

Curriculum Vitae

Gabriele Villarini

WORK ADDRESS

IIHR-Hydrosience & Engineering
The University of Iowa
107C C. Maxwell Stanley Hydraulics Laboratory
Iowa City, Iowa 52242
Office: (319) 384-0596
Fax: (319) 335-5238
E-mail: gabriele-villarini@uiowa.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:

February 2018 – present: Director, IIHR-Hydrosience & Engineering. The University of Iowa.

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

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

July 2016 – present: 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 – present: Assistant Research Engineer, IIHR-Hydrosience & 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 – Hydrosience & 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

January 2003 – June 2003: Research Assistant, Environmental Sciences, State University of New York, Purchase College

AWARDS AND FELLOWSHIPS:

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)

PEER-REVIEWED PAPERS:

1. Neri, A., G. Villarini, K. Salvi, L.J. Slater, and F. Napolitano, On the decadal predictability of the frequency of flood events across the U.S. Midwest, *s International Journal of Climatology*, 2018 (in press).

2. Ayers, J.R., **G. Villarini**, C.S. Jones, and K.E. Schilling, Changes in monthly baseflow across the U.S. Midwest, *Hydrological Processes*, 2018 (in press).
3. Zhang, W., and **G. Villarini**, Seasonal forecasting of Western North Pacific tropical cyclone frequency using the North American Multi-Model Ensemble, *Climate Dynamics*, 2018 (in press).
4. Barth, N.A., **G. Villarini**, and K. White, Accounting for mixed populations in flood frequency analysis: A Bulletin 17C perspective, *Journal of Hydrologic Engineering*, 2018 (in press).
5. Zhang, W., **G. Villarini**, G.A. Vecchi, and H. Murakami, Rainfall from tropical cyclones: High-resolution simulations and seasonal forecasts, *Climate Dynamics*, 2018 (in press).
6. Black, A.W., and **G. Villarini**, Effects of methodological decisions on rainfall-related crash risk estimates, *Accident Analysis & Prevention*, 2018 (in press).
7. Zhang, W., **G. Villarini**, and G.A. Vecchi, Impacts of Pacific Meridional Mode on rainfall over the Maritime Continent and Australia: Potential for seasonal predictions, *Climate Dynamics*, 2018 (in press).
8. Slater, L.J., **G. Villarini**, A.A. Bradley, and G.A. Vecchi, A statistical/dynamical framework for seasonal streamflow forecasting in an agricultural watershed, *Climate Dynamics*, 2018 (in press).
9. **Villarini G.**, B. Luitel, G.A. Vecchi, and J. Ghosh, Multi-model ensemble forecasting of North Atlantic tropical cyclone activity, *Climate Dynamics*, 2018 (in press).
10. Slater, L.J., **G. Villarini**, and A.A. Bradley, Evaluation of the skill of North-American Multi-Model Ensemble (NMME) global climate models in predicting average and extreme precipitation and temperature over the continental USA, doi:10.1007/s00382-016-3286-1, *Climate Dynamics*, 2018 (in press).
11. Zhang, W., **G. Villarini**, G.A. Vecchi, and J.A. Smith, Urbanization exacerbated the rainfall and flooding caused by hurricane Harvey in Houston, *Nature*, 563, 384-388, 2018.
12. Barth, N.A., **G. Villarini**, and K. White, Contribution of tropical cyclones and their remnants on flooding in the Western United States, *International Journal of Climatology*, 38, 5441-5446, 2018.
13. Giuntoli, I., **G. Villarini**, C. Prudhomme, and D.M. Hannah, Uncertainties in projected runoff over the conterminous United States, *Climatic Change*, 150(3), 149-162, 2018.
14. Rios Gaona, M.F., and **G. Villarini**, Characterization of the diurnal cycle of maximum rainfall in tropical cyclones, *Journal of Hydrology*, 564, 997-1007, 2018.

15. Slater, L.J., and **G. Villarini**, Enhancing the predictability of seasonal streamflow via a statistical-dynamical approach, *Geophysical Research Letters*, 45, 6504-6513, 2018.
16. Dhanya, C.T., and **G. Villarini**, On the inherent predictability of precipitation across the United States, *Theoretical and Applied Climatology*, 133, 1035-1050, 2018.
17. Aryal, Y.N., **G. Villarini**, W. Zhang, and G.A. Vecchi, Long term changes in flooding and heavy rainfall associated with North Atlantic tropical cyclones: Roles of the North Atlantic Oscillation and El Niño-Southern Oscillation, *Journal of Hydrology*, 559, 698-710, 2018.
18. Rios Gaona, M.F., **G. Villarini**, W. Zhang, and G.A. Vecchi, The added value of IMERG in characterizing rainfall in tropical cyclones, *Atmospheric Research*, 209, 95-102, 2018.
19. Zhang, W., **G. Villarini**, G.A. Vecchi, and H. Murakami, Impacts of the Pacific Meridional Mode on landfalling North Atlantic tropical cyclones, *Climate Dynamics*, 50(3-4), 991-1006, 2018.
20. Zhang, W., and **G. Villarini**, Uncovering the role of the East Asian jet stream and heterogeneities in atmospheric rivers affecting the western United States, *Proceedings of the National Academy of Sciences of the United States of America*, 115(5), 891-896, 2018.
21. Zhang, W., G.A. Vecchi, H. Murakami, **G. Villarini**, T. Delworth, X. Yang, and L. Jia, Dominant role of Atlantic Multidecadal Oscillation in the recent decadal changes in western North Pacific tropical cyclone activity, *Geophysical Research Letters*, 45, 354-362, 2018.
22. Nayak, M.A., and **G. Villarini**, Remote sensing-based characterization of rainfall during atmospheric rivers over the central United States, *Journal of Hydrology*, 556, 1038-1049, 2018.
23. Luitel, B., **G. Villarini**, and G.A. Vecchi, Verification of the skill of numerical weather prediction models in forecasting rainfall from U.S. landfalling tropical cyclones, *Journal of Hydrology*, 556, 1026-1037, 2018.
24. **Villarini, G.**, and L.J. Slater, Examination of changes in annual maximum gage height in the continental United States using quantile regression, *Journal of Hydrologic Engineering*, 23(3), 1-5, 2018.
25. Zhang, W., and **G. Villarini**, Extreme precipitation is highly sensitive to the magnitude of future warming, *Climatic Change*, 145, 249-257, 2017.

26. Salvi, K., **G. Villarini**, G.A. Vecchi, and S. Ghosh, Decadal temperature predictions over the continental United States: Analysis and enhancement, *Climate Dynamics*, 49, 3587-3604, 2017.
27. Zhang, W., **G. Villarini**, L. Slater, G.A. Vecchi, and A.A. Bradley, Improved ENSO forecasting using Bayesian updating and the North American Multi Model Ensemble (NMME), *Journal of Climate*, 30, 9007-9025, 2017.
28. Bin, O. J. Czajkowski, J. Li, and **G. Villarini**, Housing market fluctuations and the implicit price of water quality: Empirical evidence from a South Florida housing market, *Environmental and Resource Economics*, 68, 319-341, 2017.
29. Mallakpour, I., and **G. Villarini**, Analysis of changes in the magnitude, frequency, and seasonality of heavy precipitation over the contiguous United States, *Theoretical and Applied Climatology*, 130, 345-363, 2017.
30. Slater, L.J., and **G. Villarini**, Evaluating the drivers of seasonal streamflow in the U.S. Midwest, *Water*, 9(9), 1-22, 2017.
31. Salvi, K., **G. Villarini**, and G.A. Vecchi, High resolution decadal precipitation predictions over the continental United States for impacts assessment, *Journal of Hydrology*, 553, 559-573, 2017.
32. **Villarini, G.**, A. Khouakhi, and E. Cunningham, On the impacts of computing daily temperatures as the average of the daily minimum and maximum temperatures, *Atmospheric Research*, 198, 145-150, 2017.
33. Zhang, W., **G. Villarini**, E. Scoccimarro, and G.A. Vecchi, Stronger influences of increased CO₂ on sub-daily precipitation extremes than at the daily scale, *Geophysical Research Letters*, 44, 7464-7471, 2017.
34. Slater, L.J., and **G. Villarini**, On the impact of gaps on trend detection in extreme streamflow time series, *International Journal of Climatology*, 37(10), 3976-3983, 2017.
35. Slater, L.J., **G. Villarini**, and A.A. Bradley, Weighting of NMME temperature and precipitation forecasts across Europe, *Journal of Hydrology*, 552, 646-659, 2017.
36. Weiss, T.L., R.F. Denniston, A.D. Wanamaker, **G. Villarini**, and A.S. von der Heydt, El Niño-Southern Oscillation-like variability in a late Miocene Caribbean coral, *Geology*, 45(7), 643-646, 2017.
37. Mallakpour, I., **G. Villarini**, M.P. Jones, and J.A. Smith, On the use of Cox regression to examine the temporal clustering of flooding and heavy precipitation across the central United States, *Global and Planetary Change*, 155, 98-108, 2017.

38. Zhang, W., and **G. Villarini**, On the unseasonal flooding over the central United States during December 2015 and January 2016, *Atmospheric Research*, 196, 23-28, 2017.
39. Zhang, W., G.A. Vecchi, **G. Villarini**, H. Murakami, R. Gudgel, and X. Yang, Statistical-dynamical seasonal forecast of Western North Pacific and East Asia landfalling tropical cyclones using the GFDL FLOR coupled climate model, 30(6), 2209-2232, *Journal of Climate*, 2017.
40. Zhang, W., **G. Villarini**, and G.A. Vecchi, Impacts of the Pacific Meridional Mode on June-August precipitation in the Amazon River Basin, *Quarterly Journal of the Royal Meteorological Society*, 143, 1936-1945, 2017.
41. Nayak, M.A., and **G. Villarini**, A long-term perspective of the hydroclimatological impacts of atmospheric rivers over the central United States, *Water Resources Research*, 53, 1144-1166, 2017.
42. Barth, N.A., **G. Villarini**, M. Nayak, and K. White, Mixed populations and annual flood frequency estimates in the western United States: The role of atmospheric rivers, *Water Resources Research*, 53, 257-269, 2017.
43. Czajkowski, J., **G. Villarini**, M. Montgomery, E. Michel-Kerjan, and R. Goska, Assessing current and future freshwater flood risk from North Atlantic tropical cyclones via insurance claims, *Scientific Reports*, 7, 1-10, 2017.
44. Black, A.W., **G. Villarini**, and T.L. Mote, Effects of rainfall on vehicle crashes in six U.S. states, *Weather, Climate, and Society*, 9, 53-70, 2017.
45. Zhang, W., G.A. Vecchi, **G. Villarini**, H. Murakami, A. Rosati, X. Yang, L. Jia, and F. Zeng, Modulation of Western North Pacific tropical cyclone activity by the Atlantic Meridional Mode, *Climate Dynamics*, 48(1), 631-647, 2017.
46. Khouakhi, A., and **G. Villarini**, Attribution of annual maximum sea levels to tropical cyclones at the global scale, *International Journal of Climatology*, 37, 540-547, 2017.
47. Khouakhi, A., **G. Villarini**, and G.A. Vecchi, Contribution of tropical cyclones to rainfall at the global scale, *Journal of Climate*, 30, 359-372, 2017.
48. Dhanya, C.T., and **G. Villarini**, An investigation of predictability dynamics of temperature and precipitation in reanalysis datasets over the continental United States, *Atmospheric Research*, 183, 341-350, 2017.
49. Slater, L.J., and **G. Villarini**, Recent trends in US flood risk, *Geophysical Research Letters*, 43(24), 12428-12436, 2016.
50. Zhang, W., G.A. Vecchi, H. Murakami, **G. Villarini**, T.L. Delworth, K. Paffendorf, R. Gudgel, L. Jia, F. Zeng, and X. Yang, Influences of natural variability and anthropogenic

forcing on the extreme 2015 accumulated cyclone energy in the Western North Pacific [in “Explaining Extremes of 2015 from a Climate Perspective”], *Bulletin of the American Meteorological Society*, 97(12), S131-S135, 2016.

51. **Villarini G.**, C.S. Jones, and K.E. Schilling, Soybean area and baseflow driving Raccoon River nitrate, *Journal of Environmental Quality*, 45(6), 1949-1959, 2016.
52. Zhang, W., G.A. Vecchi, **G. Villarini**, H. Murakami, T. Delworth, L. Jia, R. Gudgel, and F. Zeng, Simulated connections between ENSO and tropical cyclones near Guam in a high-resolution GFDL coupled climate model: Implications for seasonal forecasting, *Journal of Climate*, 29, 8231-8248, 2016.
53. Murakami, H., G.A. Vecchi, **G. Villarini**, T. Delworth, R. Gudgel, S. Underwood, X. Yiang, W. Zhang, and S.-J. Lin, Seasonal forecasts of major hurricanes and landfalling tropical cyclones using a high-resolution GFDL coupled climate model, *Journal of Climate*, 29, 7977-7989, 2016.
54. Denniston, R.F., C.C. Ummenhofer, A.D. Wanamaker, M.S. Lachniet, **G. Villarini**, Y. Asmerom, V.J. Polyak, K.J. Passaro, J. Cugley, D. Woods, and W.F. Humphreys, Expansion and contraction of the Indo-Pacific tropical rain belt over the last three millennia, *Scientific Reports*, 6, 1-9, 2016.
55. Khouakhi, A., and **G. Villarini**, On the relationship between atmospheric rivers and high sea water levels along the U.S. West Coast, *Geophysical Research Letters*, 43, 8815-8822, 2016.
56. Zhang, W., **G. Villarini**, G.A. Vecchi, H. Murakami, and R. Gudgel, Statistical-dynamical seasonal forecast of western North Pacific and East Asia landfalling tropical cyclones using the High-Resolution GFDL FLOR coupled model, *Journal of Advances in Modeling Earth Systems*, 8, 538-265, 2016.
57. **Villarini G.**, K.E. Schilling, and C.S. Jones, Assessing the relation of USDA conservation expenditures to suspended sediment reductions in an Iowa watershed, *Journal of Environmental Management*, 180, 375-383, 2016.
58. Murakami, H., **G. Villarini**, G.A. Vecchi, W. Zhang, and R. Gudgel, Statistical-dynamical seasonal forecast of North Atlantic and U.S. landfalling tropical cyclones using the high-Resolution GFDL FLOR Coupled Model, *Monthly Weather Review*, 144(6), 2101-2123, 2016.
59. Mallakpour, I., and **G. Villarini**, Investigating the relationship between the frequency of flooding over the central United States and large-scale climate, *Advances in Water Resources*, 92, 159-171, 2016.
60. Zhang, W., G.A. Vecchi, H. Murakami, T. Delworth, A. Wittenberg, W. Anderson, A. Rosati, S. Underwood, L. Harris, R. Gudgel, S.-J. Lin, **G. Villarini**, and J.-H. Chen,

- Improved simulation of tropical cyclone responses to ENSO in the western North Pacific in the high-resolution GFDL HiFLOR coupled climate model, *Journal of Climate*, 29(4), 1391-1415, 2016.
61. Zhang, W., G.A. Vecchi, H. Murakami, **G. Villarini**, and L. Jia, The Pacific Meridional Mode and the occurrence of tropical cyclones in the Western North Pacific, *Journal of Climate*, 29(1), 381-398, 2016.
 62. Mallakpour, I., and **G. Villarini**, A simulation study to examine the sensitivity of the Pettitt test to detect abrupt changes in mean, *Hydrological Sciences Journal*, 61(2), 245-254, 2016.
 63. **Villarini, G.**, and R.F. Denniston, Contribution of tropical cyclones to extreme rainfall in Australia, *International Journal of Climatology*, 36(2), 1019-1025, 2016.
 64. Nayak, M., and **G. Villarini**, Evaluation of the capability of the Lombard test in detecting abrupt changes in variance, *Journal of Hydrology*, 534, 451-465, 2016.
 65. Nayak, M.A., **G. Villarini**, and A.A. Bradley, Atmospheric rivers and rainfall during NASA's Iowa Flood Studies (IFloodS) campaign, *Journal of Hydrometeorology*, 17(1), 257-271, 2016.
 66. **Villarini, G.**, On the seasonality of flooding across the continental United States, *Advances in Water Resources*, 87, 80-91, 2016.
 67. Little, C.M., R.M. Horton, R.E. Kopp, M. Oppenheimer, G. Vecchi, and **G. Villarini**, Joint projections of US East Coast sea level and storm surge, *Nature Climate Change*, 5, 1114-1120, 2015.
 68. Giuntoli, I., **G. Villarini**, C. Prudhomme, I. Mallakpour, and D. Hannah, Evaluation of global impact models ability to reproduce runoff characteristics over the central United States, *Journal of Geophysical Research*, 120, 9138-9159, 2015.
 69. **Villarini, G.**, E. Scoccimarro, K.D. White, J.R. Arnold, K.E. Schilling, and J. Ghosh, Projected changes in discharge in an agricultural watershed in Iowa, *Journal of the American Water Resources Association*, 51(5), 1361-1371, 2015.
 70. Knutson, T., J. Sirutis, M. Zhao, R. Tuleya, M. Bender, G.A. Vecchi, **G. Villarini**, and D. Chavas, Global projections of intense tropical cyclone activity for the late 21st century from dynamical downscaling of CMIP5/RCP4.5 scenarios, *Journal of Climate*, 28(18), 7203-7224, 2015.
 71. Denniston, R.F., **G. Villarini**, A.N. Gonzales, V.J. Polyak, C.C. Ummenhofer, M.S. Lachniet, A.D. Wannamaker, W.F. Humphreys, D. Woods, and J. Cugley, Reply to Nott: Assessing biases in speleothem records of flood events, *Proceedings of the National Academy of Sciences of the United States of America*, 112(34), E4637, 2015.

72. Scoccimarro, E., **G. Villarini**, M. Vichi, M. Zampieri, P.G. Fogli, A. Bellucci, and S. Gualdi, Projected changes in intense precipitation over Europe at the daily and sub-daily time scales, *Journal of Climate*, 28(15), 6193-6203, 2015.
73. Yeung, J.K., J.A. Smith, M.L. Baeck, and **G. Villarini**, Lagrangian analyses of rainfall structure and evolution for organized thunderstorm systems in the urban corridor of the Northeastern US, *Journal of Hydrometeorology*, 16(4), 1575-1595, 2015.
74. Bates, N.S., J.A. Smith, and **G. Villarini**, Flood response for the watersheds of the Fernow experimental forest in the central Appalachians, *Water Resources Research*, 51(6), 4431-4453, 2015.
75. Walsh, K.J.E., S.J. Camargo, G.A. Vecchi, A.S. Daloz, J. Elsner, K. Emanuel, M. Horn, Y.-K. Lim, M. Roberts, C. Patricola, E. Scoccimarro, A.H. Sobel, S. Strazzo, **G. Villarini**, M. Wehner, M. Zhao, J. Kossin, T. LaRow, K. Oouchi, S. Schubert, H. Wang, J. Bacmeister, P. Chang, F. Chauvin, C. Jablonowski, H. Murakami, T. Ose, K.A. Reed, R. Saravanan, Y. Yamada, C.M. Zarzycki, P.L. Vidale, J.A. Jonas, and N. Henderson, Hurricanes and climate: the U.S. CLIVAR working group on hurricanes, *Bulletin of the American Meteorological Society*, 96(6), 997-1017, 2015.
76. Lavers, D.A., and **G. Villarini**, The relationship between daily European precipitation and measures of atmospheric water vapour transport, *International Journal of Climatology*, 35(8), 2187-2192, 2015.
77. Denniston, R.F., **G. Villarini**, A.N. Gonzales, K.-H. Wyrwoll, V.J. Polyak, C.C. Ummenhofer, M.S. Lachniet, A.D. Wannamaker, W.F. Humphreys, D. Woods, and J. Cugley, Extreme rainfall activity in the Australian tropics reflects changes in the El Niño/Southern Oscillation over the last two millennia, *Proceedings of the National Academy of Sciences of the United States of America*, 112(15), 4576-4581, 2015.
78. Mallakpour, I., and **G. Villarini**, The changing nature of flooding across the central United States, *Nature Climate Change*, 5, 250-254, 2015.
79. Lavers, D.A., and **G. Villarini**, The contribution of atmospheric rivers to precipitation in Europe and the United States, *Journal of Hydrology*, 522, 382-390, 2015.
80. **Villarini, G.**, R. Goska, J.A. Smith, and G.A. Vecchi, North Atlantic tropical cyclones and U.S. flooding, *Bulletin of the American Meteorological Society*, 95(9), 1381-1388, 2014.
81. Vecchi, G.A., T. Delworth, R. Gudgel, S. Kapnick, A. Rosati, A. Wittenberg, F. Zeng, W. Anderson, V. Balaji, K. Dixon, L. Jia, H.-S. Kim, L. Krishnamurthy, R. Msadek, W.F. Stern, S.D. Underwood, **G. Villarini**, X. Yang, and S. Zhang, On the seasonal forecasting of regional tropical cyclone activity, *Journal of Climate*, 27, 7994-8016, 2014.

82. Chaney, N.W., J. Sheffield, **G. Villarini**, and E.F. Wood, Development of a high resolution gridded daily meteorological data set over Sub-Saharan Africa: Spatial analysis of trends in climate extremes, *Journal of Climate*, 27(15), 5815-5835, 2014.
83. Nayak, M.A., **G. Villarini**, and D.A. Lavers, On the skill of numerical weather prediction models to forecast atmospheric rivers over the central United States, *Geophysical Research Letter*, 41, 4354-4362, 2014.
84. Ferguson, C.R., and **G. Villarini**, An evaluation of the statistical homogeneity of the Twentieth Century Reanalysis, *Climate Dynamics*, 42(11-12), 2841-2866, 2014.
85. Scoccimarro, E., S. Gualdi, **G. Villarini**, G.A. Vecchi, M. Zhao, K. Walsh, and A. Navarra, Intense precipitation events associated with landfalling tropical cyclones in response to a warmer climate and increased CO₂, *Journal of Climate*, 27(12), 4642-4654, 2014.
86. **Villarini, G.**, D.A. Lavers, E. Scoccimarro, M. Zhao, M.F. Wehner, G.A. Vecchi, T.R. Knutson, and K.A. Reed, Sensitivity of tropical cyclone rainfall to idealized global scale forcings, *Journal of Climate*, 27(12), 4622-4641, 2014.
87. Wright, D.B., J.A. Smith, **G. Villarini**, and M.L. Baeck, Long-term high-resolution radar rainfall fields for urban hydrology, *Journal of the American Water Resources Association*, 50(3), 713-734, 2014.
88. Fox, J. W. Ford, K. Strom, **G. Villarini**, and M. Meehan, Benthic control upon the morphology of transported fine sediments in a low-gradient stream, *Hydrological Processes*, 28(11), 3776-3788, 2014.
89. **Villarini, G.**, and A. Strong, Roles of climate and agricultural practices in discharge changes in an agricultural watershed in Iowa, *Agriculture, Ecosystems and Environment*, 188, 204-211, 2014.
90. Vecchi, G.A., and **G. Villarini**, Next season's hurricanes, *Science*, 343(6171), 618-619, 2014.
91. Vecchi, G.A., R. Msadek, W. Anderson, Y.-S. Chang, T. Delworth, K. Dixon, R. Gudgel, A. Rosati, W. Stern, **G. Villarini**, A. Wittenberg, X. Yang, F. Zeng, R. Zhang, and S. Zhang, Reply to comments on "Multi-year predictions of North Atlantic hurricane frequency: Promise and limitations," *Journal of Climate*, 27(1), 490-492, 2014.
92. **Villarini, G.**, B.-C. Seo, F. Serinaldi, and W.F. Krajewski, Spatial and temporal modeling of radar rainfall uncertainties, *Atmospheric Research*, 135-136, 91-101, 2014.

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- Mandapaka, P.V., W.F. Krajewski, G.J. Ciach, and **G. Villarini**, Estimation of radar-rainfall error spatial covariance, *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract H33E-1422, 2005.
- **Villarini, G.**, W.F. Krajewski, and G.J. Ciach, Empirical characterization of radar rainfall uncertainties: preliminary results, *International Conference on Civil and Environmental Engineering 2005*, Hiroshima, Japan, October 26-27, 2005.

- Ciach, G.J., W.F. Krajewski, **G. Villarini**, D. Kitzmiller, and R.A. Fulton, Ensemble generator of radar-based QPE, *32nd Conference on Radar Meteorology*, Albuquerque, New Mexico, October 24-29, 2005.
- Ciach, G.J., W.F. Krajewski, and **G. Villarini**, Radar based probabilistic quantitative precipitation estimation: first results of large sample data analysis, *Eos Trans. AGU*, Jt. Assem. Suppl., Abstract H43E-06, 2005.
- Krajewski, W.F., and **G. Villarini**, Radar-rainfall, uncertainties: implications for flash-flood forecasting and rainfall modeling, *New Frontiers in Hydrology*, 3rd CNR-Princeton Workshop, May 18-20, 2005.
- Krajewski, W.F., G.J. Ciach, and **G. Villarini**, Towards probabilistic quantitative precipitation estimation, *HFP Workshop*, Montreal, Canada, May 9-12, 2005.
- **Villarini, G.**, Effects of observational uncertainties on the estimated multifractal properties in radar rainfall fields, *The University of Iowa 2005 Seventh Annual James F. Jakobsen Graduate Forum*, Iowa City, April 29-30, 2005.
- Krajewski, W.F., G.J. Ciach, and **G. Villarini**, Towards uncertainty-based forecasting of rainfall-induced hazards, *General Assembly, EGU*, Vienna, Austria, April 24-29, 2005.
- **Villarini, G.**, G.J. Ciach, and W.F. Krajewski, Effects of observational uncertainties on the estimated multifractal properties in radar rainfall fields, *The University of Iowa College of Engineering 3rd Research Open House*, Iowa City, April 7, 2005.
- **Villarini G.**, G.J. Ciach, and W.F. Krajewski, Effects of observational uncertainties on the estimated multifractal properties in radar rainfall fields. *8th International Conference on Precipitation*, Vancouver, Canada, August 8-11, 2004.
- **Villarini, G.**, G.J. Ciach, and W.F. Krajewski, Multifractal analyses of radar rainfall fields - effects of the uncertainties, *The University of Iowa College of Engineering 2nd Research Open House*, Iowa City, April 29, 2004.
- **Villarini G.**, and G.J. Ciach, Multifractal analyses of radar rainfall fields – effects of the uncertainties. *Eos Trans. AGU*, 85 (17), Joint Assembly Suppl., Abstract NG23A-04, 2004.
- Gorokhovich Y., and **G. Villarini**, Study of correlation between weather radar reflectivity and precipitation data in continental United States using free Internet resources. *Remote Sensing 2003 Conference*, Barcelona, Spain, September 8-12. Vol. 5232, 616-626, 2003.

SEMINARS:

- **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*, IHR-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-)

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-)

Ph.D. Students

- Iman Mallakpour (2012-2016)
- Munir Nayak (2013-2016)
- Nancy Barth (2015-2018)
- Jessica Ayers (2017-)

- Zhiqi Yang (2017-)
- William Veatch (2018-)

M.S. Students

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

Undergraduate Students

- Anda Shi (2014-2015)
- Alexa Hanson (2016-2017)

Visiting Students and Researchers

- Ignazio Giuntoli (2014)
- Dr. Dhanya C.T. (2015)
- Evan Cunningham (2016)
- Andrea Neri (2017-2018)
- Arianna Miniussi (2018-)

FUNDED PROJECTS:

- Source of Support: U.S. Army Corps of Engineers
Lead PI. Title: 2018 IPA with USACE
Award: \$100,000 [09/01/2018 – 07/01/2020]
- 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
Award: \$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
Award: \$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
Award: \$2,999,869 [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

Award: \$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
Award: \$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
Award: \$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
Award: \$119,532 [09/01/2014 – 08/31/2016]
- Source of Support: U.S. Army Corps of Engineers
Lead PI. Title: IPA Agreement with USACE
Award: \$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
Award: \$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
Award: \$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?
Award: \$30,000 [07/01/2014 – 06/30/2015]
- Source of Support: National Science Foundation
Lead PI. Title: CAREER: Temporal Clustering of Hydrometeorological Extremes
Award: \$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

Award: \$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
Award: \$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
Award: \$263,206 [09/01/2013 – 08/31/2016]
- Source of Support: U.S. Army Corps of Engineers
Lead PI. Title: IPA Agreement with USACE
Award: \$27,888 [09/01/2013 – 07/31/2014]
- Source of Support: U.S. Army Corps of Engineers
Lead PI. Title: IPA Agreement with USACE
Award: \$200,000 [09/26/2012 – 08/31/2014]

SERVICE:

- *July 2018 – present:* Member of the Iowa Water Center Advisory Board.
- *January 2017 – present:* Representative of the University of Iowa to the Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI).
- *March 2015 – present:* Associate Editor for *Advances in Water Resources*.
- *April 2014 – present:* Associate Editor for *Journal of Climate*.
- *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*; *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*; *Physical Geography*; *Proceedings of the National Academy of Sciences*; *Quarterly Journal of the Royal Meteorological Society*; *Regional Environmental Changes*; *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; 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.