Curriculum Vitae

Viviana Maggioni, Ph.D.

Associate Professor
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I. PERSONAL INFORMATION

A. Education

Ph.D.   Environmental Engineering, University of Connecticut, Storrs, CT, May 2012

M.S.   Environmental Engineering, Politecnico di Milano, Milan, Italy, April 2006

B.S.   Environmental Engineering, Politecnico di Milano, Milan, Italy, October 2003

B. Employment Background

George Mason University, Fairfax, VA
- Department of Civil, Environmental, and Infrastructure Engineering
  - Associate Professor (with tenure)   2020 – present
  - Director of Undergraduate Affairs   2023 – present
  - Associate Chair for Research   2020 – 2023
  - Assistant Professor   2014 – 2020
- Institute for a Sustainable Earth
  - Affiliated Faculty   2020 – present
- Center for Resilient and Sustainable Communities (C-RASC)
  - Affiliated Faculty   2020 – present
- Satellite and Earth System Studies (SESS) program
  - Affiliated Faculty   2023 – present

University of Maryland, College Park, MD
- Earth Systems Science Interdisciplinary Center (ESSIC)
  - Visiting Assistant Research Scientist   2016 – 2023
  - Visiting Research Associate   2014 – 2015
  - Research Associate   2012 – 2014

Chungnam National University, Daejeon, Republic of Korea
- International Water Resources Research Institute (IWRRI)
  - Affiliated Research Professor   2016 – 2019

University of Connecticut, Storrs, CT
- Department of Civil and Environmental Engineering
  - Graduate Research Assistant   2007 – 2012

II. RESEARCH ACTIVITIES

A.   Publications and Presentations

i. Doctoral Dissertation

"The Effect of Rainfall Error Characterization on the Efficiency of a Land Data Assimilation System for Soil Moisture Prediction," University of Connecticut; Advisor: Emmanouil N. Anagnostou; 2012.

ii. Books

Maggioni, V. and C. Massari (Eds.), *Extreme Hydroclimatic Events and Multivariate Hazards in a Changing Climate*, Elsevier, June 2019.

iii. Book Chapters

[1]   **Maggioni, V.**, C. Massari, and C. Kidd. Errors and uncertainties associated with quasiglobal satellite precipitation products. In Michaelides (Ed.), *Precipitation Science. Measurement, Remote Sensing, Microphysics and Modeling*, Elsevier, November 2021.

[2]   Massari, C. and **V. Maggioni**. Error and uncertainty characterization. In Levizzani, Kidd, Kirschbaum, Kummerow, Nakamura, Turk (Eds.), *Satellite Precipitation Measurement*, Springer, 2020.

[3]   Kidd, C., S. Shige, D. Vila, E. Tarnavsky, M. Yamamoto, **V. Maggioni**, B. Maseko. The IPWG satellite precipitation validation effort. In Levizzani, Kidd, Kirschbaum, Kummerow, Nakamura, Turk (Eds.), *Satellite Precipitation Measurement*, Springer, 2020.

[4]   Emelianenko, M. and **V. Maggioni**. Mathematical challenges in measuring variability patterns for precipitation analysis. In Kaper and Roberts (Eds.), *Mathematics of Planet Earth: Protecting Our Planet, Learning from the Past, Safeguarding for the Future*, Springer, 2019.

[5]   **Maggioni, V.** and P.R. Houser. Soil moisture data assimilation. In Park, Seon Ki, Xu, Liang (Eds.), *Data Assimilation for Atmospheric, Oceanic and Hydrologic Applications (Vol. III)*, pp. 195-217. Springer, Cham, 2017.

iv. Articles in Peer Refereed Journals (supervised undergraduate/graduate students and postdoctoral research fellows are underlined)

[1]   Kandasamy, J., Y. Xue, P. Houser, and **V. Maggioni;** 2023: Performance of Different Crop Models in Simulating Soil Temperature. *Sensors*, 23(6), p.2891.

[2]   Li, Z., D. Wright, S. Hartke, D. Kirschbaum, **V. Maggioni**, P. Kirstetter, S. Khan, 2022: Toward A Globally-Applicable Uncertainty Quantification Framework for Satellite Multi-sensor Precipitation Products based on GPM DPR, *IEEE Transactions on Geoscience and Remote Sensing (TGRS)*, 10.1109/TGRS.2023.3235270.

[3] Dollan, I., **V. Maggioni**, J. Johnston, G. de Almeida Coelho, J. Kinter, 2022: Seasonal Variability of Future Extreme Precipitation and Associated Trends across the Contiguous U.S., *Frontiers in Climate*, p. 195.

[4] Maina, F., S. Kumar, I. Dollan, **V. Maggioni**, 2022: Development and evaluation of ensemble consensus precipitation estimates over High Mountain Asia, *Journal of Hydrometeorology*, 10.1175/JHM-D-21-0196.1.

[5] Hartke, S., D. Wright, Z. Li, **V. Maggioni**, D. Kirschbaum, S. Khan, 2022: Ensemble Representation of Satellite Precipitation Uncertainty using an Uncalibrated, Nonstationary, Anisotropic Autocorrelation Model, *Water Resources Research*, e2021WR031650.

[6] de Almeida Coelho, G., C. Ferreira, J. Johnston, J. Kinter, I. Dollan, **V. Maggioni**, 2022: Potential Impacts of Future Extreme Precipitation Changes on Flood Engineering Design across the Contiguous United States, *Water Resources Research*, p.e2021WR031432.

[7] Xue, Y., P. Houser, **V. Maggioni**, Y. Mei, S. Kumar, Y. Yoon, 2022: Evaluation of High Mountain Asia - Land Data Assimilation System (version 1) from 2003 to 2016, Part II: The Impact of Assimilating Satellite-Based Snow Cover and Freeze/Thaw Observations into a Land Surface Model, *Journal of Geophysical Research – Atmospheres*, p.e2021JD035992.

[8] Sharif, R.B., P.R Houser, V. Aquila, and **V. Maggioni**, 2022: Investigating Rainfall Patterns in the Hubei Province, China and Northern Italy during the Covid-19 Lockdowns. *Frontiers in Climate*, p.193.

[9] Rahman, A., **V. Maggioni**, X. Zhang, P. Houser, T. Sauer, and, D. Mocko, 2022: The Joint Assimilation of Remotely Sensed Leaf Area Index and Surface Soil Moisture into a Land Surface Model, *Remote Sensing*, 14, 437.

[10] Rahman, A., X. Zhang, P. Houser, T. Sauer, and **V. Maggioni**, 2021: Global Assimilation of Remotely Sensed Leaf Area Index: The Impact of Updating More State Variables Within a Land Surface Model, *Frontiers in Water – Water and Hydrocomplexity*, p.200.

[11] Dollan, I., **V. Maggioni**, and J. Johnston, 2021: Investigating Temporal and Spatial Precipitation Patterns in the Southern Mid-Atlantic United States, *Frontiers in Climate – Climate Services*, 3: 799055.

[12] Zhang, X., **V. Maggioni**, P. Houser, Y. Xue, 2021: The Impact of Weather Condition on COVID-19 Transmission in the United States, *Journal of Environmental Management*, Vol. 302, 114085.

[13] Rouf, T., M. Girotto, P. Houser, and **V. Maggioni**, 2021: Assimilating Satellite-Based Soil Moisture Observations in a Land Surface Model: The Effect of Spatial Resolution, *Journal of Hydrology X*, 13, p. 100105.

[14] Mishra, S., S. Rupper, S. Kapnick, K. Casey, H. G. Chan, E. Ciraci, U. Haritashya, J. Hayse, J. Kargel, R. Kayastha, N. Krakauer, S. Kumar, R. Lammers, **V. Maggioni**, S. Margulis, M. Olson, B. Osmanoglu, Y. Qian, S.

McLarty, K. Rittger, D. Rounce, D. Shean, I. Velicogna, T. Veselka, A. Arendt, 2021: Grand Challenges of Hydrologic Modeling for Food-Energy-Water Nexus Security in High Mountain Asia, *Frontiers in Water – Water and Hydrocomplexity*, p.123.

[15] Johnston, J., P. Houser, V. Maggioni, R. Sung Kim, and C. Vuyovich, 2021: Informing Improvements in Freeze/Thaw State Classification Using Sub-pixel Temperature, *IEEE Transactions on Geoscience and Remote Sensing*, doi: 10.1109/TGRS.2021.3099292.

[16] Nanding, N., H. Wu, N. Zhou, M. Huang, J. Tao, H. Beck, Z. Huang, **V. Maggioni**, 2021: Assessment of Precipitation Error Propagation in Discharge Simulations over the Contiguous United States, *Journal of Hydrometeorology*, 22, 8, 1987–2008.

[17] Kidd, C., G. Huffman, **V. Maggioni**, P. Chambon, R. Oki, 2021: The Global Satellite Precipitation Constellation: Current Status and Future Requirements, *Bulletin of the American Meteorological Society* (BAMS), pp. 1–47.

[18] Falck, A., J. Tomasella, F. Diniz, **V. Maggioni**, 2021: Applying a precipitation error model to numerical weather predictions for probabilistic flood forecasts, *Journal of Hydrology*, 598, p.126374.

[19] Xue, Y., P. Houser, **V. Maggioni**, Y. Mei, S. Kumar, Y. Yoon, 2021: Evaluation of High Mountain Asia – Land Data Assimilation System (version 1) from 2003 to 2016, Part I: A hyper-resolution terrestrial modeling system, *Journal of Geophysical Research – Atmospheres*, 126 (8).

[20] Girotto, M., R. Reichle, M. Rodell, **V. Maggioni**, 2021: Data Assimilation of Terrestrial Water Storage Observations to Estimate Precipitation Fluxes: A Synthetic Experiment, *Remote Sensing*, 13, 1223.

[21] Zavareh, M., **V. Maggioni**, V. Sokolov, 2021: Investigating Water Quality Data Using Principal Component Analysis and Granger Causality, *Water*, 13(3), p.343.

[22] Rouf, T., **V. Maggioni**, Y. Mei, and P. Houser, 2021: Towards Hyper-Resolution Land-Surface Modeling of Surface and Root Zone Soil Moisture, *Journal of Hydrology*, 594, p.125945.

[23] Solakian, J., **V. Maggioni**, A. Godrej, 2020: On the Performance of Satellite-based Precipitation Products in Simulating Streamflow and Water Quality during Hydrometeorological Extremes, *Frontiers in Environmental Science*, 8:585451.

[24] Mei, Y., **V. Maggioni**, P. Houser, Y. Xue, and T. Rouf, 2020: A Nonparametric Statistical Technique for Spatial Downscaling of Precipitation over High Mountain Asia, *Water Resources Research*, 56, 11.

[25] Solakian, J., **V. Maggioni**, A. Godrej, A. Lodhi, 2020: Investigating the Error Propagation from Satellite-based Input Precipitation to Output Water Quality Indicators Simulated by a Hydrologic Model, *Remote Sensing,* 12, 3728.

[26] **Maggioni, V.**, M. Girotto, E. Habib, M.A. Gallagher, 2020: Building an Online Learning Module for Satellite Remote Sensing Applications in Hydrologic Science, *Remote Sensing – Special Issue on "Teaching and Learning in Remote Sensing"*, 12, 3009.

[27] Rahman, A., X. Zhang, Y. Xue, P. Houser, T. Sauer, S. Kumar, D. Mocko, and **V. Maggioni**, 2020: A Synthetic Experiment to Investigate the Potential of Assimilating LAI through Direct Insertion in a Land Surface Model, *Journal of Hydrology X*, 9, p.100063.

[28] Zhang, X., **V. Maggioni**, A. Rahman, P. Houser, Y. Xue, T. Sauer, S. Kumar, and D. Mocko, 2020: The Influence of Assimilating Leaf Area Index in a Land Surface Model on Global Water Fluxes and Storages, *Hydrology and Earth System Sciences*, Vol. 24 (3775–3788).

[29] Johnston, J., **V. Maggioni**, and P. Houser, 2020: Comparing Global Passive Microwave Freeze/Thaw Records: Investigating Differences between Ka- and L-Band Products, *Remote Sensing of the Environment*, Vol. 247 (111936).

[30] Massari C., L. Brocca, T. Pellarin, G. Abramowitz, P. Filippucci, L. Ciabatta, **V. Maggioni**, Y. Kerr, and D. Fernandez Prieto, 2020: A daily/25 km short-latency rainfall product for data scarce regions based on the integration of the GPM IMERG Early Run with multiple satellite soil moisture products, *Hydrology and Earth System Sciences*, 24, pp 2687-2710.

[31] Khan, S. and **V. Maggioni**, 2020: Evaluating the Applicability of the PUSH Framework to Quasi-Global Infrared Precipitation Retrievals at 0.5°/Daily Spatial/Temporal Resolution, *Asia-Pacific Journal of Atmospheric Sciences*, 10.1007/s13143-020-00185-3.

[32] Di, Z., **V. Maggioni**, Y. Mei, M. Vazquez, P. Houser, M. Emelianenko, 2020: Centroidal Voronoi Tessellation Based Methods for Optimal Rain Gauge Location Prediction, *Journal of Hydrology*, 584, p.124651.

[33] Rouf, T., Y. Mei, **V. Maggioni**, P. Houser, M. Noonan, 2020: A physically-based atmospheric variables downscaling technique, *Journal of Hydrometeorology*, 21, 93–108.

[34] Solakian, J., **V. Maggioni**, A. Godrej, A. Lodhi, 2019: Investigating the Use of Satellite-based Precipitation Products for Monitoring Water Quality in the Occoquan Watershed, *Journal of Hydrology: Regional Studies*, 26, p.100630.

[35] Johnston, J., **V. Maggioni**, and P. Houser, 2019: Investigating the Relationship Between Satellite-Based Freeze/Thaw Products and Land Surface Temperature, *IEEE (Institute of Electrical and Electronics Engineers) Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS)*, 2(9), pp.3247-3271.

[36] Porcacchia, L., P.-E. Kirstetter, **V. Maggioni**, and S. Tanelli, 2019: Investigating the GPM Dual-Frequency Precipitation Radar Signatures of Low-Level

Precipitation Enhancement, *Quarterly Journal of the Royal Meteorological Society*, 145:3161–3174.

[37] Yoon, Y., S. Kumar, B. Forman, B. Zaitchik, Y. Kwon, Y. Qian, S. Rupper, **V. Maggioni**, P. Houser, D. Kirschbaum, A. Richey, A. Arendt, D. Mocko, J. Jacob, S. Bhanja, A. Mukherjee, 2019: Evaluating the uncertainty of terrestrial water budget components over High Mountain Asia, *Frontiers in Earth Science,* 7, p. 120.

[38] Xue, Y., P. Houser, **V. Maggioni**, Y. Mei, S. Kumar, Y. Yoon, 2019: Assimilation of satellite-based snow cover and freeze/thaw observations over High Mountain Asia, *Frontiers in Earth Science,* 7, p. 115.

[39] Massari, C., **V. Maggioni**, S. Barbetta, L. Brocca, L. Ciabatta, S. Camici, T. Moramarco, G. Coccia, and E. Todini, 2019: Complementing near-real time satellite rainfall products with satellite soil moisture-derived rainfall through a Bayesian inversion approach, *Journal of Hydrology*, 573, pp 341-351.

[40] Khan, S. and **V. Maggioni**, 2019: Assessment of Level-3 gridded Global Precipitation Mission products over oceans, *Remote Sensing – Special Issue on "Remote Sensing of Precipitation"*, 11(3), p. 255.

[41] Hazra, A., **V. Maggioni**, P. Houser, H. Antil, and M. Noonan, 2019: A Monte Carlo-based multi-objective optimization approach to merge different precipitation estimates for land surface modeling, *Journal of Hydrology*, 570, pp. 454-462.

[42] Zavareh, M. and **V. Maggioni**, 2018: Application of Rough Set Theory to Water Quality Analysis: a Case Study, *Data – Special Issue on "Overcoming Data Scarcity in Earth Science"*, 3(4), p. 50.

[43] Falck, A., **V. Maggioni**, J. Tomasella, F. Diniz, Y. Mei, C. Beneti, D. Herdies, D. R. Neundorf, R. Caram, and D. Rodriguez, 2018: Improving the use of ground-based radar rainfall data for monitoring and predicting floods in the Iguaçu river basin, *Journal of Hydrology*, 567, pp. 626–636.

[44] Khan S., **V. Maggioni**, and P.-E. Kirstetter, 2018: Investigating the potential of using satellite-based precipitation radars as reference for evaluating multi-satellite merged products, *Journal of Geophysical Research – Atmospheres*, 123, pp. 8646–8660.

[45] Oliveira R., **V. Maggioni**, D. Vila, and L. Porcacchia, 2018: Using satellite error modeling to improve GPM-Level 3 rainfall estimates over the Central Amazon Region, *Remote Sensing – Special Issue "Remote Sensing Precipitation Measurement, Validation, and Applications"*, 10(2), p. 336.

[46] Porcacchia L., P.-E. Kirstetter, J. Gourley, **V. Maggioni**, B. Cheong, and M. Anagnostou, 2018: Toward a polarimetric radar classification scheme for coalescence dominant precipitation: Application to complex terrain, *Journal of Hydrometeorology*, 18(12), pp. 3199-3215.

[47] **Maggioni, V.** and C. Massari, 2018: On the performance of satellite precipitation products in riverine flood modeling: A review, *Journal of Hydrology*, 558, pp. 214–224.

[48] Nikolopoulos, E., E. Destro, **V. Maggioni**, F. Marra, and M. Borga, 2017: Satellite-rainfall estimates for debris flow prediction: An evaluation based on rainfall depth-duration thresholds, *Journal of Hydrometeorology*, 18(8), pp. 2207-2214.

[49] **Maggioni V.**, E. Nikolopoulos, E. Anagnostou, and M. Borga, 2017: Modeling satellite precipitation errors over mountainous terrain: The influence of gauge density, seasonality, and temporal resolution, *IEEE Transactions on Geoscience and Remote Sensing*, 55(7), pp. 4130-4140.

[50] Mousam A., **V. Maggioni**, P. Delamater, and A. Quispe, 2017: Using remote sensing and modeling techniques to investigate the annual parasite incidence of malaria in Loreto, Peru, *Advances in Water Resources, Special Issue "Hydrology, water resources and the epidemiology of water-related diseases"*, 108, pp. 423-438.

[51] Tadesse, H., J. Qu, A. Aguirre, M. Komba, and **V. Maggioni**, 2017: Land use classification and analysis using radar data mining in Ethiopia. *International Journal of Advanced Remote Sensing and GIS*, 6(1), pp. 2006-2022.

[52] Oliveira R., **V. Maggioni**, D. Vila, and C. Morales, 2016: Characteristics and diurnal cycle of GPM rainfall estimates over the Central Amazon Region, *Remote Sensing – Special Issue on "Uncertainties in Remote Sensing"*, 8(7), p. 544.

[53] **Maggioni V.**, P. Meyers, and M. Robinson, 2016: A review of merged high resolution satellite precipitation product accuracy during the Tropical Rainfall Measuring Mission (TRMM) – Era, *Journal of Hydrometeorology – International Precipitation Working Group 7 Special Collection*, 17(4), pp. 1101-1117.

[54] **Maggioni V.**, M. Sapiano, and R. Adler, 2016: Estimating uncertainties in high-resolution satellite precipitation products: systematic or random error?, *Journal of Hydrometeorology*, 17(4), pp.1119-1129.

[55] Falck A., D. Vila, J. Tomasella, and **V. Maggioni**, 2016: Evaluation of a multidimensional stochastic error model applied to satellite rainfall estimates, *Brazilian Journal of Meteorology* (Revista Brasileira de Meteorologia), 31(1), pp. 52-63.

[56] Falck A., **V. Maggioni**, J. Tomasella, D. Vila, and F. Diniz, 2015: Propagation of satellite precipitation uncertainties through a distributed hydrologic model: a case study in the Tocantins-Araguaia basin in Brazil, *Journal of Hydrology*, 527, pp. 943–957.

[57] **Maggioni V.**, M. Sapiano, R. Adler, Y. Tian, and G. Huffman, 2014: An error model for uncertainty quantification in high-time resolution precipitation products, *Journal of Hydrometeorology*, 15(3), pp.1274–1292.

[58] Seyyedi H., E. Anagnostou, P.-E. Kirstetter, **V. Maggioni**, Y. Hong, and J. Gourley, 2014: Incorporating surface soil moisture information in error modeling of TRMM passive microwave rainfall, *IEEE Transactions on Geoscience and Remote Sensing*, 52(10), pp. 6226-6240.

[59] Vergara H.J., Y. Hong, J. Gourley, E. Anagnostou, **V. Maggioni**, D. Stampoulis and P.E. Kirstetter, 2013: Effects of resolution of satellite-based rainfall estimates on hydrologic modeling skill at different scales, *Journal of Hydrometeorology*, 15(2), pp. 593-613.

[60] **Maggioni V.**, H. Vergara, E. Anagnostou, J. Gourley, Y. Hong, and D. Stampoulis, 2013: Investigating the applicability of error correction ensembles of satellite rainfall products in river flow simulations, *Journal of Hydrometeorology*, 14(4), pp. 1194-1211.

[61] Tian, Y., G. Huffman, R. Adler, L. Tang, M. Sapiano, **V. Maggioni**, and H. Wu, 2013: Modeling errors in daily precipitation measurements: additive or multiplicative?, *Geophysical Research Letters*, 40(10), pp. 2060-2065.

[62] **Maggioni, V.**, R. Reichle, and E. Anagnostou, 2012: The efficiency of assimilating satellite soil moisture retrievals in a land data assimilation system using different rainfall error models, *Journal of Hydrometeorology – Expedited Contributions*, 14(1), pp. 368-374.

[63] **Maggioni, V.**, E. Anagnostou, and R. Reichle, 2012: The impact of land model structural, parameter, and forcing errors on the characterization of soil moisture uncertainty, *Hydrology and Earth System Sciences*, 16, pp. 3499-3515.

[64] **Maggioni, V.**, R. Reichle, and E. Anagnostou, 2012: The impact of rainfall error characterization on the estimation of soil moisture fields in a land data assimilation system, *Journal of Hydrometeorology*, 13(3), pp. 1107-1118.

[65] **Maggioni, V.**, R. Reichle, and E. Anagnostou, 2011: The effect of satellite-rainfall error modeling on soil moisture prediction uncertainty, *Journal of Hydrometeorology*, 12(3), pp. 413-428.

[66] Anagnostou, E., **V. Maggioni**, E. Nikolopoulos, T. Meskele, and F. Hossain, 2010: Benchmarking high-resolution global satellite rain products to radar and rain gauge rainfall estimates, *IEEE Transactions on Geosciences and Remote Sensing*, 48(4), pp. 1667-1683.

[67] Serpetzoglou, E., E. Anagnostou, A. Papadopoulos, E. Nikolopoulos, and **V. Maggioni**, 2010: Error propagation of remote sensing rainfall estimates in soil moisture prediction from land surface model, *Journal of Hydrometeorology*, 11(3), pp. 705–720.

v. Articles in Peer Refereed Conference Proceedings

[1] Zhang, X., **V. Maggioni**, A. Rahman, 2020: Investigating the assimilation of leaf area index products at different temporal resolutions in a land surface model,

International Geoscience and Remote Sensing Symposium (IGARSS), IEEE Xplore, pp.3931-3934.

[2] Reagle C., **V. Maggioni**, M. Boicu, M. Albanese, M. Joshi, D. Sklarew, and N. Peixoto, 2017: From idea to prototype: introducing students to entrepreneurship, *IEEE Integrated STEM Education Conference* (ISEC), pp. 71-75, IEEE.

[3] Khan S., **V. Maggioni**, and L. Porcacchia, 2016: Uncertainties associated with the IMERG multi-satellite precipitation product, *International Geoscience and Remote Sensing Symposium (IGARSS), 2016 IEEE International*, pp. 2127-2130.

[4] **Maggioni, V.**, R. Panciera, J. Walker, M. Rinaldi, and V. Paruscio, 2006: A multi-sensor approach for high resolution airborne soil moisture mapping, 30th Hydrology and Water Resources Symposium [CD-ROM]. The Institute of Engineers Australia, Launceston, Australia, 4-8 December 2006, 6pp.

vi. Reports and Editorials

[1] **Maggioni V**., S. Upadhyaya, V. Petkovic and G. Mascaro, 2022: Editorial: A quest to fully understand precipitation: Novel methods to characterize, model, and detect precipitation processes, *Frontiers in Climate,* 4:992356.

[2] Roca, R, Z. Haddad, F. Akimoto, L. Alexander, A. Behrangi, G.Huffman, S. Kato, C. Kidd, P.-E. Kirstetter, T. Kubota, C. Kummerow, T. L'Ecuyer, V. Levizzani, **V. Maggioni**, C. Massari, H. Masunaga, M. Schröder, F. Tapiador, F. Turk, N. Utsumi, 2021: The Joint IPWG/GEWEX Precipitation Assessment, World Climate Research Program, https://doi.org/10.13021/gewex.precip.

[3] Chambon, P. and **V. Maggioni** (coordinators, 20 authors), 2021: A review of the different operational applications of spaceborne precipitation radars within the International Precipitation Working Group (IPWG) community.

[4] Osmanoglu, B., D. Kirschbaum, **V. Maggioni**, S. Nicholls, 2018: NASA High Mountain Asia Team Precipitation Workshop Summary, *The Earth Observer*, 30(2), pp. 27–30.

vii. Invited Lectures and Presentations

[1] "Modeling errors in satellite-based precipitation products: Past Achievements, Present Situation, Future Developments," invited speaker at the Virtual Workshop on "Precipitation Estimation from LEO Satellites: Retrieval and Applications," organized by The Center for Hydrometeorology and Remote Sensing – University of California at Irvine and sponsored by NOAA JPSS, 2023.

[2] "Water and Climate Extremes," invited lecture in the course of *Terrestrial Hydrology* at University of California, Berkeley, CA, 2022.

[3] "Orbital Watermarks: Leveraging the Use of Satellite Observations to Study Precipitation Patterns and Trends," invited speaker at the *Fall Environmental Science Colloquia*, American University, Washington, DC, 2022.

[4]   "Cutting-edge activities in the International Precipitation Working Group," invited talk at the World Meteorological Organization (WMO) Open Consultative Platform Webinar on *Innovation and Cutting-edge Activities in Space-borne Precipitation Measurements and Application*, 2022.

[5]   "Hyper-Resolution Surface Hydrology in the Nepalese Himalayas", invited talk in the *General Surface Hydrology and Catchment Science* session, American Geophysical Union (AGU) Fall Meeting, San Francisco, CA, 2019.

[6]   "Downscaled Atmospheric Forcings for Hyper-Resolution Hydrologic Modeling in High Mountain Asia", invited talk at the *Extreme Rainfall and Flooding: Monitoring, Forecasting, Risk Assessment, and Socioeconomic Consequences* session, American Geophysical Union (AGU) Fall Meeting, Washington, DC, 2018.

[7]   "Downscaling techniques for hyper-resolution hydrology", University of Connecticut, Storrs, CT, 2018.

[8]   "Satellite precipitation error corrections, product merging, and downscaling for improved hydrological predictions", Research Institute for Geo-Hydrological Protection – Italian National Research Council, Perugia, Italy, 2017.

[9]   "Modeling satellite precipitation uncertainties over complex terrain", Atmospheres Seminar Series, NASA Goddard Space Flight Center, Greenbelt, MD, 2015.

[10]   "The effective use of satellite products for water cycle research: an applied perspective", Remote Sensing of Water System Symposium, University of Zurich, Zurich, Switzerland, 2015.

[11]   "Engineering solutions for water problems", <u>Keynote speaker</u> at the Mason Water Symposium – Highlighting Inter-disciplinary Water Research and Conservation, George Mason University, Fairfax, VA, 2015.

[12]   "Advances in Land Resources Management", Lecture to a delegation from the Guangzhou Municipal Land Resources and Housing Administrative Bureau, Guangzhou, China, organized by Triway International Group, Falls Church, VA, 2015.

[13]   "The use of satellite precipitation products in hydrology", International Water Resources Research Institute, Chungnam National University, Deajeon, Republic of Korea, 2014.

[14]   "The quest for precision: uncertainties in satellite precipitation products", Center for Weather Forecasting and Climate Research/National Institute for Space Research (CPTEC/INPE), Cachoeira Paulista, Sao Paulo, Brazil, 2014.

[15]   "Uncertainty estimates for high-time resolution satellite precipitation products", United States Geological Survey (USGS), Reston, VA, 2014.

[16] "To what degree of accuracy can we measure precipitation from satellites?", Mason Water Forum Seminar Series, George Mason University, Fairfax, VA, 2014.

[17] "The *Precipitation Uncertainties for Satellite Hydrology* (PUSH) model", Earth Systems Science Interdisciplinary Center (ESSIC), University of Maryland, College Park, MD, 2014.

[18] "Tweaking uncertainty: the impact of a more accurate characterization of satellite rainfall errors on hydrologic predictions", The City College of New York - CUNY/NOAA CREST, New York City, NY. 2013.

B.   Contracts and Grants

i.   Extramural Funding

NASA SERVIR Applied Science Team, "Machine Learning-based Flash Flood Forecasting in West Africa with Satellite Observations", co-I/Institution P.I. (P.I.: E. Nikolopoulos, Rutgers University), **$65,179**, Mar 2023 – Feb 2026.

NASA Understanding Changes in High Mountain Asia, "Mapping Changes in Hydroclimatic Risk in High Mountain Asia", co-I/Institution P.I. (P.I.: E. Nikolopoulos, Florida Institute of Technology), **$214,077**, Aug 2020 – July 2024.

NASA Understanding Changes in High Mountain Asia, "Development of Multidecadal Land Reanalysis over High Mountain Asia", co-I. (P.I.: S. Kumar, NASA GSFC), **$146,630** out of $293,261, Aug 2020 – Jul 2023.

NASA PMM (Precipitation Measurement Mission Science Team), "Characterizing and Communicating Global IMERG Error Estimates for End User Applications", Collaborator (P.I.: D. Kirschbaum, NASA GSFC), Jan 2019 – Dec 2021.

NASA Terrestrial Hydrology Program (THP), "Next-Generation Large-Scale Fractional Freeze/Thaw Analysis", co-I. (P.I.: P. Houser), **$372,552** out of $745,104, Jul 2017 – Jul 2023.

NASA Modeling, Analysis, Prediction (MAP) Program, "Integrating remotely sensed phenology observations in a multi-model land data assimilation system", P.I., **$702,000** out of $882,315, Jun 2017 – Jun 2023.

NASA Understanding Changes in High Mountain Asia, "High Mountain Asia Land Data Assimilation System (HMA-LDAS)", co-I. (P.I.: P. Houser), **$318,158** out of $638,317, Sep 2016 – Aug 2019.

NASA SMAP (Soil Moisture Active Passive Mission Science Team), "Hyper-Resolution Hydrologic Modeling Enabled by SMAP Observations", P.I., **$218,236** out of $280,417, Aug 2016 – Jul 2020.

NASA PMM (Precipitation Measurement Mission Science Team), "A Research Framework to Bridge the Global Precipitation Measurement (GPM) Level II and Level

III using Multi-Radar/Multi-Sensor (MRMS)", co-I/Institution P.I. (P.I.: P. Kirstetter, University of Oklahoma), **$10,948**, Jan 2016 – Dec 2018.

Dominion Foundation – Higher Education Partnership Grants Program, "Green For Good (G4G) – Designing Sustainability at Mason", co-P.I. (P.I.: P. Houser), **$6,666** out of $20,000, Aug 2016 – Jul 2017.

Dominion Foundation – Environmental Stewardship Grants Program in Virginia, "Visualizing Watershed Connections", co-P.I. (P.I.: C. Smith), **$5,000** out of $15,000, Jun 2016 – Jun 2017.

NASA PMM (Precipitation Measurement Mission Science Team), "Extending the IMERG Multi-Sensor Level 3 Precipitation Product Across the TRMM-GPM Era", Collaborator (P.I.: G. Huffman, NASA GSFC), January 2016 – December 2018.

NOAA Joint Center for Satellite Data Assimilation, "Optimal Precipitation Estimation for Land Surface Modeling", P.I., **$174,559** out of $224,559, Aug 2015 – Jul 2018.

Dominion Foundation – Environmental Stewardship Grants Program in Virginia, "Cast the Net - An Adaptive Wireless Environmental Sensor-Web for Stormwater Monitoring", P.I., **$8,333** out of $25,000, Aug 2015 – Aug 2016.

VentureWell (former NCIAA) Faculty Grants Program, "Classroom to Makers Week (C2MW) - A Year-Long Journey from Idea to Implementation at George Mason University", P.I., **$28,000** out of $32,332, Mar 2015 – Dec 2018.

Dominion Foundation – Environmental Stewardship Grants Program in Virginia, "Stormwater in HD: Monitoring the Chesapeake Bay Water Quality One Site at a Time", co-P.I. (P.I.: C. Ferreira), **$12,500** out of $25,000, Aug 2014 – Aug 2015.

ii. Intramural Funding

Institute for Digital Innovation (IDIA)'s 2021 Seed Grant, "A Decision Guidance System for Precision Agriculture Management in a Nonstationary Environment using Advanced Machine Learning Algorithms," PI, **$39,329**, August 2021 – February 2023.

Mason College of Science – School of Engineering Seed Award, "Can the Next NASA Mission Improve the Forecasting of Coastal Hazards?," P.I., **$19,000**, May 2021 – May 2022.

Mason Curriculum Impact Grant, "Engaging Locally with Food, Energy, Water and Climate Global Goals: Adding Experiential Learning to the Energy and Sustainability Policy and Science MS Concentration," co-I. (P.I.: J. Sklarew), **$4,000** out of $33,000, July 2021 – June 2022.

C-RASC Seed Funding Program, "Leveraging the Next NASA Mission to Improve the Monitoring and Forecasting of Coastal Hazards," PI, **$10,000**, June 2021 – May 2022.

C-RASC Seed Funding Program, "An Adaptive Crop Forecast System for a Secure Food Supply in a Nonstationary World," co-I (PI: Y. Xue), **$3,500** out of $9,000, June 2021 – May 2022.

Mason College of Science – School of Engineering Seed Award, "A COVID-19 Transmission Prediction System," co-I (P.I.: P. Houser), **$8,000** out of $16,000, July 2020 – June 2021.

Mason Provost's Summer Team Impact Projects, "FEWS: Food-Energy-Water Solutions for Rural, Low Income Communities", co-I. (P.I.: J. Sklarew), **$19,260** out of $57,780, May – Aug 2020.

Mason College of Science – School of Engineering Seed Award, "Development of proposal to IARPA with BlackSky and RIT on Spatio-temporal broad area monitoring and characterization of the construction life cycle", co-I (P.I.: K. Wessels), **$7,500** out of $15,000, Sep 2019 – Aug 2020.

C.   Honors, Recognitions, and Fellowships

Nominated for the COSPAR Vikram SARABHAI Medal, 2023, Committee on Space Research.

Distinguished Faculty Mentor for Faculty Affairs and Development, 2021-2022, Mason Office of the Provost.

HydroLearn Fellowship, 2020 HydroLearn Virtual Hackathon & Workshop, sponsored by the National Science Foundation.

AMS (American Meteorological Society) Editor's Award, 2016: "*For very thorough reviews of several manuscripts, including excellent insights on precipitation error modeling.*"

Faculty Research Award, Center for Global Studies, George Mason University, 2015. Project Title: "Global Warning: Climate Change and the Spread of Malaria"

Best Paper by Research Faculty 2013, ESSIC, UMD: "Investigating the Applicability of Error Correction Ensembles of Satellite Rainfall Products in River Flow Simulations" in the *Journal of Hydrometeorology*, co-authored with H. Vergara, E. Anagnostou, J. Gourley, Y. Hong, D. Stampoulis); "*For a comprehensive and well-written manuscript that assesses the application of an ensemble approach to error correction in a hydrological model.*"

NASA Earth System Science Graduate Fellowship, Investigating the impact of improved model error characterization on the assimilation of remotely sensed soil moisture in a land data assimilation system, 2009 – 2012.

D.   Editorships, Editorial Boards, Journal Reviewing Activities

Editor in Chief:
        Journal of Hydrometeorology, AMS Publications, 2024 – present

Editor:

Journal of Hydrometeorology, AMS Publications, 2019 – 2023

Associate Editor:

Frontiers in Climate – Climate Services, Frontiers, 2021 – present
Journal of Hydrology, Elsevier, 2017 – 2023
Journal of Hydrometeorology, AMS Publications, 2017 – 2018

Special Issue Co-Editor:

– Research Topic on "A Quest to Fully Understand Precipitation: Novel Methods to Characterize, Model, and Detect Precipitation Processes", Frontiers in Climate, Frontiers, 2021
– Special Issue on "Remote Sensing of Hydrometeorological Extremes", Remote Sensing, Multidisciplinary Digital Publishing Institute, 2019

Reviewer for:

– AGU Publications: Geophysical Research Letters, Journal of Geophysical Research, Water Resources Research
– AMS Publications: Journal of Climate, Journal of Hydrometeorology, Bulletin of the American Meteorological Society
– American Society of Civil Engineers (ASCE) Publications: Journal of Hydrologic Engineering
– Copernicus Publications: Hydrology and Earth System Sciences
– Elsevier: Advances in Water Resources, Atmospheric Research (**2015 Certificate of Outstanding Contribution in Reviewing**, **2016 Recognized Reviewer**), Journal of Hydrology, Journal of Hydrology: Regional Studies, Remote Sensing of the Environment
– Frontiers: Frontiers in Earth Science – Atmospheric Science
– Hindawi Publishing Corporation: Advances in Meteorology
– IEEE: Geoscience and Remote Sensing Letters, Transactions on Geoscience and Remote Sensing
– John Wiley & Sons: Journal of Flood Risk Management, Journal of the American Water Resources Association
– Multidisciplinary Digital Publishing Institute: Atmosphere, Hydrology, Remote Sensing, Sustainability, Water
– Nature Publishing Group: Scientific Data
– Royal Meteorological Society Publications: Quarterly Journal of the Royal Meteorological Society
– Science Publications: Journal of Computer Science
– Springer: Earth Science Informatics, Journal of Mountain Science, Stochastic Environmental Research and Risk Assessment
– Taylor & Francis Group: International Journal of Remote Sensing, Hydrological Sciences Journal

E.   Fieldwork

SMAP Validation Experiment, Manitoba, Canada, 2015-2016

Project: Field experiment conducted in the Red River basin (Manitoba, Canada) with the objective of studying freeze/thaw transitions thanks to ground measurements and airborne data collected by the Scanning L-band Active Passive (SLAP) instrument.
Participants: NASA, George Mason University, City College of New York, and Environment Canada.

National Airborne Field Experiment NAFE'05, November 2005
Project: Field experiment conducted in the Goulburn Catchment (New South Wales, Australia) with the objective of mapping near-surface soil moisture at a wide range of resolutions making use of ground and passive microwave airborne measurements.
Participants: University of Melbourne, University of Newcastle, and European Spatial Agency.

III. TEACHING AND ADVISING

1.   Courses

George Mason University, Dept. of Civil, Environmental & Infrastructure Engineering (CEIE):

CEIE 340	Water Resources Engineering F2023; 47 students enrolled on average.
CEIE 355	Introduction to Environmental Engineering and Science S2014; S2015; F2015; F2016; S2018; S2019; S2020; S2021; S2024; overall rating of the teaching: 4.6/5.0, overall rating of the course: 4.4/5.0; 40 students enrolled on average.
UNIV 391-002	Maker's Seminar (co-taught, no evaluations collected, *newly developed course*) S2016; S2017; S2018; 14 students enrolled on average.
CEIE 450/550	Environmental Engineering Systems *(substantially remodeled course)* F2016; F2019; F2021; F2022; overall rating of the teaching: 4.7/5.0, overall rating of the course: 4.4/5.0; 47 students enrolled on average.
CEIE 457/557	Remote Sensing for Civil Engineering *(newly developed course)* F2014; S2016; F2018; S2020; F2021; overall rating of the teaching: 4.8/5.0, overall rating of the course: 4.7/5.0; 29 students enrolled on average.
CEIE 499/690	Environmental Assessment and Watershed Processes (co-taught, *newly developed course*) F2018; F2019; 32 students enrolled on average.
CEIE 499	Engineering for Climate Adaptation (co-taught, *newly developed course*) Su2023; 40 students enrolled.
CEIE 603	Research Methods in Civil Engineering *(newly developed course)* S2015; F2020; overall rating of the teaching: 4.9/5.0, overall rating of the course: 4.7/5.0; 12 students enrolled on average.

CEIE 742   Water Resources Engineering II *(substantially remodeled course)*
S2016; F2017; F2020; overall rating of the teaching: 5.0/5.0, overall rating of the course: 4.8/5.0; 15 students enrolled on average.

CEIE 795/800   Civil, Environmental, and Infrastructure Engineering Seminar
F2015; S2016; overall rating of the teaching: 4.7/5.0, overall rating of the course: 4.4/5.0; 38 students enrolled on average.

CEIE 798/896   Individualized Graduate Directed Studies:
Natural Mineral Filtering; Hydrologic Downscaling Methods; Using SMAP Data in Runoff Modeling; Land Data Assimilation Systems; Hyper-resolution Hydrologic Modeling; Watershed Modeling; Computer Programming for Hydrologic Applications; Hydrological Remote Sensing; Land Surface Modeling; Land Surface Hydrology; Low Impact Development Design; Advanced Satellite Remote Sensing; Advanced Environmental Engineering Systems; Atmospheric Remote Sensing; Environmental Entrepreneurship; Stochastic Hydrology; Advanced Water Resources Engineering; Environmental Water Quality; Satellite Hydrology; Watershed Hydrology; Vegetation Remote Sensing, Statistical Methods in Hydrology.

University of Connecticut, Department of Civil and Environmental Engineering:

ENVE 4310   Environmental Modeling
S2011, S2012; overall rating of the teaching/course: 9.2/10; 35 students enrolled on average.

2.   **Graduate Research Assistant Major Advisor**

i.   **Completed**

  a. Ph.D.

1. Ishrat Dollan, 2023: Trends in extreme precipitation: Identifying historical and projected patterns using multi-source precipitation datasets, Current Position: Postdoctoral Research Fellow, Stony Brook University.

2. Jeremy Johnston, 2022: Next-generation large-scale fractional freeze/thaw products. Current Position: Postdoctoral Research Fellow, University of New Hampshire.

3. Maryam Zavareh, 2021: Investigating novel approaches for water quality data analysis, exp. date of completion. Current Position: Environmental Engineer at the Federal Energy Regulatory Commission, Washington, DC.

4. Azbina Rahman, 2021: Investigating the potential of assimilating phenology observations in a land surface model. Current Position: Postdoctoral Research Fellow, University of Maryland.

5. Jennifer Solakian, 2020: On the performance of satellite-based precipitation products for simulating stream water quality. Current Position: Water Resources Engineer at AECOM, Alexandria, VA.

6. Tasnuva Rouf, 2020: Improving hyper-resolution soil moisture estimation. <u>Current Position</u>: Assistant Professor, BUET, Dhaka, Bangladesh.

7. Sana Khan, 2019: Evaluating high-resolution satellite precipitation products globally over land and oceans. <u>Current Position</u>: Senior Technical Advisor Data Science-Climate at The Palladium Group.

8. Leonardo Porcacchia, 2018: A radar classification scheme for collision-coalescence dominant precipitation, <u>Current Position</u>: Postdoctoral Research Fellow, University of Amsterdam, Netherlands.

b. M.S. (with thesis)

1. Alia Gholoom, 2017: Studying the impact of different green rooftop designs on stormwater. <u>Current Position</u>: Water Resources Engineer, Kuwait.

2. Aneela Mousam, 2016: Using remote sensing and modeling techniques to investigate malaria prevalence in Loreto, Peru. <u>Current Position</u>: Environmental Engineer at the Federal Energy Regulatory Commission, Washington, DC.

c. M.S. (with non-thesis research project)

1. Soelem Bhuiyan, 2021: A synthetic experiment for assimilating sea surface height observations in a storm surge model.

2. Ishrat Dollan, 2020: Analyzing high-resolution precipitation trends for resilient stormwater infrastructure in Northern Virginia.

3. Ingrid Davis-Colato, 2019: Using black sand as an alternative in filtering systems in El Salvador.

4. Margaret Noonan, 2019: Comparing SCS AMC Type II runoff models to Type III AMC models using SMAP soil moisture data in the Four Mile Run watershed in Virginia.

5. Jeremy Johnston, 2019: Moving towards next-generation freeze/thaw products.

6. Azbina Rahman, 2018: Using Earth observations and land surface modeling for precision agriculture.

7. Reza Ravandoust, 2017: A water quality analysis for a green roof project at the George Mason University campus.

ii. In progress

1. Malihe Nasibi (PhD): Investigating the Risk of Hydroclimatic Extremes in West Africa, exp. date of completion 2027.

2. Janani Kandasamy (PhD): A decision guidance system for precision agriculture management using a novel data assimilation framework, exp. date of completion 2026.

3. Soelem Bhuiyan (PhD): Investigating the efficiency of assimilating SWOT observations to improve storm surge predictions, exp. date of completion 2024.

4. Ridwana Binte Sharif (PhD): Assessing past and future precipitation patterns across scales, exp. date of completion 2024.

5. Noelle Frances Brobst-Whitcomb (M.S. with thesis): Analyzing recent extreme precipitation events in Southern California, exp. date of completion 2025.

3. Postdoctoral Research Fellow Supervisor (*co-advising)

1. *Yuan Xue: A Land Data Assimilation System for High Mountain Asia (LDAS-HMA), 2018 – 2023.
2. Azbina Rahman: Developing a multi-model land data assimilation system for leaf-area-index satellite observations, 2021 – 2022, <u>Current position</u>: Post-doctoral Associate at the University of Maryland.
3. Xinxuan Zhang: Integrating remotely sensed phenology observations in a multi-model land data assimilation system, 2018 – 2021, <u>Current position</u>: Research Assistant Professor at the University of Connecticut.
4. Yiwen Mei: Downscaling atmospheric forcings for hyper-resolution hydrologic modeling in High Mountain Asia, 2017 – 2019, <u>Current position</u>: Assistant Professor, SunYat-sen University, Guangzhou, China.
5. Aline Schneider Falck: Using ensemble precipitation forecasting for flood monitoring in Brazil, 2017 – 2018, <u>Current position</u>: Hydrologist at the National Center for Natural Disaster Monitoring and Warning, Brazil.
6. Abheera Hazra: Optimal precipitation estimation for soil moisture estimation, 2016 – 2017. <u>Current position</u>: Assistant Research Scientist at NASA Goddard Space Flight Center, Greenbelt, MD.

4. Member of PhD Advisory Committee

1. Ioana Bouvier, Spatio-temporal patterns of forest disturbance in mountain catchments and hydrologic impacts: a review of existing methods and gaps, GGS, GMU; 2024.
2. Sarah Jones, Optimizing transect spacing 2-d methodology investigation for shoreline change analysis: A case study of Assateague Island, MD using DSAS and vector line analysis, GGS, GMU; 2024.
3. Guy Oldaker, On CVT-CUR Matrix Decompositions and their Applications, Department of Mathematics, GMU; 2024.
4. Ashweq Almuteiry: Analyzing the Influence of Solar Panels on the Stormwater Management and Vegetative Health of Green Roof, GGS, GMU; 2024.
5. Ziyana Al-Rawahi: The effects of urban development (Land Use/Land Cover), population growth and global climate change on the sustainability of Falaj Daris, Sultanate of Oman, ESP, GMU; 2023.
6. Felicio Cassalho: Large scale flood hazard mitigation by natural and nature- based features: a spatially distributed investigation of wave propagation over saltmarshes, CEIE, GMU; 2023.
7. Richard Weissman, Effects of source water conditions on the formation of disinfection byproducts in potable drinking water plants in the Shenandoah River watershed, CEIE, GMU; 2022.
8. Sara Modanesi: Innovative Use of Earth Observation and Land Surface Modeling for Tracking Human Induced Changes to the Terrestrial Water Cycle, Università degli Studi di Firenze/University of Leuven; 2022.

9. Samantha Hartke: Accounting for satellite precipitation uncertainty in à environmental modeling applications, University of Wisconsin-Madison; 2022.

10. Mostafa Tajic: An integrated feature-based computational framework for automatic generation of Building Information Models, CEIE, GMU; 2022.

11. Gustavo de Almeida Coelho: Towards flood resilience in metropolitan areas: real-time flood forecast and planning for climate uncertainty, CEIE, GMU; 2022.

12. Seth Lawler: Flood hazards analysis systems, CEIE, GMU; 2022.

13. Yashar Alimohammadlou: Landslide forecasting: Inventory, susceptibility, and hazard analyses; CEIE, GMU; 2020.

14. Arslaan Khalid: Multiscale-multitemporal approaches for advancements in the real-time total water level forecasting; CEIE, GMU; 2020.

15. Selina Jahan Sumi: Compound urban flooding: the emerging hazard for large metropolitan areas; CEIE, GMU; 2020.

16. Ali Mohammad Rezaie: Investigating the role of natural habitats and features for coastal resilience; CEIE, GMU; 2019.

17. Seth Brown: Simulation of economic incentive frameworks for an urban stormwater program using an agent-based modeling platform; CEIE, GMU; 2019.

18. Fitsum Gebremariam: Boundary conditions for composite behavior of Geosynthetic Reinforced Soil structures; CEIE, GMU; 2019.

19. Saad Ullah: Sustainable infrastructure: The use of Reclaimed Asphalt Pavement (RAP) in the base layer of the pavement structure; CEIE, GMU; 2018.

20. Nikolaos Bartsotas: Improving satellite precipitation estimates over complex terrain through the use of high-resolution numerical weather predictions; Division of Environmental Physics & Meteorology, University of Athens, Greece; 2018.

21. Juan Luis Garzon Hervas: Observations and numerical modeling of coastal storm-induced hazards: A step forward in the implementation of natural solutions for coastal protection in the Chesapeake Bay; CEIE, GMU; 2018.

22. Mersedeh Tariverdi: Time-critical decision making in rescue resource deployment and health care systems; CEIE, GMU; 2017.

23. Cary Cox: Spatial-spectral approaches to edge detection in hyperspectral remote sensing; GGS, GMU; 2017.

24. Daniel Habete: Impacts of nonstationarity on watershed hydrologic and floodplain hydraulic analyses: climate change and urbanization; CEIE, GMU; 2017.

25. Aiyoub Abbaspour: Evaluation of governing mechanisms in clogging potential of geotextile based on use of recycled concrete aggregate as base coarse/sub-base material; CEIE, GMU; 2017.

26. Rômulo Augusto Jucá Oliveira: Assessing precipitation and associated uncertainty in Brazil using the NASA GPM Satellite Constellation, INPE-CPTEC, Cachoeira Paulista, Sao Paulo, Brazil; 2017.

27. Haile K. Tadesse: Land use classification and analysis using radar and optical data in Ethiopia; GGS, GMU; 2016.

28. Aline Schneider Falck: Flood monitoring in the Tocantis-Araguaia watershed in Brazil, INPE-CPTEC, Cachoeira Paulista, Sao Paulo, Brazil; 2015.

5.   Undergraduate Research Advising (*co-advised)

1. Roemio Wilkins, Owen Bates, Harmon Turner; Food-Energy-Water Engineering Solutions for a Rural, Low Income Community in Northern Virginia, Summer 2020.
2. Michael Sowell: Using load cells to quantify stormwater reductions from a green roof, Federal Work Study Research Assistantship, 2018 – 2020.
3. Giorgio Barchitta: Green Roof Efficiency for Stormwater Runoff Reduction, 2018 – 2019.
4. Andrew Richardson: Studying the efficiency of green infrastructure on stormwater runoff, Federal Work Study Research Assistantship, 2017 – 2019.
5. *Kristine Mosuela: Incentivizing bike riding in a University Setting Using a Mobile App, funded by the GMU Undergraduate Research Scholars Program (URSP), Fall 2016, Spring 2017, Total awarded $3,000.
6. Jeremy Johnston: Smart Sensor Webs for Environmental Monitoring, funded by GMU URSP, Summer 2016, Total awarded $5,000 (also awarded the *Schwartzstein Honors College Summer Research Award*).
7. Ingrid Davis-Colato: Integrating rainwater harvesting systems for domestic use in United States (California) and developing countries (El Salvador), funded by GMU URSP, Fall 2015, Spring 2016, Total awarded $3,800.
8. Renee Nmair: Stormwater in HD: Monitoring water quality at the George Mason University Fairfax campus, funded by GMU URSP, Summer 2015, Total awarded $5,000.
9. Audrey Nerette: A field campaign to monitor stormwater across the Rabbit Head watershed, funded by the GMU-CEIE Summer Research Experience for Undergraduate Students Program, Summer 2015.
10. Ernesto Gomez: Setting up a telemetry system to collect storwmwater quality data, funded by the GMU-CEIE Summer Research Experience for Undergraduate Students Program, Summer 2015.
11. *Monique Robinson: A satellite precipitation literature review for the IPWG website content development, Summer Internship at the Cooperative Institute for Climate and Satellites at the University of Maryland (CICS-MD), Summer 2015.
12. Afsana Anwar: To what degree of accuracy can we measure precipitation from satellites over oceans?, funded by GMU URSP, Fall 2014, Total awarded $1,500.
13. Rebecca Brenneis: A comparison of satellite precipitation data with locust swarm behavior in Saharan Africa, funded by GMU URSP, Fall 2014, Total awarded $1,500.
14. *Rachele Tarantola: Satellite precipitation products for stormwater monitoring at GMU, Visiting Graduate Student from Politecnico di Milano (Italy), Summer 2014.

6.   Visiting Students/Scholars

1. Ridwana Binte Sharif, Voluntary Work Appointment, The impact of COVID-19 related lockdowns on local precipitation patterns, 2020.
2. Christian Massari, Visiting Research Scholar from the Research Institute for Geo-Hydrological Protection of the National Research Council, Perugia, Italy, Fall 2018.
3. Rômulo Augusto Jucá Oliveira, Visiting Graduate Research Assistant from INPE-CPTEC, Cachoeira Paulista, Sao Paulo, Brazil; AY 2015-2016.

IV. SERVICE

A.   Professional

i.   Membership in professional organizations

American Geophysical Union (AGU)
American Meteorological Society (AMS)
International Precipitation Working Group (IPWG)
American Society for Engineering Education (ASEE)
American Water Resources Association (AWRA)
Earth Science Women's Network (ESWN)

ii.   Committee Memberships and Offices

International Precipitation Working Group (IPWG)	
Co-Chair	2018 – 2022
Chair of the Validation Working Group	2014 – 2018
AGU Fall Meeting Program Committee	
Lead Representative	2023 – present
Member	2021 – 2022
AGU Hydrology Section Technical Committee on Precipitation	
Chair	2020 – 2021
Deputy Chair	2017 – 2019
CUAHSI, Consortium of Universities for the Advancement of Hydrologic Science	
Representative for George Mason University	2015 – present

iii. Reviewing activities

Pre-publication Book Reviewer for	
Cambridge University Press	2023
Oxford University Press	2017
CRC Press, Taylor & Francis Group	2015

Kuwait Foundation for the Advancement of Sciences (KFAS)
    Grant Proposal Reviewer   2022

AGU Fall Meeting Student Travel Grant, Berkner Travel Fellowship, David S. Miller
Young Scientist Scholarship
    Application Reviewer   2022

EUMETSAT Satellite Application Facilities (SAFs)
    Proposal Reviewer   2020

National Science Foundation (NSF)
    Proposal Reviewer, Division of Earth Sciences   2020
    Proposal Reviewer, Division of Atmospheric and Geospace Sciences 2019

CUAHSI, Consortium of Universities for the Advancement of Hydrologic Science
    Voices of the Future Award   2020

Legislative-Citizen Commission on Minnesota Resources
    Proposal Reviewer   2020

National Aeronautics and Space Administration (NASA)
    Review Panelist   2018; 2019
    Proposal Reviewer   2013; 2014

ESA (European Space Agency) Living Planet Symposium   2019
    Reviewer of abstracts submitted to the "Hydrosphere: Water Level, Storage, River
    Discharge and Floods from Remote Sensing and Assimilation in Hydrodynamic
    Models" session

ASEE Annual Conference & Exposition   2019
    Reviewer of abstracts in the Environmental Engineering Division

ORAU Ralph E. Powe Junior Faculty Award
    Reviewer   2017; 2018

UNESCO-IHE Institute for Water Education
    External Reviewer for a PhD Dissertation Proposal   2017

Flanders (FWO) Research Foundation, Belgium
    Reviewer for the Postdoctoral Fellowship Program   2017

USGS State Water Resources Research Institute Program   2016
    Proposal Reviewer for the Ohio Water Resources Center and the National Institutes
    for Water Resources (NIWR) State Water Resources Research Institute 104(b) Grant
    Program

George Mason University Provost's Multidisciplinary Research Seed Grant
    Review Panelist   2016

iv. Other Professional Service

Member of the Scientific and Program Committee of the 11th International Precipitation
Working Group (IPWG) Workshop, Tokyo, Japan, July 2024.

Co-Chair of the session "Precipitation Processes and Observations for Atmospheric, Land Surface, and Hydrological Modeling", 2024 American Meteorological Society Annual Meeting, Baltimore, MD.

Chair of the session "Late-Breaking Contributions for the Maui and Canadian Wildfires and 2023 Cyclone Activity," 2023 AGU Fall Meeting, San Francisco, CA.

Co-Chair of the session "Precipitation Processes and Observations for Atmospheric, Land Surface, and Hydrological Modeling", 2023 American Meteorological Society Annual Meeting, Denver, CO.

Chair of the Union session "Extreme 2022 Hydrologic Events in Southern Asia, Hazards, and Geomorphological Responses," 2022 AGU Fall Meeting, Chicago, IL.

Co-organizer and Member of the Scientific Committee of the 10th IPWG and 6th International Workshop on Space-based Snowfall Measurement (IWSSM) Workshop, Fort Collins, CO, June 2022.

Co-Chair of the session "Precipitation Processes and Observations for Atmospheric, Land Surface, and Hydrological Modeling", 2022 American Meteorological Society Annual Meeting, Houston, TX.

Co-Chair of the session "Precipitation Through the Eyes of Machine Learning and Advanced Statistics: Remote Sensing, Uncertainties, and Variability", 2021 AGU Fall Meeting, New Orleans, LA.

Co-Chair of the "Precipitation Processes and Observations for Atmospheric, Land Surface, and Hydrological Modeling" session, 2021 American Meteorological Society Annual Meeting, Boston, MA.

Chair of the session "New Approaches to Characterize, Model, and Detect Precipitation Variability: Scientific and Practical Applications", 2020 AGU Fall Meeting, virtual.

Co-Chair of the Invited Session on "Hydrologic Remote Sensing, Modeling and Data Assimilation", 2020 IEEE Geoscience and Remote Sensing Symposium (IGARSS), virtual meeting.

Chair of the session "Statistical Characterization and Probabilistic Modeling of Precipitation Variability and Extremes Across Multiple Scales", 2018 and 2019 AGU Fall Meetings (Washington, DC and San Francisco, CA).

Panelist at the "Publishing Your Research" Workshop, organized by the Mason University Libraries, 2018.

Promoter and coordinator of the Memorandum of Understanding (MOU) between George Mason University and the Research Institute for Geo-Hydrological Protection of the Italian National Research Council, Perugia, Italy, 2016.

Co-Organizer of the "Mathematical Advances in Hydrology: Non-stationarity and Data Assimilation" minisymposium at the 2016 SIAM (Society for Industrial and Applied Mathematics) Conference on Mathematics of Planet Earth, Philadelphia, PA.

Chair of the sessions "Clouds and Precipitation: TRMM/GPM" and "Clouds and Precipitation: Satellite Remote Sensing I", IEEE Geoscience and Remote Sensing Symposium (IGARSS), 2016, Beijing, China.

Program Committee Member, International Workshop on Information Integration in Cyber Physical Systems (IICPS 2016, 2017).

Judge for Best Poster Award at the 2016 Mason Water Research Symposium, George Mason University, Fairfax, VA.

Judge for the Regional KidWind Challenge for K-12 students, 2016 School Environmental Action Showcase, George Mason University, Fairfax, VA.

Promoter and coordinator of the Memorandum of Understanding (MOU) between George Mason University and the International Water Resources Research Institute, Chungnam National University, Daejeon, Republic of Korea, 2015.

Chair of the session "Monitoring, Prediction, and Hazard Mitigation of Hydroclimatic Extreme Events", AGU Fall Meeting 2015, San Francisco, CA.

Co-Convener of the session "Open session on remote sensing applications in hydrology and climate studies", EGU General Assembly 2015, Vienna, Austria.

Convener of the session "In Situ and Spaceborne Observations of Atmospheric Water Vapor and Temperature", AGU Fall Meeting 2014, San Francisco, CA.

Judge for the AGU Outstanding Student Paper Awards (OSPAs), AGU Fall Meeting 2014, 2015, 2017, 2018.

Co-Organizer, Inaugural CICS-MD (Cooperative Institute for Climate & Satellites-Maryland) Science Meeting, 2012, College Park, MD.

B.   University

i. CEIE Department

Member of the Review Committee for Term Faculty Promotion	2023 – 2024
Department Seminar Committee Member	2022 – 2023
Open Rank Faculty Search Committee Member	2019 – 2020
CEIE Undergraduate Studies Committee Member	2018 – 2019
Non-Tenure Track Faculty Search Committee Member	2017 – 2018
CEIE Graduate Student Council Faculty Representative	2017 – 2018
Department Chair Search Committee Member	2016 – 2017
Hazel Endowed Chair Search Committee Member	2015 – 2016
Chair of the Graduate Culture Committee	2014 – 2017
Postdoctoral Research Fellow Search Committee Member	2015 – 2017

ii. College of Engineering and Computing (CEC)

CEIE Representative, CEC Promotion & Tenure Committee	2023 – 2024
Faculty Research Mentoring Committee Member	2020 – 2021
Graduation Ceremony Marshall	2015 – present
CEIE Recycling Champion for the Office of Sustainability	2018 – 2020
Information Sciences and Technology Department Tenure Track Faculty Search Committee Member	2016 – 2018