonlinearity of Hydrologic Response as a Function of Scale*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Basu, Sukanta.** PhD, 2004 December, “*Large-Eddy Simulation of Stably Stratified Atmospheric Boundary Layer Turbulence: A Scale-Dependent Dynamic Modeling Approach*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Gupta, Rohit.** MS, 2004 June. “*Parametric and Non-Parametric Approaches for Validation and Blending of Multi-Sensor Precipitation Estimates*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Smedsmo, Jamie L.** MS, 2004 June, “*A Statistical View of the Vertical Structure of Modeled and Observed Clouds: Insights for QPF Verification and Remote Sensing of Precipitation*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Passalacqua, Paola.** Master's 2005 December, “*Scale Dependence and Subgrid-Scale Closure in Numerical Simulations of Landscape Evolution*”, Adv. F. Porte-Agel, E. Foufoula-Georgiou and C. Paola, Department of Civil Engineering, University of Minnesota.

[http://home.safl.umn.edu/bmackay/pub/Theses/Passalacqua\\_Paola\\_MSc\\_2007.pdf](http://home.safl.umn.edu/bmackay/pub/Theses/Passalacqua_Paola_MSc_2007.pdf)

**Tilman, Elizabeth A.** MS, 2005 May, “*Scaling Relationships for the Depth and Width of Channels in an Experimental Braided River*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota. [http://home.safl.umn.edu/bmackay/pub/Theses/Tilman\\_Lisa\\_MS\\_2005.pdf](http://home.safl.umn.edu/bmackay/pub/Theses/Tilman_Lisa_MS_2005.pdf)

**Theodoratos, Nikos.** MS, 2006 June, “*The Effect of Channel-Floodplain Interactions on the Scaling of Floods*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Gangodagamage, Chandana.** PhD, 2009 September, “*Scale Invariance and Scaling Breaks - New Metrics for Inferring Process Signature from High Resolution LiDAR Topography*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota. <http://purl.umn.edu/57133>

**Paola Passalacqua.** PhD, 2009, “*On the geometric and statistical signature of landscape forming processes,*” Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

**Singh, Arvind.** PhD, 2011 December, “*Statistical Mechanics of Sediment Transport*”, Adv. E. Foufoula-Georgiou, Department of Civil Engineering, University of Minnesota.

[http://library.safl.umn.edu/docs/theses/Singh\\_Arvind\\_PhD\\_2011.pdf](http://library.safl.umn.edu/docs/theses/Singh_Arvind_PhD_2011.pdf); <http://purl.umn.edu/120031>

**Ganti, Vamsi.** PhD, 2012, “*Non-local Theories of Geomorphic Transport: From Hillslopes to Rivers to Deltas to the Stratigraphic Record*”, Adv. E. Foufoula-Georgiou, Department of Civil and Environmental Engineering, University of Minnesota.

**Mohammad Ardeshir Ebtehaj,** PhD, 2013, “*Hydrometeorological Inverse Problems via Sparse Regularization: Advanced Frameworks for Rainfall Downscaling, Fusion, and Assimilation*”, Adv. E. Foufoula-Georgiou, Department of Civil and Environmental Engineering, University of Minnesota.

**Jon Czuba,** PhD, 2016, “*A network-based framework for hydro-geomorphic modeling and decision support with application to space-time sediment dynamics, identifying vulnerabilities, and hotspots of change*”, Adv. E. Foufoula-Georgiou, Department of Civil and Environmental Engineering, University of Minnesota.

<http://conservancy.umn.edu/handle/11299/181713>

**Jon Schwenk,** PhD, 2016, “*Meandering rivers: interpreting dynamics from planform geometry and the secret lives of migrating meanders*”, Adv. E. Foufoula-Georgiou, Civil and Environmental Engineering, University of Minnesota, <http://conservancy.umn.edu/handle/11299/183333>

**Mohammad Danesh-Yazdi,** PhD, 2017, “*Inferring the impacts of anthropogenic changes and catchment spatial heterogeneity on the water cycle dynamics and transport time scales*”, Adv. E. Foufoula-Georgiou, Department of Civil and Environmental Engineering, University of Minnesota, <https://www.safl.umn.edu/mohammad-danesh-yazdi-defends-phd-dissertation-titled-inferring-impacts-anthropogenic-changes-and-ca>

**Zeinab Takhiri,** PhD, 2018, “*Multi-Satellite Remote Sensing of Land-Atmosphere Interactions: Advanced Data-Driven Methodologies for Passive Microwave Retrievals of Flood and Precipitation*”, Adv. E. Foufoula-Georgiou (UCI), co-adv. M. Ardeshir Ebtehaj (UMN), Department of Civil and Environmental Engineering,

<https://conservancy.umn.edu/handle/11299/201100>



## SPONSORED RESEARCH

(PI – Principal Investigator)

NSF–Presidential Young Investigator Award (lead PI)	1990-1995	\$500,000
NSF–Critical Systems and Engineering Program (lead PI)	1988-1989	\$100,000
NSF–Hydrologic Sciences Program (lead PI)	1992-1994	\$150,000
NASA–Tropical Rainfall Measuring Mission (TRMM) (lead PI)	1992-1995	\$230,000
NASA–Global Change Fellowship for P. Kumar (lead PI)	1992-1994	\$90,000
NASA- Global Change Fellowship for S. Perica (lead PI)	1994-1996	\$90,000
NASA- Global Change Fellowship for V. Venugopal (lead PI)	1996-1999	\$90,000
NOAA–Office of Global Programs (lead PI)	1994-1997	\$220,000
NSF–Hydrologic Sciences Program (lead PI)	1996-1999	\$200,000
NASA–Land Surface Hydrology Program (lead PI)	1996-1999	\$290,000
NOAA/NASA–Joint Program on GCIP (lead PI)	1997-2000	\$330,000
NSF–U.S. Weather Research Program (lead PI)	1997-2000	\$330,000
NASA–Tropical Rainfall Measuring Mission (TRMM) (lead PI)	1998-2001	\$300,000
NASA–Land Surface Hydrology (lead PI)	2001-2003	\$360,000
NASA–Land Surface Hydrology (co-PI with F. Porté-Agel)	2001-2005	\$350,000
NSF–Mesoscale Meteorology Program (lead PI)	2001-2004	\$286,000
NSF–Hydrologic Sciences Program (lead PI)	2002-2006	\$262,000
NASA–Land Surface Hydrology Program (lead PI)	2002-2005	\$232,700
NASA–Global Precipitation Mission (GPM) (lead PI)	2003-2006	\$300,000
NSF–Science and Technology Center (NCED) (co-lead PI and co-Director, University of Minnesota)	2002-2012	\$40 million (20 PIs)
NSF–Hydrology Program (co-PI with F. Porte-Agel)	2005-2008	\$300,000
NASA – Land Surface Hydrology (co-PI with F. Porté-Agel)	2005-2008	\$320,000
NASA – Global Precipitation Mission (GPM) (lead PI)	2006-2009	\$340,000
NSF – Cyber Enabled Discovery and Innovation (lead PI)	2008-2011	\$300,000
NSF – Geomorphology and Land-use Dynamics (lead PI)	2008-2011	\$230,000
NSF – Mathematics in Geosciences (Geomorphic Transport Laws) (lead PI)	2008-2011	\$150,000
NASA – GPM data fusion with emphasis on extremes (lead PI)	2009-2012	\$280,000
UMN - Institute on the Environment – U of Minnesota (lead PI)	2011-2013	\$200,000
Google Earth Engine (lead PI)	2011-2013	\$200,000
NSF – Mathematics in Geosciences (Environmental Transport on river networks) (lead PI)	2009-2013	\$230,000
NASA - Climate Change Education Partnership (co-PI)	2011-2013	\$420,000
NASA -- Global Change Fellowship for M. Ebtehaj	2012-2015	\$150,000
NASA – Towards the next generation of multi-sensor multi-scale precipitation fusion: a variational approach in the wavelet domain (GPM) (lead PI)	2013-2016	\$415,000
NSF – Water Sustainability and Climate: Climate and human dynamics as amplifiers of natural change: a framework for vulnerability assessment and mitigation planning (lead PI)	2012-2017	\$4.3 M (\$2.3 U of M)
NSF – National Center for Earth Surface Dynamics NCED 2 (co-PI)	2012-2017	\$3.5 M
NSF – Linked Institutions for Future Earth (LIFE) (lead PI)	2012-2017	\$800,000
NSF – Belmont Forum: DELTAS (lead PI; 7 countries)	2013-2017	\$2.0 M (\$750K US)
NASA – Global Precipitation Program (lead PI)	2016-2019	\$350,000
NSF – National Research Training at UCI (co-PI)	2017-2020	\$2.5 M

NSF- TRIPODS+CLIMATE, Div. of Mathematical Sciences (DMS) (lead PI)	2018-2021	\$300,000
NSF—Delta Channel Networks, Earth Sciences Div., Geomorphology and Land use Dynamics (GLD) Program (lead PI)	2018-2021	\$335,000
NSF— Finest Time Resolution Dynamic Modeling, Engineering Directorate (co-PI)	2018-2021	\$220,000
NASA- Earth Sciences Fellowship for L. Vulis (lead PI)	2018-2021	\$310,000
NASA –Global Precipitation Measuring Mission (GPM) (lead PI)	2019-2021	\$430,000

Updated: 02/10/2020