

## **Bradford D. Johnson, Ph.D.**

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### **Research Interests**

Impact of urbanization on regional climate; land use-land cover change and atmospheric response; urban climate systems; incorporating geographic information science into weather and climate applications and research; socioeconomic impacts of weather and climate; transitional winter precipitation; extratropical-tropical interactions; tropical cyclone development; ice-ocean-atmosphere teleconnections; aerosol effects on local climate and health-related ramifications.

### **Education**

Ph.D. Geography, University of Georgia, Fall 2018

*Thesis:* The Impact of Urbanization on Regional Scale Climate and Winter Precipitation

*Graduate certificate:* Geographic Information Systems

M.S. Meteorology, Florida State University, Summer 2012

*Thesis:* Rainfall Anomaly Prediction Using Statistical Downscaling in a Multimodel Superensemble over Tropical South America

B.S. Meteorology, Iowa State University, Spring 2004

### **Research Experience**

Assistant Professor, Department of Geography, Florida State University, August 2019 - present

*Roles/Responsibilities:* Develop and execute research agenda by authoring and submitting publications for peer review and funding sources; mentor undergraduate and graduate students; teach upper-level course describing the Earth's climate system and relationship to current weather and storms; teach graduate-level course featuring introduction to Python programming and applications in GIS; teach research-oriented seminar detailing urban climate science, atmospheric data, and the use of GIS analytical techniques; promote and represent Florida State University and the Department of Geography by serving internally, in professional organizations, and within the community.

Program Strategist, Trivector Services, Inc./National Oceanic and Atmospheric Administration, Office of Oceanic and Atmospheric Research, Office of Weather and Air Quality, Silver Spring, MD, August 2017 - July 2019

*Roles/Responsibilities:* Perform interagency and intraagency liaison duties pertaining to the multiagency National Earth System Prediction Capability (ESPC) effort; coordinate strategy and implementation alongside assessment of short and long-term needs of the OWAQ Subseasonal to Seasonal (S2S) portfolio in accordance with OAR and OWAQ strategic plans; contracting team lead for ESPC and S2S; develop, coauthor, facilitate, manage, and conduct reviews of external S2S funding opportunities; coordinate programmatic and scientific working groups on numerical modeling-related tasks from the ESPC Executive Steering Group; draft and inventory materials related to federal modeling capability and collaborative efforts from weather and S2S to climate scales; collect information from NOAA/Oceanic and Atmospheric Research laboratories to draft and present high-level technical briefs; interact with program and laboratory managers to facilitate transition of emerging technologies and research to operations; plan and support S2S and National ESPC-sponsored workshops, panels, committees, and conference sessions; manage National ESPC website.

Research Assistant, Dept. of Geography, University of Georgia, Athens, GA, August 2013 - August 2017

*Advisor:* J. Marshall Shepherd

*Roles/Responsibilities:* Combine geographic information systems (GIS), climate, and remote sensing techniques to investigate atmospheric phenomena; develop data mining and analysis scripting of environmental observations; interpret data from numerical model simulations; analyze and digitize data from satellite imagery using various software; present research and mapping products at conferences.

Research Assistant, Dept. of Earth, Ocean and Atmospheric Science, Florida State University, Tallahassee, FL, August 2006 - May 2008

*Advisor:* T. N. Krishnamurti

*Roles/Responsibilities:* Analyze seasonal model rainfall prediction using statistical downscaling; developed scripts to visualize results with GrADS in a UNIX environment.

Research Intern, Louis-Stokes Heartland Alliance for Minority Participation, Dept. of Soil, Environmental and Atmospheric Sciences, University of Missouri-Columbia, May - July 2002

*Advisors:* Anthony Lupo and Patrick Market

*Roles/Responsibilities:* Investigate case studies of Midwestern synoptic-scale systems that generated thundersnow using reanalysis datasets.

### **Publications**

**Johnson, B.D.**, M.D. Williams, J.M. Shepherd, 2021: Urbanization and Winter Precipitation: A Case Study Analysis of Land Surface Sensitivity. *Atmosphere*, 12, 805.  
<https://doi.org/10.3390/atmos12070805>.

Shepherd J.M., S.J. Burian, M. Jin, C. Liu, and **B. Johnson**, 2020: Two Decades of Urban Hydroclimatological Studies Have Yielded Discovery and Societal Benefits. In: Levizzani V., Kidd C., Kirschbaum D., Kummerow C., Nakamura K., Turk F. (eds) *Satellite Precipitation Measurement. Advances in Global Change Research*, vol 69. Springer, Cham.  
[https://doi.org/10.1007/978-3-030-35798-6\\_29](https://doi.org/10.1007/978-3-030-35798-6_29).

Sandgathe, S., B. R. Brown, J. C. Carman, J. M. Infanti, **B. Johnson**, D. McCarren, and E. McIlvain, 2020: Exploring the Need for Reliable Decadal Prediction. *Bull. Amer. Meteor. Soc.*, 101, E141–E145,  
<https://doi.org/10.1175/BAMS-D-19-0248.1>.

Haupt, S., S. Hanna, M. Askleson, M. Shepherd, M. Fragomeni, N. Debbage, and **B. Johnson**, 2019: 100 Years of Scientific Research at AMS, 100 years of Progress in Applied Meteorology. Part II: Applications that Address Growing Populations. *Meteorological Monographs*.  
<https://journals.ametsoc.org/doi/pdf/10.1175/AMSMONOGRAPHS-D-18-0007.1>.

Sandgathe, S., J. Carman, **B. Johnson**, and E. McIlvain, 2018: Bridging The Gap Between Climate And Weather. *Bull. Amer. Meteor. Soc.*, <https://doi.org/10.1175/BAMS-D-18-0154.1>.

**Johnson, B.** and J. M. Shepherd, 2018: An Urban-based Climatology of Winter Precipitation in the Northeast United States. *Urban Climate*, June 2018, 24, 205-220,  
<https://doi.org/10.1016/j.uclim.2018.03.003>.

Zeng, X., K. Emanuel, R. Houze, G. Jenkins, **B. Johnson**, M. McPhaden, A. L. Molthan, C. D. Peters-Lidard, R. Schumacher, J. A. Thornton, P. Try, S. van den Heever, P. J. Webster, 2017: White Paper on Early

Career Researcher Involvement in AMS Activities, AMS Researcher Involvement Committee, Amer. Meteor. Soc.

Mattingly, K., **B. Johnson**, and A. Fischer, 2015: Characterization of Atmospheric Saharan Dust Plumes Using Remote Hyperspectral Imagery for Public Health. *Papers in Applied Geography*, 1(3), 286-293, <https://doi.org/10.1080/23754931.2015.1014705>.

**Johnson, B.**, V. Kumar, and T.N. Krishnamurti, 2014: Rainfall anomaly prediction using statistical downscaling in a multimodel superensemble over tropical South America. *Climate Dynamics*, 43(7/8), 1731-1752, <https://doi.org/10.1007/s00382-013-2001-8>.

### **Grant Funding**

Elsner, J., B. Johnson, and C. Uejio. *NIHHIS Urban Heat Island Mapping | CAPA Heat Watch 2022*, NOAA Climate Program Office. \$10,000. (submitted)

Johnson, B. (co-PI). *Toward Conceptualization and Predictability: A Multi-scalar Analysis of Urban-Influenced Hydrometeorological Processes*. 7/2020 – 7/2024. Subaward from the University of Georgia w/ PI J.M. Shepherd. NASA Interdisciplinary Science Program. Subaward: \$60,000.

Johnson, B. (PI). *Exploration of the atmospheric boundary layer near urban areas in observations and high-resolution models*. First Year Assistant Professor Summer Award. Florida State University. \$20,000.

### **Teaching Experience and Speaking Engagements**

Instructor, Florida State University, Department of Geography

- Geography of Climate Change and Storms (3 times)
- GIS Databases, Fall 2020
- Physical Geography, Fall 2021
- Programming for GIS, Fall 2019
- Urban Climate and GIS (3 times)

Teaching Assistant

- Introduction to Weather and Climate Lab, Dept. of Geography, University of Georgia, August 2016 - August 2017 (3 sections)
- Teaching Assistant, Introduction to the Atmosphere Lab, Dept. of Earth, Ocean and Atmospheric Science, Florida State University, January - May 2006 (1 section)

Invited Lecture, Towards an Understanding of the Regional Impact of Urbanization, University of Illinois, Urbana-Champaign, October 2021.

Invited Lecture, Beyond the City Limits: Assessing the Collective Impact of Urbanization on the Regional Scale, Dept. of Atmospheric and Oceanic Sciences, University of Wisconsin, March 2021.

Invited Lecture, Inside and Out: Connecting Cities to Regional Climate, Dept. of Geography, Florida State University, February 2019.

Co-Lecturer, Introduction to Weather and Climate, Dept. of Geography, University of Georgia, Spring 2017.

Invited Lecture, Mesoscale and Synoptic Forecasting, School of Earth and Atmospheric Sciences, Georgia Institute of Technology, April 2017.

Invited Lecture, Weather, Climate, and People: A Crash Course, Dept. of Geography, University of Geography, April 2016.

Invited Lecture, Physical Climatology, Dept. of Geography, University of Georgia, January 2015.

### **Service**

#### External Proposal Reviews

- Subseasonal to Seasonal Program, NOAA Weather Program Office, Fall 2021.
- Proposal Reviewer and Panelist, ROSES Competition, NASA, Fall 2021.
- Proposal Reviewer and Panelist, Observations Competition FY21, NOAA Weather Program Office, Spring 2021.

#### Student Advising and Research Committees

- (1) M.S. Thesis Advisor (ongoing)
- (2) M.S. Thesis Committee Member (2 ongoing)
- (1) Ph.D. Dissertation Committee Member (completed Feb 2021)

Architect and Organizer, The Geography Summit, FSU Department of Geography, Fall 2020 and Fall 2021.

Team Member, Oak Ridge Associated Universities, FSU Climate Research Committee, Fall 2021.

Digital Outreach and Outreach Director, FSU Department of Geography, Fall 2021 to current.

Colloquium Series Director, FSU Department of Geography, Spring 2021.

Invited Participant, COSSPP Dean Discussion on Diversity with Black Faculty, June 2020.

Lead Author, Board for Early Career Professionals, Diversity, Equity, and Inclusion. *Recommendations for a Better AMS*. Statement. July 2020.

Manuscript Reviewer, Papers in Applied Geography, Fall 2020.

### **Professional Affiliations**

Member, American Meteorological Society, 2012 - present

Co-chair, Eighth Conference for Early Career Professionals, 2019 - 2020

Member, Board for Early Career Professionals, 2017 - present

Student Member, Committee on Climate Services, Commission on the Weather, Water, and Climate Enterprise, 2014 - 2018

Member, Researcher Involvement Committee, 2017 - 2018

Member, American Geophysical Union, 2018 - present

Member, Association of American Geographers, 2015 - present

Member, International Association for Urban Climate, 2014 - present

Member, Southeastern Division of the Association of American Geographers, 2013 - 2014

### **Awards and Fellowships**

Fellow, Kavli Frontiers of Science, National Academies of Science, Spring 2022

Inaugural member, AMS Early Career Leadership Academy, 2018

Recipient, 2017 Summer Doctoral Research Fellowship, University of Georgia Graduate School

### **Conference Presentations and Activities**

**Johnson, B.** and M. Williams, 2022: Land Use and Land Cover Change: Interactions with Weather and Climate. 35th Conference on Climate Variability and Change, Amer. Meteor. Soc. 2022 Annual Meeting (virtual). Session co-chair.

**Johnson, B.** and others, 2022: Leading from Anywhere: How Anyone Can Be a Leader, Amer. Meteor. Soc. 2022 Annual Meeting. Moderator.

**Johnson, B.**, 2021: Exploration of the atmospheric boundary layer near urban areas in observations and high-resolution models, First Year Assistant Professor Research Symposium, Florida State University, August 2021.

**Johnson, B.**, M.D. Williams, and J.M. Shepherd, 2021: An Investigation of Urban Land Surface Modifications on Boundary Layer Processes and Winter Precipitation: A Case Study, 34<sup>th</sup> Conference on Climate Variability and Change, Amer. Meteor. Soc. 2021 Annual Meeting.

**Johnson, B.** and M. Williams, 2021: Land Use and Land Cover Change III - Interactions with Weather and Climate. 34th Conference on Climate Variability and Change, Amer. Meteor. Soc. 2021 Annual Meeting (virtual). Session co-chair.

Bell, J., B. Burkey, **B. Johnson**, and R. DePodwin, 2020: Eighth Conference for Early Career Professionals, Boston, MA, Amer. Meteor. Soc. Session Co-chair.

**Johnson, B.**, E. Schultz, E. Smith, and J. Pullin, 2020: Breaking In: Surviving the Early Career Transition. Eighth Conference for Early Career Professionals, Boston, MA, Amer. Meteor. Soc. Panelist.

Williams, M. and **B. Johnson**, 2020: Land Use and Land Cover Change - Interactions with Weather and Climate. 33rd Conference on Climate Variability and Change, Boston, MA, Amer. Meteor. Soc. Session co-chair.

Haupt, S.E., R.M. Rauber, B. Carmichael, J.C. Knievel, J. Cogan, S. Hanna, M. Askelson, J.M. Shepherd, M. Alfonso Fragomeni, N. Debbage, **B. Johnson**, B. Kosovic, S. McIntosh, F. Chen, K. Miller, M. Williams, and S. Drobot, 2020: 100 Years of Progress in Applied Meteorology. 18th History Symposium, Boston, MA, Amer. Meteor. Soc.

**Johnson, B.** and B. Brown, 2020: Advances in Model Technologies for High-resolution S2S Predictions. Eighth Symposium on the Weather, Water, and Climate Enterprise, Boston, MA, Amer. Meteor. Soc. Session Chair.

**Johnson, B.**, R. DePodwin, and J. Rennie, 2019: Early Career Leadership Academy: Beyond Leadership into Mentorship. Seventh Early Career Professionals Conference, Phoenix, AZ, Amer. Meteor. Soc. Session Organizer and Co-chair.

**Johnson, B.** and J. Cortinas, 2019: Probabilistic Predictions for Enhanced Resilience. Special Symposium on Catalyzing Innovation in Weather Science Internationally, Phoenix, AZ, Amer. Meteor. Soc. Session Chair.

Carman, J., D. McCarren, and **B. Johnson**, 2019: National Earth System Prediction Capability: Coordinating Across Time Scales, Across Agencies. 35th Conference on Environmental Information Processing Technologies, Phoenix, AZ, Amer. Meteor. Soc., 3A.3. Oral Presentation.

**Johnson, B.** and M. Williams, 2019: Land Use and Land Cover Change—Interactions with Climate. 32nd Conference on Climate Variability and Change, Phoenix, AZ, Amer. Meteor. Soc., 14C. Session Organizer and Chair.

Carman, J., L. Van Roekel, S. Akella, and **B. Johnson**, 2018: Improvements in Synoptic, Subseasonal to Seasonal, and Decadal Projections Through Next-Generation Ocean Model Developments, Observations, and Coupled Data Assimilation I, Washington, DC, Amer. Geophys. Union Fall Meeting, OS44A. Session Organizer and Co-Convener.

Sandgathe, S., J. Carman, D. McCarren, **B. Johnson**, and E. McIlvain, 2018: National Earth System Prediction Capability: Metrics, Post-processing, and Products for Seasonal to Subseasonal Workshop. International Conferences on Subseasonal to Seasonal and Seasonal to Decadal Prediction, Boulder, CO, WWRP/WCRP, P-B5-03. Poster Presentation.

**Johnson, B.** and V. Tallapragada, 2018: From Top to Bottom: An Inventory of NWS and OAR Environmental Modeling. NOAA General Modeling Meeting and Fair, College Park, MD. Poster and Oral Presentation.

**Johnson, B.** and J. M. Shepherd, 2018: A WRF-model based sensitivity analysis of urbanization on winter precipitation type. 32nd Conference on Hydrology, Austin, TX, Amer. Meteor. Soc., 10.4. Oral Presentation.

**Johnson, B.**, K. Franz, and N. Debbage, 2018: Local and regional response in the water cycle due to urbanization. 32nd Conference on Hydrology, Austin, TX, Amer. Meteor. Soc. Session Organizer and Chair.

Lacke, M., M. Behl, J. Rennie, and **B. Johnson**, 2018: Perspectives on leadership for early career professionals. Sixth Conference for Early Career Professionals, Austin, TX, Amer. Meteor. Soc. Session Co-chair.

**Johnson, B.**, J. M. Shepherd, A. Bleistein, M. Lanza, K. Jeromin, and E. Cohen, 2018: Panel Discussion: Future state of jobs in the sciences. Sixth Conference for Early Career Professionals, Austin, TX, Amer. Meteor. Soc. Session Chair.

**Johnson, B.** and J. M. Shepherd, 2017: The impact of urban clusters on winter precipitation. 2017 Annual Meeting, Boston, MA, Assoc. Amer. Geographers. Oral Presentation.

**Johnson, B.** and J. M. Shepherd, 2017: The effects of urban clusters on winter precipitation. 13th Symposium on the Urban Environment, Seattle, WA, Amer. Meteor. Soc., 8.3. Oral Presentation.

**Johnson, B.** and J. M. Shepherd, 2016: Assessing urban impact on winter precipitation type using dual polarization radar. 30th Conf. on Hydrology, New Orleans, LA, Amer. Meteor. Soc., J20.4. Oral Presentation.

**Johnson, B.**, 2015: When Cities Meet Climate: Not Your Typical Love Story. 1st Geography Graduate Research Symposium, Athens, GA. Oral Presentation.

**Johnson, B.** and J. M. Shepherd, 2015: Towards the Understanding and Development of an Urban-Influenced Climate Framework. 27th Conf. on Climate Variability and Change, Phoenix, AZ, Amer. Meteor. Soc. Poster Presentation.

**Johnson, B.** and J. M. Shepherd, 2014: Postulating the Development of a Climate Framework considering Urbanization. 69th Annual Meeting, SouthEastern Division of the Association of American Geographers, Athens, GA. Oral Presentation.

**Johnson, B.** and L. Anderson, 2014: Healthcare and Access: Crash Fatalities in Georgia. Center for Disease Control GIS Day 2014, Atlanta, GA. Poster Presentation. **People's Choice Award.**

Mattingly, K., **B. Johnson**, and A. Fischer, 2014: Characterization of Atmospheric Saharan Dust Plumes Using Remote Hyperspectral Imagery for Public Health. 38th Annual Applied Geography Conference, Atlanta, GA. Oral Presentation.

**Johnson, B. D.**, T. N. Krishnamurti, and V. Kumar, 2013: Rainfall Anomaly Prediction Using Statistical Downscaling in a Multimodel Superensemble over Tropical South America. 27th Conf. on Hydrology, Austin, TX, Amer. Meteor. Soc. 38. Poster Presentation.

### **Media**

Podcast Guest, Clear Skies Ahead: Conversations about Careers in Meteorology and Beyond, American Meteorological Society, Aired 14 December 2021.

[https://open.spotify.com/episode/ONiGzq2USZm3jwTpD00Caf?si=js1MDIR\\_TUWTM4EWDNJTbw](https://open.spotify.com/episode/ONiGzq2USZm3jwTpD00Caf?si=js1MDIR_TUWTM4EWDNJTbw)

Panelist, Highlighting Racial Challenges in STEM, Weather Geeks Podcast. Aired 15 July 2020.

<https://weloveweather.tv/episode-119/>

### **Professional Development**

Workshop Coordinator, Workshop on Building an Interannual to Decadal (2 to 30 year) Prediction/Projection Capability for Decision Support, College Park, MD, June 2019

Project and Meeting Coordinator, NSF Research Coordination Network Urban Climate Institute, Athens, GA, April - July 2015

Communicating Climate Science Workshop, American Association for the Advancement of Science, Georgia Institute of Technology, Atlanta, GA, January 2015

Incorporating GIS into the Atmospheric Science Curriculum, NCAR GIS Program BRIGHT Workshop Series, National Center for Atmospheric Research, Boulder, CO, June 2015

Atlanta Integrated Warning Team Partners Workshop, Atlanta, GA, December 2015

### **Skills and Training**

ArcGIS, Python, Weather Research and Forecasting (WRF) modeling, remote sensing, PostgreSQL, bash scripting, R, Matlab, ENVI, ERDAS Imagine, cluster/supercomputer workflow, Ubuntu/Linux, Fortran, Adobe Photoshop, Excel, PowerPoint, technical writing