NASSER NAJIBI

Postdoctoral Associate
Department of Biological and Environmental Engineering
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APPOINTMENTS

Postdoctoral Associate, Cornell University, NY, USA	Aug. 2019–Present
ORISE Postdoctoral Fellow, US Army Corps of Engineers, DoD, USA	Mar. 2021–Jun. 2023
Graduate Research/Teaching Assistant, The City College of New York, USA	Jan. 2015–Jul. 2019
Graduate Research Assistant, Chinese Academy of Sciences, CHINA	Aug. 2011–2014

EDUCATION

Ph.D., Civil Engineering (Environmental and Water Resources Engineering) — Jan. 2015–Jul. 2019
City **U**niversity of **N**ew **Y**ork, The City College of New York — New York, USA
Dissertation: *Hydroclimate Drivers and Atmospheric Dynamics of Floods*
Advisor: Naresh Devineni
Committee Members: Balázs M. Fekete, Anil K. Agrawal, James F. Booth, Amir AghaKouchak

M.Phil., Civil Engineering — Jan. 2015–2017
City **U**niversity of **N**ew **Y**ork, The City College of New York — New York, USA

M.Sc., Geodesy and Remote Sensing — Sep. 2011–Jul. 2014
University of **C**hinese **A**cademy of **S**ciences — Beijing, CHINA

B.Sc., Civil and Surveying Engineering *(Magna Cum Laude)* — Sep. 2007–Jul. 2011
University of **T**ehran — Tehran, IRAN

RESEARCH INTERESTS

Water Resources, Extreme Events, Hydroclimatology
Floods, Compound Events, Climate Risk, Stochastic Methods, AI/ML Applications
Climate Change, Impacts Modeling, Sustainable Water Resources Management
Weather Generators, Atmospheric Dynamics, Remote Sensing, Decision Scaling

AWARDS & HONORS

Oak Ridge Institute for Science and Education (ORISE) Postdoctoral Fellowship	Mar. 2021
Review Panelist for NASA CYGNSS Science Team	Feb. 2021
Expert Reviewer of IPCC 6th Assessment Reports WG1 and WG2 (AR6)	Jan. 2021
Top Peer Reviewer in Geosciences Award	2018–2019
MDPI-Remote Sensing Outstanding Reviewer Award	Mar. 2019
SEAL (Sustainability, Environmental Achievement and Leadership) Award and Grant	Jun. 2018
NOAA/CESSRST HIRES and NSF-REU Summer Mentorship Fellowship	2017–2018
City University of New York Science Fellowship	Sep. 2014
Travel Grant Support by Center for Study of Biosphere from Space (CESBIO)	May. 2013
UCAS Excellent Student Award	Jul. 2012
UCAS M.Sc. Full Scholarship Award	Sep. 2011
UT Fellowship Award for M.Sc. Program	Sep. 2011
Ranked 4th in Civil/Surveying Eng. of UT Class 2011 (Magna Cum Laude)	Jul. 2011
University of Tehran B.Sc. Scholarship	Sep. 2007

GRANTS

U.S. Department of Defense (DoD), Army Corps of Engineers, Engineer Research and Development Center - Environmental Laboratory (ERDC-EL) 2021–2023
$267,712 (PI)

SEAL (Sustainability, Environmental Achievement and Leadership) Environment Grant 2018–2019
$2000 (PI)

PUBLICATIONS

*Lead Author: 13; +Co-Author: 4 {+450 citations; h-index=8} [Google Scholar link] [ResearchGate link] [ORCiD Profile]

Peer-Reviewed Journal Papers

(Published)

[J 17] **Najibi, N.***, N. Devineni, and U. Lall (2023). Compound continental risk of multiple extreme floods in the United States. *Geophysical Research Letters*, 50(21), e2023GL105297, 1–14. DOI: 10.1029/2023gl105297.

[J 16] **Najibi, N.*** and S. Steinschneider (2023). Extreme precipitation-temperature scaling in California: The role of atmospheric rivers. *Geophysical Research Letters*, 50(14), e2023GL104606, 1–11. DOI: 10.1029/2023gl104606.

[J 15] Song, Y., M. Kalacska, M. Gašparović, J. Yao, and **N. Najibi+** (2023). Advances in geocomputation and geospatial artificial intelligence (GeoAI) for mapping. *International Journal of Applied Earth Observation and Geoinformation*, 120, 103300, 1–6. DOI: 10.1016/j.jag.2023.103300.

[J 14] **Najibi, N.*** and N. Devineni (2023). Scaling of floods with geomorphologic characteristics and precipitation variability across the conterminous United States. *Water Resources Research*, 59(2), e2022WR032815, 1–33. DOI: 10.1029/2022wr032815.

[J 13] Shi, H., B. Sivakumar, S. Liu, X. Tan, and **N. Najibi+** (2022). Extreme hydro-climate events: Past, present, and future. *Atmosphere*, 13(843), 1–2. DOI: 10.3390/atmos13050843.

[J 12] **Najibi, N.***, S. Mukhopadhyay, and S. Steinschneider (2022). Precipitation scaling with temperature in the Northeast US: Variations by weather regime, season, and precipitation intensity. *Geophysical Research Letters*, 49(8), e2021GL097100, 1–14. DOI: 10.1029/2021gl097100.

[J 11] Steinschneider, S. and **N. Najibi+** (2022). Observed and projected scaling of daily extreme precipitation with dew point temperature at annual and seasonal scales across the Northeastern United States. *Journal of Hydrometeorology*, 23(3), 403–419. DOI: 10.1175/jhm-d-21-0183.1.

[J 10] **Najibi, N.***, S. Mukhopadhyay, and S. Steinschneider (2021). Identifying weather regimes for regional-scale stochastic weather generators. *International Journal of Climatology*, 41(4), 2456–2479. DOI: 10.1002/joc.6969.

[J 9] **Najibi, N.***, A. Mazor, N. Devineni, C. Mossel, and J.F. Booth (2020). Understanding the spatial organization of simultaneous heavy precipitation events over the conterminous United States. *Journal of Geophysical Research: Atmospheres*, 125(23), e2020jd033036, 1–33. DOI: 10.1029/2020jd033036.

[J 8] **Najibi, N.***, N. Devineni, M. Lu, and R.A. Perdigão (2019). Coupled flow accumulation and atmospheric blocking govern flood duration. *npj Climate and Atmospheric Science*, 2(1), 19, 1–13. DOI: 10.1038/s41612-019-0076-6. [**Highlighted by the Editor-in-Chief and several media coverages, e.g., *United Nations Office for Disaster Risk Reduction (UN-DRR)*, *Homeland Security News Wire*, *Smart Water Magazine*, *The Water Network*]

[J 7] **Najibi, N.*** and N. Devineni (2018). Recent trends in the frequency and duration of global floods. *Earth System Dynamics*, 9, 757–783. DOI: 10.5194/esd-9-757-2018.

[J 6] **Najibi, N.***, N. Devineni, and M. Lu (2017). Hydroclimate drivers and atmospheric teleconnections of long duration floods: An application to large reservoirs in the Missouri River Basin. *Advances in Water Resources*, 100, 153–167. DOI: 10.1016/j.advwatres.2016.12.004.

[J 5] **Najibi, N.***, S.G. Jin, and W.X. Rui (2015). Validating the variability of snow accumulation and melting from GPS reflected signals: Forward modeling. *IEEE Transactions on Antenna and Propagation*, 63(6), 2646–2654. DOI: 10.1109/tap.2015.2414950.

[J 4] Jin, S.G. and **N. Najibi*** (2014). Sensing snow height and surface temperature variations in Greenland from GPS reflected signals. *Advances in Space Research*, 53(11), 1623–1633. DOI: 10.1016/j.asr.2014.03.005.

[J 3] Jahandideh, S., A. Azizi, and **N. Najibi**+ (2014). Numerical evaluation and application-oriented analysis for forward and inverse rational function models of terrain-independent case in satellite imagery. *Geodesy and Cartography*, 40(3), 99–109. DOI: 10.3846/20296991.2014.962731.

[J 2] **Najibi, N.*** and S.G. Jin (2013). Physical reflectivity and polarization characteristics for snow and ice-covered surfaces interacting with GPS signals. *Remote Sensing*, 5(8), 4006–4030. DOI: 10.3390/rs5084006.

[J 1] **Najibi, N.*** and R. Arabsheibani (2013). Snow-covered surface variability and DEM generation using aerial photogrammetry in Mount Odin, Canada. *Geodesy and Cartography*, 39(3), 113–120. DOI: 10.3846/20296991.2013.823704.

(In revision or submitted; drafts are available upon request)

[W 1] **Najibi, N.**, A.J. Perez, W. Arnold, A. Schwarz, R. Maendly, and S. Steinschneider, 2023, "Developing a statewide, weather-regime based stochastic weather generator for process-based bottom-up climate risk assessments in California –Part I: Model evaluation", *Climate Services*, submitted.

[W 2] **Najibi, N.**, A.J. Perez, W. Arnold, A. Schwarz, R. Maendly, and S. Steinschneider, 2023, "Developing a statewide, weather-regime based stochastic weather generator for process-based bottom-up climate risk assessments in California –Part II: Thermodynamic and dynamic climate change scenarios", *Climate Services*, submitted.

Book Chapter

[B 1] **Najibi, N.**, and S.G. Jin, 2015, "Surface reflectance characteristics and snow surface variations from GNSS reflected signals", in S. Jin (Ed.), *Satellite Positioning: Methods, Models and Applications*, InTech-Publisher, Rijeka, Croatia, ISBN: 978-953-51-1738-4, pp. 187–203. http://doi.org/10.5772/58886

Conference Presentations (past five years)

[C 7] **Najibi, N.**, A. Weyant, A.J. Perez, W. Arnold, A. Schwarz, A. Gershunov, R. Maendly, and S. Steinschneider, *A Statewide, weather-regime based stochastic weather generator for California*, AMS Annual Meeting, January 28 - February 1, 2024, Baltimore, MD.

[C 6] **Najibi, N.**, A. Weyant, A.J. Perez, W. Arnold, A. Schwarz, A. Gershunov, R. Maendly, and S. Steinschneider, *A process-based approach to bottom-up climate risk assessments: A statewide, weather-regime based stochastic weather generator for California*, AGU Fall Meeting, December 11-15, 2023, San Francisco, CA.

[C 5] **Najibi, N.** and S. Steinschneider, *Extreme precipitation-temperature scaling in California: The role of atmospheric rivers*, AGU Fall Meeting, December 12-16, 2022, Chicago, IL.

[C 4] **Najibi, N.**, S. Mukhopadhyay, and S. Steinschneider, *A Bayesian quantile regression framework for scaling precipitation with temperature and weather regimes in the Northeast US*, AGU Fall Meeting,

December 13-17, 2021, New Orleans, LA.

[C 3] **Najibi, N.**, S. Mukhopadhyay, and S. Steinschneider, *Identifying weather regimes for a regional-scale stochastic precipitation generator in California*, AGU Fall Meeting, December 1-17, 2020, Online Everywhere.

[C 2] **Najibi, N.** and N. Devineni, *On the variability of flood attributes and damages at the global scale*, AGU Fall Meeting, December 9-13, 2019, San Francisco, CA.

[C 1] **Najibi, N.** and N. Devineni, *Joint modeling of flood volume, duration and peak across the United States: Role of hydro-geomorphological drivers*, AGU Fall Meeting, December 10-14, 2018, Washington, D.C.

Thesis Reports

[T 1] Nasser Najibi, "Hydroclimate Drivers and Atmospheric Dynamics of Floods", **Ph.D. Dissertation**, Supervisor: Naresh Devineni, Department of Civil Engineering, The City College of New York, *City University of New York*, New York, USA, July 2019. (https://academicworks.cuny.edu/cc_etds_theses/883)

[T 2] Nasser Najibi, "Snow Depth and Surface Temperature Variability from Ground-based GPS Observations", **M.Sc. Thesis**, Supervisor: Shuanggen Jin, Shanghai Astronomical Observatory, *University of Chinese Academy of Science*, Shanghai, CHINA, May 2014.

[T 3] Nasser Najibi, "Climate Change and Global Warming Analysis using GIS Tools", **Capstone Project Report**, School of Surveying and Geospatial Engineering, Faculty of Engineering, *University of Tehran*, Tehran, IRAN, July 2011.

TEACHING EXPERIENCE & MENTORSHIP

Project Mentor and Judge for UCAR Global Learning and Observations to Benefit the Environment (GLOBE) Program (GLOBE is sponsored by NASA, NOAA, and NSF) — 2021–2023

- 2021 IVSS: Data Analysis
- 2022 IVSS: Engineering Solutions for a Changing Climate
- 2023 IVSS: Global Connections, Investigating Earth as a System Together

Graduate Mentor for NOAA/CESSRST HIRES (High School Initiative in Remote Sensing of the Earth Systems Engineering and Sciences) and NSF-REU (National Science Foundation Research Experiences for Undergraduates) — 2017–2018

- 2019 Emerging Researchers National (ERN) Conference in Science, Technology, Engineering and Mathematics (STEM) organized by the American Association for the Advancement of Science (AAAS) in Washington, D.C.
- Virtual Poster Showcase (VPS) of AGU Fall Meeting 2018 on YouTube (~5 min)

Guest Lecturer for *Civil Engineering Decision and Systems Analysis* Course at The City College of New York, CUNY — Dec. 2017

Teaching Assistant for *Civil Engineering Decision & Systems Analysis* and *Civil Engineering Data Analysis* Courses at The City College of New York, CUNY — 2017–2019

MACHINE LEARNING & GEOSPATIAL DATA EXPERTISE

AIBridge Boot Camp – Center for Advanced Computing (CAC) — Jul. 2023

5-day (30 hours) in-person training on machine learning fundamentals, tools, and practical applications (lecture, lab)

Sponsored by the AI Institute for Next Generation Food Systems (AFIS)

Massive Open Online Course (MOOC) on Machine Learning in Weather and Climate — Jan-May 2023

10-week (40 hours) interactive learning training:

- Tier 1 (ML in weather and climate)
- Tier 2 (Concepts of ML)
- Tier 3 (Practical ML applications in weather and climate)

Sponsored by the European Centre for Medium-Range Weather Forecasts (ECMWF), in partnership with the International Foundation of Big Data and Artificial Intelligence for Human Development (IFAB)

NASA Applied Remote Sensing Training (ARSET) Program

Introduction to NASA Resources for Climate Change Applications	Oct. 2021
Using the VIC Hydrologic Model with NASA Earth Observations	Mar. 2018
Accuracy Assessment of a Land Cover Classification	Feb. 2018
Introduction to Synthetic Aperture Radar	Jul. 2017
Remote Sensing of Land Indicators for Sustainable Development Goal 15	Jun. 2017
Global Precipitation Measurement (GPM)	
Status of GPM Mission Data Products and Applications	May. 2017
NASA Applied Remote Sensing Training (ARSET) Disaster Management	
Overview of the Global Disaster Alert and Coordination System	Feb. 2017
Using NASA Remote Sensing for Disaster Management	Jun. 2016
Using NASA Remote Sensing for Flood Monitoring and Management	Apr. 2016
Water Resources Management Using NASA Earth Science Data	Feb. 2016
NASA Remote Sensing Observations for Flood Management	Aug. 2015

SOFTWARE & DATASETS

Stochastic Weather Generator v2.0: https://github.com/nassernajibi/WGEN-v2.0 *San Francisco Bay, Tuolumne River: https://doi.org/10.5281/zenodo.7311768*	2019-Present
California Department of Water Resources data release: *Gridded weather generator perturbations of historical detrended and stochastically generated temperature and precipitation for the state of CA and HUC8s: https://data.cnra.ca.gov/dataset/ca-weather-generator-gridded-climate-pr-tmin-tmax-2023*	2023
R Code for flood scaling models: *Scaling of floods with geomorphologic characteristics and precipitation variability (single-level and multilevel Bayesian scaling models): https://doi.org/10.5281/zenodo.7612441*	2023
U.S. Geological Survey data release: *Predicted temperature and precipitation values derived from modeled localized weather regimes and climate change in the state of Massachusetts: https://doi.org/10.5066/p9kty3ms*	2023
R Code for spatiotemporal hierarchical Bayesian regressions: https://github.com/nassernajibi/extreme-precipitation-temperature-scaling-in-california *Atmospheric rivers (ARs)-induced extreme precipitation-temperature scaling in California: https://doi.org/10.5281/zenodo.7390731*	2022
Massachusetts Climate & Hydrologic Risk (Phase I) – future climate projections: https://mass-eoeea.maps.arcgis.com/home/item.html?id=1ce2fd14191b48789a36f344f4df52d3	2022 +500,000 views
R Code for spatial hierarchical Bayesian regression frameworks: https://dataverse.harvard.edu/dataverse/bayesian *Precipitation scaling with temperature in the Northeastern US: https://doi.org/10.7910/dvn/3pbuks*	2021 +30 downloads
Global Floods: https://dataverse.harvard.edu/dataverse/dfo1985to2015	+800 downloads
Floods in the Missouri River Basin: https://dataverse.harvard.edu/dataverse/MRB *Data for hydroclimate drivers and atmospheric teleconnections of long-duration floods: https://doi.org/10.7910/dvn/uwqdwk* *Data for coupled flow accumulation and atmospheric blocking govern flood duration: https://doi.org/10.7910/dvn/qomqk4*	2017 +50 downloads

PROFESSIONAL SERVICE & MEMBERSHIP

Organizing Committee Member for City+2023 @ Perth: Geospatial Big Data and Artificial Intelligence for Cities (An International Conference for Early-Career Researchers and Ph.D. Students on Urban Studies, Perth, Australia)	Sep. 2023
Guest Editor of ELSEVIER International Journal of Applied Earth Observation and Geoinformation for Special Issue on "Recent Advances in Geocomputation and GeoAI for Mapping"	Jul. 2021–2022
Review Panelist for NASA CYGNSS Science Team	Feb. 2021
Reviewer of NSF's Hydrologic Sciences Program Proposals	Feb. 2021−Present
Reviewer of IPCC Sixth Assessment Report (AR6) Second Order Draft (SOD) of	Spring–Fall 2020

Climate Change 2021 Working Group 1: *The Physical Science Basis* and Working Group 2: *Impacts, Adaptation and Vulnerability*

Reviewer of IPCC Sixth Assessment Report (AR6) First Order Draft (FOD) of Climate Change 2021 Working Group 1 and 2 — Spring–Fall 2019

Reviewer for: — 2015−Present

Proceedings of the National Academy of Sciences (PNAS)	*Natural Hazards*
Nature Communications	*Hydrological Processes*
Geophysical Research Letters	*ASCE-Journal of Hydrologic Engineering*
Water Resources Research	*Journal of Applied Meteorology and Climatology*
Climate Dynamics	*SoftwareX*
Journal of Hydrometeorology	*Environmental Monitoring and Assessment*
Geoscientific Model Development	*ISPRS International Journal of Geo-Information*
Journal of Hydrology	*International Journal of Climatology*
Stochastic Environmental Research and Risk Assessment	*Big Earth Data*
Journal of Hydroinformatics	*Earth System Science Data*

Member of: — 2015–Present

American Geophysical Union (AGU)

American Meteorological Society (AMS)

American Society of Civil Engineers (ASCE)

Hispanic Serving Institution (HSI) STEM Professionals Network (HSI STEM Hub) — 2019–Present

TALKS & MEDIA COVERAGE

EWRS Seminar Series, Civil and Environmental Eng., Cornell University, NY, USA	Apr. 2022
EWRS Seminar Series, Civil and Environmental Eng., Cornell University, NY, USA	May. 2020
EWRS Seminar Series, Civil and Environmental Eng., Cornell University, NY, USA	Dec. 2019
Biological and Environmental Engineering, Cornell University, NY, USA	Sep. 2019
8th NOAA/EPP with Minority Serving Institutions (MSI) Forum, New York, USA	Aug. 2016
Soil Moisture and Ocean Salinity (SMOS) Training Course, Toulouse, France	May. 2013

¶ U.S. Department of Energy's Office of Science research highlights "*Compound continental risk of multiple extreme floods in the United States*" (read more)	Nov. 2023
¶ U.S. Department of Energy's Office of Science research highlights "*Scaling of floods with geomorphologic characteristics and precipitation variability*" (read more)	Jan. 2023
¶ U.S. Climate Variability and Predictability Program (US CLIVAR) research highlights "*Understanding the spatial structure of simultaneous heavy precipitation events*" (read more)	Dec. 2020
¶ U.S. Climate Variability and Predictability Program (US CLIVAR) research highlights "*Governance of long-duration floods*" (read more)	Oct. 2019
¶ United Nations Office for Disaster Risk Reduction (UNDRR) "*USA: City College-led experts develop flood prediction model*" (read more)	Jul. 2019
¶ Smart Water Magazine "*Experts develop flood prediction model*" (read more)	Jul. 2019
¶ The Water Network "*Scientists develop flood prediction model*" (read more)	Jul. 2019
¶ Water Online "*City College-led experts develop flood prediction model*" (read more)	Jul. 2019
¶ Science Daily "*Flood prediction model developed*" (read more)	Jul. 2019
¶ U.S. Department of Energy's Office of Science research highlights "*Recent trends in the frequency and duration of global floods*" (read more)	Jun. 2018