Curriculum Vitae

Gabriele Villarini

Vice Dean, School of Engineering and Applied Science

Theodora Shelton Pitney Professor in Environmental Studies

Professor, Department of Civil and Environmental Engineering and High Meadows Environmental Institute

Princeton University

WORK ADDRESS

Civil and Environmental Engineering
Princeton University
E418 Engineering Quad
Princeton, New Jersey 08544
Office: (609) 258-3761
E-mail: gvillari@princeton.edu
Personal Webpage: http://www.gabrielevillarini.com

RESEARCH INTERESTS:

Hydrometeorology, climatology, extreme events, hurricanes, atmospheric rivers, seasonal forecasting, applied statistics, remote sensing of rainfall.

EDUCATION:

May 2018:	Executive MBA, Tippie College of Business, the University of Iowa (With Distinction).
May 2018:	Certificate in Leadership, Tippie College of Business, the University of Iowa.
August 2008:	Ph.D., Department of Civil and Environmental Engineering, the University of Iowa.
July 2003:	Degree in Civil Engineering, Universita' degli Studi "La Sapienza", Rome, Italy.

THESIS:

- *"Empirically-Based Modeling of Radar-Rainfall Uncertainties."* The University of Iowa, Iowa City, USA.

- *"From Measurements to Modeling: the Use of NEXRAD Weather Radar for Hydrological Applications ".* Universita' degli Studi "La Sapienza", Rome, Italy.

PROFESSIONAL EXPERIENCE:

May 2026 – present: Theodora Shelton Pitney Professor in Environmental Studies. Princeton University.

September 2025 – present: Vice Dean, School of Engineering and Applied Science. Princeton University.

July 2023 – present: Professor, Civil & Environmental Engineering and High Meadows Environmental Institute. Princeton University.

July 2020 – June 2023: Professor, Civil & Environmental Engineering. The University of Iowa.

February 2018 – August 2022: Director, IIHR—Hydroscience & Engineering. The University of Iowa.

August 2017 – February 2018: Interim Director, IIHR-Hydroscience & Engineering. The University of Iowa.

December 2016 – August 2017: Associate Director, IIHR-Hydroscience & Engineering. The University of Iowa.

July 2016 – June 2020: Associate Professor, Civil & Environmental Engineering. The University of Iowa.

July 2016 – August 2017: Director of Graduate Studies, Civil & Environmental Engineering. The University of Iowa.

June 2012 – June 2016: Assistant Professor, Civil & Environmental Engineering. The University of Iowa.

June 2012 – June 2023: Research Engineer, IIHR-Hydroscience & Engineering. The University of Iowa.

August 2008 – May 2012: Willis Research Network Fellow.

August 2011 – May 2012: Associate Research Scholar, Civil & Environmental Engineering. Princeton University.

February 2012 – May 2012: Lecturer, Civil & Environmental Engineering. Princeton University.

August 2008 – July 2011: Research Associate, Civil & Environmental Engineering. Princeton University.

August 2003 – July 2008: Graduate Research Assistant, Hydrometeorology Group, IIHR – Hydroscience & Engineering. The University of Iowa. Adviser: Prof. W.F. Krajewski.

December 2003 – December 2004: President of SIIHR (Students of Iowa Institute of Hydraulic Research), The University of Iowa, Iowa City, USA

December 2003 – December 2004: President of SIAHR (University of Iowa Student Chapter, International Association of Hydraulic Engineering and Research), The University of Iowa, Iowa City, USA

AWARDS AND FELLOWSHIPS:

January 2027: "Fellow" awarded by the American Meteorological Society.

May 2026: "Theodora Shelton Pitney Professor in Environmental Studies" awarded by Princeton University.

May 2022: "*Faculty Excellence Award for Research*" by the College of Engineering at the University of Iowa.

April 2021: "*Hot List of the world's 1,000 top climate scientists*" by Reuters.

November 2020: "*2020 Highly Cited Researcher*" by Clarivate Web of Science.

July 2020 – June 2023: "*Robert & Virginia Wheeler Faculty Fellow in Engineering*" awarded by the College of Engineering at the University of Iowa.

May 2018: Fellow in the "*2018-2019 Big Ten Academic Alliance (BTAA) Academic Leadership Program (ALP)*."

April 2017: "*2017 Water Young Investigator Award*" awarded by Water.

December 2016: "*Fellow*" awarded by the American Geophysical Union.

December 2016: "*James B. Macelwane Medal*" awarded by the American Geophysical Union.

April 2014: "*NSF CAREER Award*" for the proposal entitled "CAREER: Temporal Clustering of Hydrometeorological Extremes"

February 2014: "*Editor's Award – Journal of Climate*" awarded by the American Meteorological Society (AMS). Citation: "For thorough, prompt, and fair reviews on topics addressing the interface between water, statistics, and climate."

January 2014: "2014 *Old Gold Summer Fellowship*" awarded by The University of Iowa.

December 2013: Nominated to represent The University of Iowa for the "*2014 Blavatnik Award for Young Scientists*" in the Physical Sciences & Engineering Category.

April 2013: "*Hydrological Sciences Outstanding Young Scientist Award*" awarded by the European Geosciences Union (EGU). Citation: "For innovative studies in the field of remote sensing of rainfall, flood prediction, and hydroclimatological trend analysis."

September 2012: "*Premio Torricelli*" awarded by the Gruppo Italiano di Idraulica for the best young Italian researcher in hydrology and hydraulics. Citation: "Per la vasta produzione scientifica caratterizzata da importanti contributi nel settore dell'idrometeorologia e della previsione delle piene." ("For the vast scientific production characterized by important contributions in the field of hydrometeorology and flood prediction").

Fall 2006 – Summer 2008: NASA Earth System Science (ESS) Fellowship, National Aeronautics and Space Administration (Code Y), USA.

January 2008: Center for Global and Regional Environmental Research (CGRER) Graduate Student Travel Award, The University of Iowa, Iowa City, Iowa, USA.

December 2007: *Outstanding Student Paper Award*, Hydrology Section of the American Geophysical Union (AGU), 2007 Fall Meeting, San Francisco, California, USA.

July 2007: Center for Global and Regional Environmental Research (CGRER) Graduate Student Travel Award, The University of Iowa, Iowa City, Iowa, USA.

March 2007: Third Place in the Mathematical, Physical Sciences and Engineering Division, The University of Iowa 2007 Ninth Annual James F. Jakobsen Graduate Conference, The University of Iowa, Iowa City, Iowa, USA.

Fall 2006: Graduate Incentive Fellowship (GIF), The University of Iowa, Iowa City, Iowa, USA.

Fall 2003 – Summer 2006: Graduate Research Assistantship, IIHR–Hydroscience & Engineering, The University of Iowa, Iowa City, Iowa, USA.

July 2006: Center for Global and Regional Environmental Research (CGRER) Graduate Student Travel Award, The University of Iowa, Iowa City, Iowa, USA.

May 2006: Graduate Student Senate Travel Funds Award, The University of Iowa, Iowa City, Iowa, USA.

April 2006: Travel grant by the World Meteorological Organization to present at the Second International Symposium on Quantitative Precipitation Forecasting and Hydrology, Boulder, Colorado.

March 2006: Third Place in the Mathematical, Physical Sciences and Engineering Division, The University of Iowa 2006 Eighth Annual James F. Jakobsen Graduate Conference, The University of Iowa, Iowa City, Iowa, USA.

January 2006: Center for Global and Regional Environmental Research (CGRER) Graduate Student Travel Award, The University of Iowa, Iowa City, Iowa, USA.

October 2005: Travel grant to attend the International Conference on Civil and Environmental Engineering 2005 (ICCEE05), Hiroshima, Japan.

October 2004: International Programs Graduate Student Travel Award, The University of Iowa, Iowa City, Iowa, USA.

PROFESSIONAL SOCIETIES:

American Geophysical Union (AGU); *American Meteorological Society (AMS)*

BOOKS

1. **Villarini, G.**, G.A. Vecchi, and E. Scoccimarro (Eds). *Tropical Cyclones and Associated Impacts: A Global Perspective*, Elsevier, 2025.

PEER-REVIEWED PAPERS:

1. Prein, A.F., Q. Kong, **G. Villarini**, J.M. Done, D.R. Johnson, C. Wang, and M. Huber, Local drivers in accelerating North American heat stress, *Nature Communications*, 17, 6600, 2026.

2. Yang, Y., **G. Villarini**, and L. Yang, Spatiotemporal dynamics of hydrological whiplash events across the contiguous United States, 14(7), e2025EF008000, *Earth's Future*, 2026.

3. Kaiser, S., E. Ahmadisharaf, C. Polatel, **G. Villarini**, V. Misra, T. Asefa, and A. AghaKouchak, Assessing dominant uncertainties in future precipitation projections for a hurricane-prone region, 14(7), e2025EF007680, *Earth's Future*, 2026.

4. **Villarini, G.**, R. Amorim, and J.A. Smith, Rethinking flood risk: Tropical cyclones, orography, and the upper tail of flood peaks for the Appalachian region of the United States, *Journal of Hydrology X*, 31, 100218, 2026.

5. Deng, Z., **G. Villarini**, W. Yang, G.A. Vecchi., and Z. Wang, Global stalled tropical cyclones in a changing climate, *Nature Communications*, 17, 5145, 2026.

6. Kim, T., W. Chao, **G. Villarini**, J. Done, D. Johnson, and A.F. Prein, Physics-informed bias correction using a convolution-based multivariate Gaussian process, *Journal of Advances in Modeling Earth Systems*, 18, e2026MS005765, 2026.

7. Treppiedi, D., **G. Villarini**, C. Mattina, A. Francipane, and L.V. Noto, Unveiling changes in the seasonality of extreme precipitation shows an anticipation of short-duration extremes, *Earth Systems and Environment*, doi:10.1007/s41748-026-01178-4, 2026.

8. Li, D., A.T. Michalek, and **G. Villarini**, Assessing the global performance of a parsimonious soil temperature model for frozen ground prediction, *Journal of Hydrology*, 672, 135277, 2026.

9. Michalek, A.T., **G. Villarini**, J.M. Done, M. Wang, and P. Passalacqua, Quantification of the impact of uncertainties in flood risk projections across the Delaware River Basin, *Earth's Future*, 14, e2025EF006306, 2026.

10. Saari, C., J. Kurths, **G. Villarini**, and B. Ghanbarian, Synchronization of extreme precipitation and sea surface temperature events in the Northern Hemisphere: A complex network approach, *International Journal of Climatology*, 46(3), e70218, 2026.

11. Li, D., and **G. Villarini**, Parsimonious and transferrable parameterization of reservoir operations: A modular approach for large-scale modeling, *Journal of Advances in Modeling Earth Systems*, 18, e2025MS005180, 2026.

12. Maduwantha, P., T. Wahl, S. Santamaria-Aguilar, R. Jane, S. Dangendorf, H. Kim, and **G. Villarini**, Generating boundary conditions for compound flood modeling in a probabilistic framework, *Hydrology and Earth System Sciences*, 30(2), 401-420, 2026.

13. Torelló-Sentelles, H., M. Koukoula, **G. Villarini**, F. Marra, and N. Peleg, When storms slow down: Urban effects on rainfall accumulation and flood hazard, *npj Natural Hazard,* 2, 106, 2025.

14. Kim, H., **G. Villarini**, and S. Maebius, Changes in the frequency of flood events across the United States detectable by the middle of this century, *Earth's Future*, 13, e2025EF006677 2025.

15. Liu, Y., D.B. Wright, F. Quintero, A. Michalek, **G. Villarini**, and J.A. Smith, Increasing flood hazard in the Lower Mississippi River due to extreme storm clustering, *Science Advances*, 11(40), eadt1868, 2025.

16. Yang, Y., L. Yang, **G. Villarini**, F. Zhao, D. Huang, G.A. Vecchi, Q. Wang, Y. Sun, and F. Tian, Synchronization of global peak river discharge since the 1980s, *Nature Climate Change*, 15, 1084-1090, 2025.

17. Kim, H., **G. Villarini**, W. Yang, and G.A. Vecchi, Global response of floods to tropical explosive volcanic eruptions, *Nature Geoscience*, 2025.

18. Guan, Y., X. Gu, L. Wang, T. Zhou, J. Xia, D. Jiang, L.J. Slater, L. Gimeno, Y. Pokhrel, **G. Villarini**, J.-S. Kug, S.-W. Son, R.P. Allan, J. Li, T.Y. Gan, Y. Liu, D. Kong, X. Zhang, and X. Cui, Excess water availability in northern mid-high latitudes contiguously migrated from ocean under climate change, *Science Advances*, 11, eadv0282, 2025.

19. Nanditha, J.S., **G. Villarini**, S. Misra, and K. White, Regional variability in the projected changes in sub-daily precipitation IDF curves across the contiguous United States, *Environmental Research Letters*, 20, 094006, 2025.

20. Cho, E., E. Ahmadisharaf, **G. Villarini**, and A. AghaKouchak, Historical changes in overtopping probability of dams in the United States, *Nature Communications*, 16, 6693, 2025.

21. El Adlouni, S., G. Kabbaj, H. Kim, **G. Villarini**, C. Wasko, and Y. Tramblay, Climatic a priori information for the GEV distribution's shape parameter of annual maximum flow series, *Journal of Hydrology*, 661 C, 133789, 2025.

22. Amorim, R., **G. Villarini**, H. Kim, R.A. Jane, and T. Wahl, A practitioner's approach to process-driven modeling of compound rainfall and storm surge extremes for coastal Texas, *Journal of Hydrologic Engineering*, 30(5), 04025025, 2025.

23. Kim, T., **G. Villarini**, J.M. Done, A.F. Prein, D.R. Johnson, and C. Wang, Ensemble downscaled climate dataset for Alaska and Hawaii under historical and future conditions, *Scientific Data*, 12, 1089, 2025.

24. Torelló-Sentelles, H., **G. Villarini**, M. Koukoula, and N. Peleg, Impacts of urban dynamics and thermodynamics on convective rainfall across different urban forms, *Urban Climate*, 62, 102499, 2025.

25. Nanditha, J.S., **G. Villarini**, H. Kim, and P. Naveau, Causal attribution of the interannual variability in flood peaks through Bayesian Networks, *Water Resources Research*, 61, e2024WR039385, 2025.

26. Amorim, R., **G. Villarini**, J. Czajkowski, and J.A. Smith, Flooding from Hurricane Helene and associated impacts: A historical perspective, *Journal of Hydrology X*, 27, 100204, 2025.

27. Ekolu, J., B. Dieppois, S.B. Diop, A. Bodian, S. Grimaldi, P. Salamon, **G. Villarini**, J.M. Eden, P.-A. Monerie, M. van de Wiel, and Y. Tramblay, How could climate change affect the magnitude, duration and frequency of hydrological droughts and floods in West Africa during the 21st century? A storyline approach, *Journal of Hydrology*, 660(B), 133482, 2025.

28. Lavers, D.A., **G. Villarini**, H.L. Cloke, A. Simmons, N. Roberts, A. Lombardi, S.N. Burgess, and F. Pappenberger, How bad is the rain? Applying the Extreme Rain Multiplier globally and for climate monitoring activities, *Meteorological Applications*, 32(2), e70031, 2025.

29. Nanditha, J.S., **G. Villarini**, and P. Naveau, Assessing future changes in daily precipitation extremes across the contiguous United States with the extended Generalized Pareto distribution, *Journal of Hydrology*, 659, 133212, 2025.

30. Kim, T., **G. Villarini**, A.F. Prein, J.M. Done, D.R. Johnson, and C. Wang, Climate change reduces the wind chill hazard across Alaska, *Communications Earth & Environment*, 6, 195, 2025.

31. Kraft, L.L., **G. Villarini**, J. Czajkowski, D. Zimmerman, and R. Amorim, Developing a spatial regression model framework for insured flood losses in Houston, Texas, *ASCE Open: Multidisciplinary Journal of Civil Engineering*, 3(1), 04025002, 2025.

32. Michalek, A., **G. Villarini**, A. Prein, J. Done, D. Johnson, and C. Wang, Precipitation- and temperature-driven future changes to flooding in Alaska, *Geophysical Research Letters*, 52, e2024GL112004, 2025.

33. Deng, Z., **G. Villarini**, and Z. Wang, Climate change dominates over urbanization in tropical cyclone rainfall patterns, *Communications Earth & Environment*, 6, 54, 2025.

34. Deng, Z., **G. Villarini**, Z. Wang, X. Wu, Z. Zeng, and C. Lai, Urbanization intensifies heavy hourly rainfall preconditioned by heatwaves, *Journal of Geophysical Research – Atmospheres*, 130, e2024JD041184, 2025.

35. Treppiedi, D., **G. Villarini**, J. Bender, and L.V. Noto, Precipitation extremes projected to increase and to occur in different times of the year, *Environmental Research Letters*, 20(1), 014014, 2025.

36. Amorim, R., and **G. Villarini**, Impacts of urbanization on the riverine flooding in major cities across the eastern United States, *Hydrological Processes*, 38(12), e70027, 2024.

37. Michalek, A., F. Quintero, and **G. Villarini**, Contiguous United States hydrologic modeling using the Hillslope Link Model TETIS, *Journal of the American Water Resources Association,* 60(6), 1058-1079, 2024.

38. Maduwantha, P., T. Wahl, S. Santamaria-Aguilar, R. Jane, J. Booth, H. Kim, and **G. Villarini**, A multivariate statistical framework for mixed populations in compound flood analysis, *Natural Hazards and Earth System Sciences*, 24, 4091-4107, 2024.

39. Nanditha, J.S., **G. Villarini**, H. Kim, and P. Naveau, Strong linkage between observed daily precipitation extremes and anthropogenic emissions across the contiguous United States, *Geophysical Research Letters*, 51(20), e2024GL109553, 2024.

40. Torelló-Sentelles, H., F. Marra, M. Koukoula, **G. Villarini**, and N. Peleg, Intensification and changing spatial extent of heavy rainfall in urban areas, *Earth's Future*, 12, e2024EF004505, 2024.

41. Kim, H., and **G. Villarini**, Floods across the eastern United States are projected to last longer, *npj Natural Hazard*, 1, 23, 2024.

42. Ekolu, J., B. Dieppois, Y. Tramblay, **G. Villarini**, L.J. Slater, G. Mahé, J.-E. Paturel, J.M. Eden, S. Moulds, M. Sidibe, P. Camberlin, B. Pohl, and M. van de Wiel, Variability in flood frequency in Sub-Saharan Africa: The role of large-scale climate modes of variability and their future impacts, *Journal of Hydrology*, 640, 131679, 2024.

43. Kim, T., **G. Villarini**, J.M. Done, D.R. Johnson, A.F. Prein, and C. Wang, Dominant sources of uncertainty for downscaled climate: A military installation perspective, *Journal of Geophysical Research – Atmospheres*, 129, e2024JD040935, 2024.

44. Michalek, A., J. Done, and **G. Villarini**, Future changes in regional tropical cyclone wind, precipitation and flooding using event-based downscaling, *Earth's Future*, 12(6), e2023EF004279, 2024.

45. Treppiedi, D., **G. Villarini**, and L.V. Noto, Climate change exacerbates the compounding of heat stress and flooding in the mid-latitudes, *International Journal of Climatology*, 44(7), 2283-2296, 2024.

46. Kim, T., and **G. Villarini**, Projected changes in daily precipitation, temperature and wet-bulb temperature across Arizona using statistically downscaled CMIP6 climate models, *International Journal of Climatology*, 44, 1994-2010, 2024.

47. Kim, H., **G. Villarini**, C. Wasko, and Y. Tramblay, Changes in the climate system dominate the inter-annual variability in flooding across the globe, *Geophysical Research Letters*, 51, e2023GL107480, 2024.

48. Amorim, R., and **G. Villarini**, Assessing the performance of parametric and non-parametric tests for trend detection in partial duration time series, *Journal of Flood Risk Management*, 17(1), e12957, 2024.

49. Wasko, C. S. Westra, R. Nathan, A. Pepler, T.H. Raupach, A. Dowdy, F. Johnson, M. Ho, K.L. McInnes, D. Jakob, J. Evans, **G. Villarini**, and H.J. Fowler, A systematic review of climate change science relevant to Australian design flood estimation, *Hydrology and Earth System Sciences*, 28, 1251-1285, 2024.

50. Deng, Z., X. Wu, **G. Villarini**, Z. Wang, C. Lai, and Z. Zeng, Stronger exacerbation of extreme rainfall at the hourly than daily scale by urbanization in a warming climate, *Journal of Hydrology*, 633, 131025, 2024.

51. Michalek, A., **G. Villarini**, and T. Kim, Understanding the impact of precipitation bias-correction and statistical downscaling methods on projected changes in flood extremes, *Earth's Future*, 12(3), e2023EF004179, 2024.

52. Kim, H., and **G. Villarini**, Higher emissions scenarios lead to more extreme flooding in the United States, *Nature Communications*, 15, 237, 2024.

53. Kuntla, S.K., M. Saharia, S. Prakash, and **G. Villarini**, Precipitation inequality exacerbates streamflow inequality, but dams moderate it, *Science of the Total Environment*, 912, 169098, 2024.

54. Michalek, A., **G. Villarini**, T. Kim, F., Quintero, and W.F. Krajewski, Disentangling the sources of uncertainties in the projection of floods risk across the central United States (Iowa), *Geophysical Research Letters*, 50, e2023GL105852, 2023.

55. **Villarini G.**, D., Treppiedi, and L.V. Noto, Sensitivity of the SIMulation-EXtrapolation (SIMEX) methodology to mis-specification of the statistical properties of the measurement errors, *Theoretical and Applied Climatology*, 153, 311-321, 2023.

56. Kim, H., and **G. Villarini**, On the potential use of weather types to describe the interannual variability of annual maximum discharge across the conterminous United States, *Hydrological Processes*, 37(11), e15014, 2023.

57. Michalek, A., **G. Villarini**, and A. Husic, Climate change projected to impact structural hillslope connectivity at the global scale, *Nature Communications*, 14, 1-8, 2023.

58. Amorim, R., **G. Villarini**, W. Veatch, and K. White, Reduced and more fragmented Mississippi River navigability by rising flow, *Geophysical Research Letters*, 50(19), 1-8, 2023.

59. Li, X., J. Ghosh, and **G. Villarini**, A comparison of Bayesian multivariate versus univariate regression models for prediction in moderate dimensional model, *The American Statistician*, 77(3), 304-312, 2023.

60. Islam, S., **G. Villarini**, and W. Zhang, Quantification of the role of urbanization in changing the rainfall associated with tropical cyclones affecting Charlotte, North Carolina, *Urban Climate*, 52, 101681, 2023.

61. Michalek, A., **G. Villarini**, T. Kim, F., Quintero, W.F. Krajewski, and E. Scoccimarro, Evaluation of CMIP6 HighResMIP for hydrologic modeling of annual maximum discharge in Iowa, *Water Resources Research*, 59, 1-18, 2023.

62. Kraft, L., **G. Villarini**, and J. Czajkowski, Characterizing the 2019 Midwest flood: A hydrologic and socio-economic perspective, *Weather, Climate, and Society*, 15(3), 603-617, 2023.

63. Michalek, A., F. Quintero, **G. Villarin**i, and W.F. Krajewski, Projected changes in annual maximum discharge for Iowa communities, *Journal of Hydrology*, 625, 1-8, 2023.

64. Li, X., J. Ghosh, and **G. Villarini**, Bayesian negative binomial regression model with unobserved covariates for predicting the frequency of North Atlantic tropical storms, *Journal of Applied Statistics*, 50(9), 2014-2035, 2023.

65. Slater, L.J., L. Arnal, M.-A. Boucher, A. Y.-Y. Chang, S. Moulds, C. Murphy, G. Nearing, G. Shalev, C. Shen, L. Speight, **G. Villarini**, R.L. Wilby, A. Wood, and M. Zappa, Hybrid forecasting: Blending climate predictions with AI models, *Hydrology and Earth System Sciences*, 27, 1865-1889, 2023.

66. Kim, T., **G. Villarini**, H. Kim., R. Jane, and T. Wahl, On the compounding of nitrate loads and discharge, *Journal of Environmental Quality*,52(3), 706-717, 2023.

67. Su, Y., J.A. Smith, and **G. Villarini**, Extreme convective rainfall and flooding from winter season extratropical cyclones in the Mid-Atlantic region of the United States, *Journal of Hydrometeorology*, 24(3), 497-520, 2023.

68. Yang, Z., W. Zhang, and **G. Villarini**, Impact of coronavirus-driven reduction in aerosols on precipitation in the western United States, *Atmospheric Research*, 288, 1-7, 2023.

69. Kim, H., **G. Villarini**, R. Jane, T. Wahl, S. Misra, and A. Michalek, On the generation of high-resolution probabilistic design events capturing the joint occurrence of rainfall and storm surge in coastal basins, *International Journal of Climatology*, 43(2), 761-771, 2023.

70. Su, Y., J.A. Smith, and **G. Villarini**, The hydrometeorology of extreme floods in the Lower Mississippi River, *Journal of Hydrometeorology*, 24(2), 203-219, 2023.

71. Rashid, M., T. Wahl, **G. Villarini**, and A. Sharma, Fluvial flood losses in the contiguous United States under climate change, *Earth's Future*, 11(2), 1-14, 2023.

72. Kemter, M., N. Marwan, G. Villarini, and B. Merz, Controls on flood trends across the United States, *Water Resources Research*, 59(2), 1-21, 2023.

73. Ayers, J., **G. Villarini**, Y. Tramblay, and H. Kim, Observed changes in monthly baseflow across Africa, *Hydrological Sciences Journal*, 68(1), 108-118, 2023.

74. Denniston, R.F., C.C. Ummenhofer, K. Emanuel, R. Ingrosso, F.S.R. Pausata, A.D. Wanamaker, M.S. Lachniet, K.T. Carr, Y. Asmerom, V.J. Polyak, J. Nott, W. Zhang, **G. Villarini**, J. Cugley, D. Brooks, D. Woods, and W.F. Humphreys, Sensitivity of northwest Australian tropical cyclone activity to ITCZ migration since CE 500, *Science Advances*, 9(2), 1-10, 2023.

75. Kim, H., and **G. Villarini**, On the attribution of annual maximum discharge across the conterminous United States, *Advances in Water Resources*, 171, 1-13, 2023.

76. Tramblay, Y., **G. Villarin**i, M. Saidi, C. Massari, and L. Stein, Classification of flood-generating processes in Africa, *Scientific Reports*, 12, 1-9, 2022.

77. Quintero, F., **G. Villarini**, A.F. Prein, W. Zhang, and W.F. Krajewski, Discharge and floods projected to increase more than precipitation extremes, *Hydrological Processes*, 36(11), 1-12, 2022.

78. Ekolu, J., B. Dieppois, M. Sidibe, J.M. Eden, Y. Tramblay, **G. Villarini**, D. Peña-Angulo, G. Mahé, J.-E. Paturel, C. Onyutha, and M. van de Wiel, Long-term variability in hydrological droughts and floods in sub-Saharan Africa: New perspectives from a 65-year daily streamflow dataset, *Journal of Hydrology*, 613A, 1-17, 2022.

79. Quintero, F., **G. Villarini**, A.F. Prein, W.F. Krajewski, and W. Zhang, On the role of atmospheric simulations horizontal grid spacing for flood modeling, *Climate Dynamics*, 59, 3167-3174, 2022.

80. Michalek, A., F. Quintero, **G. Villarini**, and W.F. Krajewski, Advantages of physically based flood frequency analysis with long-term simulations for Iowa, *Journal of Hydrologic Engineering*, 27(12), 1-11, 2022.

81. Veatch, W., and **G. Villarini**, Modeling riverine flood seasonality with mixtures of circular probability density functions, *Journal of Hydrology*, 613, 1-11, 2022.

82. Kim, H., and **G. Villarini**, Evaluation of the Analysis of Record for Calibration (AORC) rainfall across Louisiana, *Remote Sensing*, 14(14), 3284, 2022.

83. Ren, M., **G. Villarini**, B. Pang, Z. Xue, L. Du, and Y. Wang, Hydrological response in a highly urbanized watershed in China, *Journal of Water and Climate Change*, 13(5), 2171-2187, 2022.

84. Zhang, J., C. Lu, W. Crumpton, C. Jones, H. Tian, **G. Villarini**, K. Schilling, and D. Green, Heavy precipitation impacts on nitrogen loading to the Gulf of Mexico in the 21st century: Modeling projections under future climate scenarios, *Earth's Future*, 10(4), e2021EF002141, 2022.

85. Mishra, A., S. Mukherjee, B. Merz, V. Singh, D. Wright, **G. Villarini**, S. Paul, N. Kumar, P. Khedun, D. Niyogi, G. Schumann, and J.R. Stedinger, Challenges and future directions in flood research, *Journal of Hydrologic Engineering*, 27(6), 1-30, 2022.

86. **Villarini, G.**, W. Zhang, P. Miller, D. Johnson, L. Grimley, and H. Roberts, Probabilistic rainfall generator for tropical cyclones affecting Louisiana, *International Journal of Climatology*, 42(3), 1789-1802, 2022.

87. Ayers, J.R., **G. Villarini**, K. Schilling, C. Jones, A. Brookfield, S.C. Zipper, and W.H. Farmer, The role of climate in monthly baseflow changes across the continental United States, *Journal of Hydrologic Engineering*, 27(5), 04022006, 2022.

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2. **Villarini, G.**, and L.J. Slater, Climatology of Flooding in the United States, in *Oxford Research Encyclopedia of Natural Hazard Science*, doi:10.1093/acrefore/9780199389407.013.123, 2017.

3. Wright, D., J.A. Smith, **G. Villarini**, and M.L. Baeck, Applications of radar-based rainfall estimates for urban flood studies, *Pragmatic Modeling of Urban Water Systems*, Monograph 21, edited by W. James, et al., pp. 85-110, CHI, Guelph, ON, 2012.

4. **Villarini, G.**, W.F. Krajewski, and G.J. Ciach, Empirically-based generator of synthetic radar-rainfall data, in *Quantification and Reduction of Predictive Uncertainty for Sustainable Water Resources Management*, edited by E. Boegh, H. Kunstmann, T. Wagener, A. Hall, L. Bastidas, S. Franks, H. Gupta, D. Rosbjerg and J. Schaake, pp. 78-85, IAHS, 2007.

5. **Villarini, G.**, G.J. Ciach, W.F. Krajewski, K.M. Nordstrom, and V.K. Gupta, Effects of systematic and random errors on the spatial scaling properties in radar-estimated rainfall, in *Nonlinear Dynamics in Geosciences*, edited by A.A. Tsonis and J. Elsner, pp. 37-51, Springer, 2007.

SEMINARS:

- **Villarini**, **G.**, *Looking From Rainfall to Risk: A High-Resolution Framework for Flood Hazard and Impact Assessment*, Harvard University, 9 March, 2026.

- **Villarini**, **G.**, *Looking From Rainfall to Risk: A High-Resolution Framework for Flood Hazard and Impact Assessment*, Rice University, 19 February, 2026.

- **Villarini**, **G.**, *Looking From Rainfall to Risk: A High-Resolution Framework for Flood Hazard and Impact Assessment*, Geophysical Fluid Dynamics Laboratory, 12 February, 2026.

- **Villarini**, **G.**, *Looking Back to Move Forward: Projecting Flooding Across the United States*, University of Buffalo, 18 October, 2024.

- **Villarini**, **G.**, *Projecting Flooding Across the United States: Climate Change as a Risk Multiplier*, New York University, 8 October, 2024.

- **Villarini**, **G.**, *Projecting Flooding Across the United States: Climate Change as a Risk Multiplier*, Università degli Studi di Palermo, July 10, 2024.

- **Villarini**, **G.**, *Projecting Flooding Across the United States: Climate Change as a Risk Multiplier*, Tulane University, October 20, 2023.

- **Villarini**, **G.**, *Looking Back to Move Forward: Future Changes in the Frequency of Flood Events across the Central United States*, Princeton University, April 22, 2022.

- **Villarini**, **G.**, *Increasing Frequency of Flood Events across the Central United States: A Hierarchy of Whys*, Beijing Normal University, August 24, 2020.

- **Villarini**, **G.**, *Increasing Frequency of Flood Events across the Central United States: A Hierarchy of Whys*, Arizona State University, March 18, 2020.

- **Villarini**, **G.**, *Increasing Frequency of Flood Events across the Central United States: A Hierarchy of Whys*, University of Oxford, February 7, 2020.

- **Villarini**, **G.**, *Looking Back to Move Forward: Future Changes in the Frequency of Flood Events across the Central United States*, University of California Los Angeles, October 22, 2019.

- **Villarini**, **G.**, *Hydrometeorological Extremes and Tropical Cyclones*, University of Central Florida, Florida, October 9, 2019.

- **Villarini**, **G.**, *Hydrometeorological Extremes and Tropical Cyclones*, Asian Institute of Technology, Bangkok, Thailand, June 24, 2019.

- **Villarini**, **G.**, *Hydrometeorological Extremes and Tropical Cyclones*, CMCC, Bologna, Italy, June 27, 2019.

- **Villarini**, **G.**, *Looking Backward to Move Forward: Future Changes in the Frequency of Flood Events*, University of Padua, Padua, Italy, June 26, 2019.

- **Villarini**, **G.**, *Hydrometeorological Extremes and Tropical Cyclones*, University of Rome "La Sapienza", Rome, Italy, June 24, 2019.

- **Villarini**, **G.**, *Flooding and Heavy Rainfall Associated with Tropical Cyclones*, University of Notre Dame, Notre Dame, IN, February 19, 2019.

- **Villarini**, **G.**, *Flooding Across the Central United States: Ieri, Oggi e Domani*, CMCC, Bologna, Italy, June 21, 2018.

- **Villarini**, **G.**, *Past and future changes in streamflow in the U.S. Midwest: Bridging across time scales*, University of Illinois, Champaign, IL, November 10, 2017.

- **Villarini**, **G.**, *Flooding Across the Central United States: Past, Present and Future*, CMCC, Bologna, Italy, June 16, 2016.

- **Villarini**, **G.**, *Flooding Across the Central United States: Past, Present and Future*, Grinnell College, Grinnell, IA, October 6, 2015.

- **Villarini**, **G.**, *The Changing Nature of Flooding Across the Central United States*, Northern Illinois University, DeKalb, IL, September 11, 2015.

- **Villarini**, **G.**, *The Changing Nature of Flooding Across the Central United States*, U.S. Geological Survey, Reston, VA, August 14, 2015.

- **Villarini**, **G.**, *Flooding over the United States: A climatic perspective and the role of tropical cyclones*, Bermuda Insurance Institute, Bermuda, October 28, 2014.

- **Villarini**, **G.**, *Flooding over the Central United States*, U.S. Geological Survey, IA, August 14, 2014.

- **Villarini**, **G.**, *Flooding over the Central United States*, Geophysical Fluid Dynamics Laboratory, NJ, June 20, 2013.

- **Villarini**, **G.**, *Is it going to rain tomorrow? Heavy rainfall and flooding over the Central United States*, Luther College, Decorah, IA, April 4, 2013.

- **Villarini**, **G.**, *Is it going to rain tomorrow? Heavy rainfall and flooding over the Central United States*, Coe College, Cedar Rapids, IA, March 19, 2013.

- **Villarini**, **G.**, *What do the observational records tell us about flooding and climate change?*, The National Center for Atmospheric Research, Boulder, CO, July 20, 2012.

- **Villarini**, **G.**, *A data-driven perspective on flooding and changing climate*, University of Iowa, Iowa City, IA, March 8, 2012.

- **Villarini**, **G.**, *A data-driven perspective on flooding and changing climate*, University of Washington, Seattle, WA, February 29, 2012.

- **Villarini**, **G.**, *Flooding and changing climate: A data driven perspective*, IIHR-Hydroscience & Engineering, The University of Iowa, Iowa City, IA, September 2, 2011.

- **Villarini**, **G.**, *Extreme events and changing climate: What does the data tell us?,* Aggravated Natural Disaster Seminar, Chartis Insurance, New York, NY, July 15, 2011.

- **Villarini**, **G.**, *Flooding, tropical cyclones, and climate change in the Eastern United States*, Columbia University, New York, NY, April 8, 2010.

- **Villarini**, **G.**, *Flooding, tropical cyclones, and climate change in the Eastern United States*, James J. Howard Marine Sciences Laboratory, Sandy Hook, NJ, March 11, 2010.

- **Villarini**, **G.**, *Flood frequency in the Eastern United States*, Geophysical Fluid Dynamics Laboratory, NJ, July 15, 2009.

- **Villarini**, **G.**, *Empirically-based modeling of radar-rainfall uncertainties*, University of Connecticut, CT, April 11, 2008.

TECHNICAL REPORTS:

- Krajewski, W.F., G.J. Ciach, and **G. Villarini**, *Towards Probabilistic Quantitative Precipitation WSR-88D Algorithms: Data Analysis and Development of Ensemble Model Generator: Phase 4*, final report, 202 pp., NWS Office of Hydrologic Development, Silver Spring, MD, 2005.

STUDENTS AND POST-DOCTORAL RESEARCHERS:

Research Scientists

- Wei Zhang (2017-2020)
- Hanbeen Kim (2024-)
- Taereem Kim (2024-2027)

Post-Doctoral Researchers

- David A. Lavers (2013-2014)
- Kaustubh Salvi (2015-2016)
- Abdou Khouakhi (2015-2016)
- Louise Slater (2015-2016)
- Alan Black (2015-2016)
- Wei Zhang (2016-2017)
- Manuel F. Ríos Gaona (2017-2018)
- Vittal Hari (2018-2019)
- Hanbeen Kim (2021-2024)
- Taereem Kim (2022-2024)
- Nanditha (2023-2025)
- Donghui Li (2024-2026)
- Tianjiao Pu (2024-)

Ph.D. Students

- Iman Mallakpour (2012-2016)
- Munir Nayak (2013-2016)
- Nancy Barth (2015-2018)
- Jessica Ayers (2017-2021)
- Zhiqi Yang (2017-2021)
- William Veatch (2018-2022)
- Sadya Islam (2020-2024)
- Lily Kraft (2021-2024)
- Alexander Michalek (2021-2026)
- Renato Amorim (2021-2026)
- Sarah Maebius (2024-)
- Manjaree Binjolkar (2024-)
- Lara Tobias-Tarsh (2025-)
- Nyla Hartigan (2026-)

M.S. Students

- Scott Rowe (2012-2014)
- Beda Luitel (2013-2016)
- Yog Aryal (2015-2017)

- Alex Morrison (2017-2019)

Undergraduate Students

- Anda Shi (2014-2015)
- Alexa Hanson (2016-2017)
- Lara Gavin (2021-2021)
- Katey Namanny (2020-22)
- Laura Zepeski (2021-22)
- Lauren Owens (2024-2025)
- Claire Meng (2025-2026)
- Jessica Bressman (2025-2026)

Visiting Students and Researchers

- Ignazio Giuntoli (2014)
- Dr. Dhanya C.T. (2015)
- Evan Cunningham (2016)
- Andrea Neri (2017-2018)
- Arianna Miniussi (2018-2019)
- Ottavio Cavalcanti (2019)
- Bo Pang (2019-2020)
- Meifang Ren (2019-2020)
- Dario Treppiedi (2022)
- Roberto Quaglia (2022)
- Herminia Torelló I Sentelles (2023-2024)
- Zifeng Deng (2024)
- Flavia Marconi (2024)
- Maria Francesca Caruso (2024-2025)
- Cosimo Carniel (2024)
- Yixin Yang (2025-2026)

FUNDED PROJECTS:

- Source of Support: High Meadows Environmental Institute - Princeton University
  Co-PI. Title: Environmental Predictability as a Driver of Savanna Plant Trait Variation
  Total award: $100,000. Award to Villarini: $50,000
  [07/01/202026 – 06/30/2028]

- Source of Support: Princeton University
  Lead PI. Title: 2026 Intellectual Property Accelerator Fund
  Total award: $93,448. Award to Villarini: $0
  [04/01/202026 – 063/31/2027]

- Source of Support: School of Engineering and Applied Science - Princeton University
  Lead PI. Title: Cluster of Excellence for Land-to-Ocean Contaminant Modeling
  Total award: $50,000. Award to Villarini: $0
  [07/01/2026 – 06/30/2027]

- Source of Support: High Meadows Environmental Institute - Princeton University
  Co-PI. Title: A High-Resolution Modeling Framework to Address Coastal Hypoxia in the Indian Ocean under Current and Future Conditions
  Total award: $183,500. Award to Villarini: $91,750
  [01/01/202026 – 12/31/2027]

- Source of Support: Private Company
  Lead PI. Title: Flood Risk Scoring across the Delaware and Susquehanna River Basins
  Total award: $100,000. Award to Villarini: $100,000
  [11/01/2025 – 05/31/2026]

- Source of Support: MS Chadha Center for Global India (CGI) - Princeton University
  Lead PI. Title: Toward a Skillful Forecasting of Regional Precipitation and Extremes over Chennai Metro
  Total award: $34,946.81. Award to Villarini: $34,946.81
  [7/1/2025 – 6/30/2026]

- Source of Support: Department of Defense
  Lead PI. Title: Assessment of Extreme Weather Predictions in Support of DoD Activities to Bridge Across the One-to-Ten-Year Forecasting Window
  Total award: $867,550. Award to Villarini: $663,567
  [12/12/2024 – 12/11/2026]

- Source of Support: FM
  Lead PI. Title: Joint Research Agreement
  Total award: $500,833. Award to Villarini: $500,833
  [1/1/2025 – 12/31/2027]

- Source of Support: Department of Defense (subward)
  Lead PI. Title: Improving Climate Resilience of DOD Installation and Surrounding Community Infrastructure RC Project
  Total award: $25,370. Award to Villarini: $25,370
  [11/15/2024 – 12/21/2026]

- Source of Support: State of Louisiana Office of Community Development (subaward)
  Lead PI. Title: Office of Community Development, State of Louisiana CEA: Coastwide Transition Zone Compound Flooding Implementation
  Total award: $75,000. Award to Villarini: $75,000
  [5/1/2024 – 12/31/2024]

- Source of Support: Department of Defense

Lead PI. Title: Intergovernmental Personnel Act (IPA) with the Department of Defense: Hydrologic and Flood Risk Products
Total award: $81,833.34. Award to Villarini: $81,833.34
[07/18/2024 – 01/31/2026]

- Source of Support: Engineer Research and Development Center (ERDC) Broad Agency Announcement (BAA)
  Lead PI. Title: Probabilistic predictions of rainfall associated with tropical cyclones over land
  Total award: $391,000. Award to Villarini: $391,000
  [8/23/2024 – 8/22/2027]

- Source of Support: Cooperative Institute for Modeling the Earth System
  Lead PI. Title: Expanding the capabilities of the SHiELD modeling framework to high-resolution flood inundation modeling
  Total award: $112,300. Award to Villarini: $112,300
  [7/1/2024 – 2/28/2026]

- Source of Support: North Atlantic Treaty Organization
  Lead PI. Title: NATO STO CMRE (Science and Technology Organisation - Centre for Maritime Research and Experimentation) – Year 2
  Total award: $120,000. Award to Villarini: $120,000
  [2/27/2024 – 12/31/2024]

- Source of Support: City of Jacksonville (subaward)
  Lead PI. Title: Citywide Probabilistic and Compound Flood Model and Real Time Forecasting System
  Total award: $50,000. Award to Villarini: $50,000
  [1/1/2024 – 6/30/2024]

- Source of Support: National Oceanic and Atmospheric Administration (subaward)
  PI. Title: Co-LEARN: A Midwestern Community of Learning for Empowerment, Climate Adaptation and Resilience for the Next Generation
  Total award: $6,000,000. Award to Villarini: $176,169
  [9/1/2023 – 8/31/2028]

- Source of Support: Texas Water Development Board (subaward)
  Lead PI. Title: Literature Review on relevant models & probabilistic analysis for flood hazard characterizations, and development of workflows for compound flood hazard assessment in the Coastal Texas Region
  Total award: $105,861. Award to Villarini: $105,861
  [8/1/2023 – 2/1/2024]

- Source of Support: North Atlantic Treaty Organization
  Lead PI. Title: NATO STO CMRE (Science and Technology Organisation - Centre for Maritime Research and Experimentation)

Total award: $159,000. Award to Villarini: $159,000
[8/1/2023 – 1/31/2024]

- Source of Support: National Oceanic and Atmospheric Administration (subaward)
  Lead PI. Title: Building relationships of reciprocity among researchers and marginalized groups for resilience in the Central Midwest
  Total award: $99,954. Award to Villarini: $47,120
  [12/1/2022 – 11/30/2024]

- Source of Support: Department of Defense
  Lead PI. Title: Development of a decision support aid system connecting climate model downscaling and DoD infrastructure
  Total award: $1,217,735. Award to Villarini: $487,074
  [12/1/2022 – 11/30/2025]

- Source of Support: US Department of Housing and Urban Development (subaward)
  Lead PI. Title: GLO Flood Studies - Region 1 (Phase 3)
  Total award: $267,895. Award to Villarini: $267,895
  [10/21/2022 – 08/14/2023]

- Source of Support: US Department of Housing and Urban Development (subaward)
  Lead PI. Title: GLO Flood Studies - Region 2 (Phase 3)
  Total award: $292,120. Award to Villarini: $292,120
  [09/25/2022 – 07/01/2024]

- Source of Support: National Institutes of Health
  Co-PI. Title: Statistical and agent-based modeling of complex microbial systems: A means for understanding enteric disease transmission among children in urban neighborhoods of Kenya
  Total award: $109,453. Award to Villarini: $20,826
  [08/30/2022 – 05/31/2023]

- Source of Support: Office of the Vice President for Research, University of Iowa
  Lead PI. Title: Building Connected Communities in Rural Watersheds: Collaborative Partnerships for Actionable Science
  Total award: $50,000. Award to Villarini: $50,000
  [06/01/2022 – 05/31/2023]

- Source of Support: US Department of Housing and Urban Development (subaward)
  Lead PI. Title: Statewide high-resolution tropical cyclone rainfall generator and error/bias quantification for Louisiana
  Total award: $50,000. Award to Villarini: $50,000
  [04/01/2022 – 09/30/2022]

- Source of Support: U.S. Geological Survey (via the Iowa Water Center)

Lead PI. Title: Understanding the impacts of corona virus-related reduction in aerosols and pollution on precipitation and discharge across Iowa
Total award: $20,000. Award to Villarini: $20,000
[09/01/2021 – 08/31/2022]

- Source of Support: US Department of Housing and Urban Development (subaward)
  Lead PI. Title: GLO Flood Studies - Region 2 (TGL20583)
  Total award: $83,020. Award to Villarini: $83,020
  [05/27/2021 – 04/26/2022]

- Source of Support: US Department of Housing and Urban Development (subaward)
  Lead PI. Title: Flood Studies within Combined River Basins For Texas (GLO): Dannenbaum
  Total award: $191,500. Award to Villarini: $191,500
  [05/11/2021 – 03/15/2023]

- Source of Support: US Department of Housing and Urban Development (subaward)
  Lead PI. Title: Probabilistic modeling of rainfall associated with tropical cyclones affecting Louisiana
  Total award: $190,095. Award to Villarini: $190,095
  [04/01/2019 – 11/01/2021]

- Source of Support: Willis Tower Watson
  Co-PI. Title: Towards Physically Based and Usable Climate Event Scenarios
  Total award: $13,457. Award to Villarini: $13,457
  [01/01/2021 – 12/31/2021]

- Source of Support: National Aeronautics and Space Administration
  Lead PI. Title: Impacts of Coronavirus-driven Reduction in Aerosols on Precipitation in the Western United States
  Total award: $63,374. Award to Villarini: $63,374
  [08/06/2020 – 02/05/2021]

- Source of Support: U.S. Army Corps of Engineers
  Lead PI. Title: 2020 IPA with USACE
  Total award: $150,000. Award to Villarini: $150,000
  [07/01/2020 – 12/31/2022]

- Source of Support: Iowa Department of Transportation
  Lead PI. Title: Projected Changes in Flood Peak Discharge across Iowa: A Flood Frequency Perspective
  Total award: $313,923. Award to Villarini: $313,923
  [03/01/2020 – 02/28/2023]

- Source of Support: National Science Foundation

Co-PI. Title: Support for Young Investigator Participation at the 8th International Conference on Flood Management (ICFM8), Iowa City, August 17-19, 2020
Total award: $45,405. Award to Villarini: $0
[12/01/2019 – 11/30/2020]

- Source of Support: Thomas Jefferson Fund
  Lead PI. Title: Attribution and Projections of Changes in Discharge Across Africa and the Euro-Mediterranean Region
  Total award: $10,000. Award to Villarini: $10,000
  [09/01/2019 – 08/31/2021]

- Source of Support: National Science Foundation
  Lead PI. Title: Quantification of the Impacts of Urban Areas on Heavy Rainfall and Flooding from North Atlantic Tropical Cyclones
  Total award: $399,934. Award to Villarini: $399,934
  [04/15/2019 – 03/31/2023]

- Source of Support: U.S. Army Corps of Engineers
  Lead PI. Title: 2018 IPA with USACE
  Total award: $160,000. Award to Villarini: $160,000
  [09/01/2018 – 12/31/2020]

- Source of Support: Center for Global & Regional Environmental Research
  Co-PI. Title: Detection, Attribution and Projection of Changes in Temperature Extremes, Heat Waves and Heat Stress across the U.S. Midwest
  Total award: $35,000. Award to Villarini: $35,000
  [07/01/2018 – 06/30/2019]

- Source of Support: US Department of Housing and Urban Development (subaward)
  Lead PI. Title: Hydrometeorological Impacts on Water Quantity and Quality across Iowa's Streams
  Total award: $253,496. Award to Villarini: $253,496
  [01/01/2017 – 12/31/2019]

- Source of Support: National Science Foundation
  Co-PI. Title: NRT-INFEWS: Paths to Sustainable Food-Energy-Water Systems in Resource-Limited Communities
  Total award: $2,999,869. Award to Villarini: $220,000
  [08/30/2016 – 08/29/2021]

- Source of Support: U.S. Army Corps of Engineers
  Lead PI. Title: Water Resources and Geospatial Analysis: Attribution of Changes and Evaluation of Actionable Climate Information across the Northern Great Plains and the Central United States
  Total award: $384,471. Award to Villarini: $384,471
  [12/28/2015 – 06/30/2018]

- Source of Support: National Oceanic and Atmospheric Administration
  Lead PI. Title: NMME Precipitation and Temperature Forecasts for the Continental United States and Europe: Diagnostic Evaluation and Development of Multi Model Applications
  Total Award: $69,999. Award to Villarini: $69,999
  [08/01/2015 – 07/31/2016]

- Source of Support: U.S. Army Corps of Engineers
  Lead PI. Title: U.S. Army Corps of Engineers (USACE) Research Participation Program - Nancy Barth
  Total Award: $165,618. Award to Villarini: $165,618
  [06/01/2015 – 05/31/2018]

- Source of Support: U.S. Geological Survey
  Lead PI. Title: Development of a Comprehensive Hazard to Loss Modeling Methodology for the Residential Damage Associated with Inland Flooding from North Atlantic Tropical Cyclones
  Total award: $119,532. Award to Villarini: $119,532
  [09/01/2014 – 08/31/2016]

- Source of Support: U.S. Army Corps of Engineers
  Lead PI. Title: IPA Agreement with USACE
  Total award: $75,000. Award to Villarini: $75,000
  [09/01/2014 – 08/31/2015]

- Source of Support: National Aeronautics and Space Administration
  Lead PI. Title: Remote-sensing Based Characterization of Rainfall Associated with Atmospheric Rivers
  Total award: $90,000. Award to Villarini: $90,000
  [09/01/2014 – 08/31/2017]

- Source of Support: Iowa Nutrient Research Center
  Lead PI. Title: Modeling of Nitrate Loads and Concentrations in the Raccoon River
  Total award: $50,000. Award to Villarini: $50,000
  [07/01/2014 – 06/30/2015]

- Source of Support: Center for Global & Regional Environmental Research
  Lead PI. Title: How Is Discharge Projected to Change for an Agricultural Watershed in Iowa Over the 21st Century?
  Total award: $30,000. Award to Villarini: $30,000
  [07/01/2014 – 06/30/2015]

- Source of Support: National Science Foundation
  Lead PI. Title: CAREER: Temporal Clustering of Hydrometeorological Extremes
  Total award: $508,405. Award to Villarini: $508,405
  [05/01/2014 – 04/30/2019]

- Source of Support: U.S. Geological Survey (via the Iowa Water Center)
  Lead PI. Title: Development of a Framework for Discharge Forecasting over Iowa
  Total award: $59,929. Award to Villarini: $59,929
  [04/15/2014 – 04/14/2016]

- Source of Support: NOAA Programs for Disaster Relief Appropriation Act –Non Construction and Construction (subaward)
  Lead PI. Title: Skillful Prediction of Seasonal Hurricane Frequency, Track and Fall
  Total award: $234,537. Award to Villarini: $234,537
  [12/01/2013 – 02/28/2018]

- Source of Support: National Science Foundation
  Lead PI. Title: Collaborative Research: Understanding and Forecasting North Atlantic and US Landfalling Tropical Cyclone Activity and Associated Rainfall
  Total award: $263,206. Award to Villarini: $263,206
  [09/01/2013 – 08/31/2016]

- Source of Support: U.S. Army Corps of Engineers
  Lead PI. Title: IPA Agreement with USACE
  Total award: $27,888. Award to Villarini: $27,888
  [09/01/2013 – 07/31/2014]

- Source of Support: U.S. Army Corps of Engineers
  Lead PI. Title: IPA Agreement with USACE
  Total award: $200,000. Award to Villarini: $200,000
  [09/26/2012 – 08/31/2014]

SERVICE:

- *January 2023 – present*: member of the American Meteorological Society (AMS) Probability and Statistics Committee.

- *October 2020 – present*: Editor-in-Chief for Advances in Water Resources.

- *April 2014 – present*: Associate Editor for Journal of Climate.

- Co-chair of the "Hydrometeorologic extremes: prediction, simulation, and change" session; AGU 2020-202e Fall Meeting.

- *July 2018 – June 2023*: Member of the Iowa Water Center Advisory Board.

- *January 2017 – June 2023*: Representative of the University of Iowa to the Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI).

- *March 2015 – September 2020*: Associate Editor for Advances in Water Resources.

- *November 2015 –2016*: member of the American Meteorological Society (AMS) Flash Flood Statement Update Team.

- *July 2010 – 2015*: member of the American Geophysical Union (AGU) Precipitation Committee.

- *January 2011 – 2014*: member of the U.S.-CLIVAR Working Group on Hurricanes and Climate.

- Co-chair of the "Hydroclimatic Extremes: Estimation and Forecasting" session; AGU 2013 Fall Meeting.

- Invited Participant, NOAA National Climate Assessment Forum on Heatwaves, Cold Waves, Floods, and Droughts, 2011.

- *November 2010:* member of a National Academy of Sciences delegation meeting with members of the Ukrainian Academy of Sciences.

- Article reviewer for: Advances in Water Resources; Annals of Geophysics; Asia-Pacific Journal of Atmospheric Sciences; Atmospheric Research; Atmospheric Science Letters; Australian Meteorological and Oceanographic Journal; Bulletin of the American Meteorological Society; Climate Dynamics; Climatic Change; Earth-science Reviews; Earth System Dynamics; Environmental Engineering and Management Journal; Environmental Research Letters; Environmental Science & Technology; Geophysical Research Letters; Hydrological Processes; Hydrological Sciences Journal; Hydrology and Earth System Sciences; IEEE Geoscience and Remote Sensing Letters; IEEE Transactions on Geoscience and Remote Sensing; International Journal of Climatology; International Journal of River Basin Management; Journal of Applied Meteorology and Climatology; Journal of Atmospheric Sciences; Journal of Climate; Journal of Flood Risk Management; Journal of Geophysical Research; Journal of Hydro-Environment Research; Journal of Hydrologic Engineering; Journal of Hydrology; Journal of Hydrometeorology; Journal of Mountain Science; Journal of the American Water Resources Association; Monthly Weather Review; Natural Hazards; Natural Hazards and Earth System Sciences; Natural Hazards Review; Nature; Nature Climate Change; Nature Communications; Nature Geoscience; One Earth; Physical Geography; Proceedings of the National Academy of Sciences; Quarterly Journal of the Royal Meteorological Society; Regional Environmental Changes; Philosophical Transactions A; Science; ScienceAsia; Scientific Reports; Stochastic Environmental Research and Risk Assessment; Tellus A; Water Resources Management; Water Resources Research; Weather and Forecasting; Weather, Climate, and Society.

- Proposal reviewer for: City University of New York; Department of Defense; Department of Energy; Deutsche Forschungsgemeinschaft (DFG); Global and Regional Environmental

Research; National Science Foundation; Netherlands Organisation for Scientific Research; U.S. Bureau of Reclamation; U.S. Geological Survey.

- Book reviewer for: American Geophysical Union; Springer.