J. MICHAEL JOHNSON

Curriculum Vitae · January 04, 2021

University of California, Santa Barbara, California · Department of Geography

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Keywords:

Geoinformatics (GIS); Hydroinformatics; Big Data Hydrology; Large Scale Modeling

EDUCATION

March 2021 (Expected) — **University of California, Santa Barbara, California (UCSB)**

- **Degree:** PhD Candidate in Geography (ABD)
- **Advisor:** Dr. Keith C. Clarke
- **Committee:** Dr. Hugo Loaiciga, Dr. Kelly Caylor, David Blodgett
- **Emphasis:** Modeling, Measurement, and Computation
- **Title:** Spatial Challenges of 21st Century Water Resource Research

2015 — **California Polytechnic State University, San Luis Obispo, CA**

- **Degree:** B.S. Anthropology & Geography
- **Honors:** Cum Laude
- **Minors:** Geographic Information Systems (GIS) for Agriculture
  Water Science (Watershed Management Emphasis)
  Statistics
  Economics
  Environmental Studies

RESEARCH EXPERIENCE

Post-Doctoral Researcher — **Center for Spatial Studies, UCSB**

- April 2021 (Offered Start)

Graduate Student — **University of California, Santa Barbara, California (UCSB)**

- I seek to bridge data-intensive computational geography with water resources research
- Work with international and domestic collaborators across academia, the USGS, NCAR, and NOAA
- Develop open source software to ease community access to big data
- Served as research coordinator for the NOAA National Water Center Summer Institute
- Helped author and am a primary data scientist on a multi-million dollar NSF-funded project
- 10 peer-review articles; 2 in revision; 1 in review (8 first author)
- 47 citations; h-index 4; i-index 1

PUBLICATIONS

Peer-Reviewed Journal Articles

[10] **J.M. Johnson**, Keith C. Clarke. (2020). "An Area Preserving Method for Improved Categorical Raster Resampling". *Cartography and Geographic Information Science (In Press).*

[9] David Blodgett, **J.M. Johnson**, Mark Sondheim, Michael Wieczorek, Nels Frazier. (2020). "Mainstems: A logical data model implementing mainstem and drainage basin feature types based on WaterML2 Part 3: HY-Features concepts.". *Environmental Software & Modelling.* Available here.

[8] Wens, M., Veldkamp, T., Mwangi,M., **J.M. Johnson**, Lasage, R., de Moel, H., Haer, T, and Aerts, J.C.J.H.. (2020). "Simulating small-scale agricultural adaptation decisions in response to drought risk: an empirical agent-based socio-hydrologic drought risk model for semi-arid Kenya". *Frontiers in Water.* Available here.

[7] Keith C. Clarke, **J.M. Johnson**. (2020). "Calibrating SLEUTH with Big Data: Projecting California's Land Use to 2100". *Computers, Environment and Urban Systems.* Available here.

[6] Keith C. Clarke, **J.M. Johnson**, Tim Trainor. (2019). "Contemporary American Cartographic Research: A Review and Prospective". *Cartography and Geographic Information Science.* Available here.

[5] **J.M. Johnson***, Marthe Wens*, Cecilia Zagaria, T.I.E Veldkamp. (2019). "Integrating human behavior dynamics into drought risk assessment - A socio-hydrologic, agent-based approach". *WIRES Water (*co-first author).* Available here.

[4] **J.M. Johnson**, Dinuke Munasinghe, Damilola Eyelade, Sagy Cohen. (2019). "An Integrated Evaluation of the National Water Model (NWM) Height Above Nearest Drainage (HAND) Flood Mapping Methodology". *Natural Hazards and Earth System Sciences.* Available here.

[3] H.A. Loaiciga, **J.M. Johnson**. (2018). "Infiltration on sloping terrain and its role on runoff generation and slope stability". *Journal of Hydrology.* Available here.

[2] **J.M. Johnson**, Jim M. Coll, Paul J. Ruess, and Jordan T. Hastings. (2018). "Challenges and Opportunities for Creating Intelligent Hazard Alerts: The 'FloodHippo' Prototype". *Journal of the American Water Resources Association (JAWRA).* Available here.

[1] **J.M. Johnson**, H.A. Loaiciga. (2017). "Coupled Infiltration and Kinematic-Wave Runoff Simulation in Slopes: Implications for Slope Stability". *Water.* Available here.

In Review Articles

[3] **J.M. Johnson**, David L. Blodgett, Keith C. Clarke, Jon Pollack. (NA). "Optimized time series retrieval from the hourly 1993-2018 NOAA National Water Model Reanalysis Products". *Nature Scientific Data (In Revision).*

[2] **J.M. Johnson**, Damilola Eyelade, Keith C. Clarke, Justin Singh*. (NA). "Characterizing Roughness in Terrain Based Synthetic Rating Curves". *Water Resources Research (In Revision).*

[1] **J.M. Johnson**, Amir Mazrooei, A.Sankarasubramanian, Keith C. Clarke, Lilit Yeghiazarian. (NA). "Diagnosing performance in continental-scale, high-resolution, processed-based hydrologic models: The National Water Model". *JGR: Atmospheres (submitted for review: 2020-11-27).*

Technical Reports

[4] **J.M. Johnson**, [+22 others]. (2020). "Moving from Information to Insight by Linking Urban and Hydrologic Systems through the Urban Flooding Open Knowledge Network". *American Water Resources Association IMPACT Magizene: Geospatial Water Technology.*

[3] **J.M. Johnson**, Coll J.M, et al. (2017). "National Water Centers Innovators Program Summer Institute Report". *Consortium of Universities for the Advancement of Hydrologic Science, Inc. Technical Report 14.* Available here.

[2] Coll J.M, **J.M. Johnson**, Ruess P.J.. (2016). "Radar Measurement and Flow Modeling: Methods". *National Water Center Innovators Program Summer Institute Report. Consortium of Universities for the Advancement of Hydrologic Science, Inc. Technical Report 13, Ch 1.* Available here.

[1] **J.M. Johnson**, Coll J.M, Ruess P.J.. (2016). "OPERA-Operational Platform for Emergency Response and Awareness: Reimagining Disaster Alerts". *National Water Center Innovators Program Summer Institute Report. Consortium of Universities for the Advancement of Hydrologic Science, Inc. Technical Report 13, Ch 11.* Available here.

Cartography

[3] **J.M. Johnson**. (2017). "Map of Staats-Brabant indicating territories and boundaries c. 1648 [map]. Scale not given". *van de Meerendonk et al. Striving for Unity: The Significance and Original Context of Political Allegories by Theodoor van Thulden for 's-Hertogenbosch Town Hall. Early Modern Low Countries. Figure 6.* Available here.

[2] **J.M. Johnson**. (2017). "Rising Sea Levels: Hawaii [map]. Scale not given". *Water: An Atlas. Oakland, CA: Guerrilla Cartography.*

[1] **J.M. Johnson**. (2017). "Peoples and Regions of Africa [map]. Scale not given". *Cole, Herbert M. Maternity: Mothers and Children in the Arts of Africa, CT: Yale University Press.*

RESEARCH GRANTS

[6]	2021-2022 (Approved start in Feb.)	**Hydrologic Addressing Through a Spatial Data Lens** Role: Researcher, authored proposal USGS Pathways Program $30,000
[5]	2020-2022	**The UFOKN: Delivering Flood Information to AnyOne, AnyTime, AnyWhere** Role: Lead Data Scientist, helped author proposal National Science Foundation $2,853,561
[4]	2019-2020	**Convergence Accelerator Phase I (RAISE): The Urban Flooding Open Knowledge Network (UFOKN)** Role: Data Scientist National Science Foundation $1,027,958

[3] 2018-2019 **A National Water Model R Package: Improving access and application of model output**
Role: Co-Principal Investigator, authored proposal
UCAR COMET
$15,000

[2] 2017-2018 **FOSSFlood: The LivingFlood Application Built on Free Open Source Software**
Role: Contributor
UCAR COMET
$5,000

[1] 2017-2018 **Integrating farmers' adaptive behaviors in California's Central Valley to assess water and food security risks under climate change**
Role: Co-Principal Investigator, authored proposal
UCGHI Planetary Health Seed Grant
$10,000

FELLOWSHIPS

[3] 2020-2021 **HydroInformatics Fellowship**
Consortium of Universities for the Advancement of Hydrologic Science
$5,000

[2] 2019-2020 **Jack and Laura Dangermond GIS Fellow in Residence**
Jack and Laura Dangermond
$5,000

[1] 2015-2016 **Disciplines Fellowship**
University of California Regents
$30,000

SCIENTIFIC SOFTWARE

Author, Creator

[7] **AOI** Fast & flexible geocoding and AOI creation

[6] **climateR** Compiling gridded and observation climate data

[5] **FloodMapping** Flood mapping using CFIM and the National Water Model

[4] **nwmHistoric** Accessing the National Water Model reanalysis streamflow

[3] **NFHL** Interface to the FEMA National Flood Hazards Layer

[2] **NWM** An R client for the operational National Water Model

[1] **nomadsNC** Time Series Optimiezed National Water Model Forecasts

Author On

[1] **USGS-R dataRetrieval** R Interface to the USGS data holdings

Contributor To

[2] **USGS-R nhdplusTools** — Manipulating hydrographic data with the NHDPlus data model

[1] **elevatr** — Accessing elevation data from various sources

Roles as assigned in package description and defined here

INSTRUCTOR, DEPARTMENT OF GEOGRAPHY, UCSB:

Summer 2020 **Introduction to Geoinformatics**

- Independently developed and taught to address the growing need for data science in the GIS profession.
- Will become new prerequisite course for the UCSB Geography Department and new Masters in GIS Curriculum starting in 2021
- Content Available here: https://mikejohnson51.github.io/spds/

TEACHING ASSISTANT, DEPARTMENT OF GEOGRAPHY, UCSB:

[9] **2021, 2020** — **Remote Sensing of the Environment 2**
- Dr. Vena Chu, Alana Ayasse

[8] **2020, 2019, 2018, 2016** — **Living with Global Warming**
- Dr. Catherine Gautier

[7] **2020, 2019, 2017** — **Conceptual Modeling and Programming for the Geo-Sciences**
- Dr. Krzysztof Janowicz

[6] **2020** — **Remote Sensing of the Environment 1**
- Dr. Joe McFadden

[5] **2019** — **Remote Sensing of the Environment 3**
- Dr. Vena Chu

[4] **2019, 2018, 2017** — **Maps and Spatial Reasoning**
- Dr. Werner Kuhn, Dr. Keith Clarke

[3] **2018** — **Cartographic Design and Geovisualization**
- Dr. Keith Clarke

[2] **2017** — **Environmental Water Quality**
- Dr. Hugo Loaiciga

[1] **2016** — **Oceans and Atmosphere**
- Dr. Tim DeVeries

TEACHING AWARD NOMINATIONS, UCSB

[1] **2020, 2019** — Nominated for UCSB Geography Excellence in Teaching by faculty member

[2] **2020, 2019** — Nominated for UCSB GSA Excellence in Teaching by students

MENTORSHIP EXPERIENCE, UCSB

- Have mentored 11 undergraduates in formal capacities including independent research projects, inclusion in research efforts, and instructional independent study.
- Served as a sponsor for the Ronald E. McNair Postbaccalaureate Achievement Program
- Serving as a faculty mentor for the Gene and Susan Lucas Undergraduate Research Fund created to help first-generation undergraduate students experience research

PROFESSIONAL EXPERIENCE

Lecturer — **Department of Geography, UCSB**
- Summer 2021 (Offered Position)

Sep 2019 - Present — **Data Scientist**: Urban Flooding Open Knowledge Network

Sep 2020 - Present — **Water Resourcees Engineer II***: Lynker Technologies/ NOAA-Affiliate
- Assigned to the NOAA Next Generation Water Modeling Engine and Framework Prototype development group

Visiting Researcher — **Institute for Environmental Studies. Vrije Universiteit, Amsterdam**
- June - July 2019
- January - March 2018

Research Applications Laboratory. NCAR, Boulder, Colorado
- August - September 2018

NOAA National Water Center. Tuscaloosa, Alabama
- June - August 2017
- June - August 2016

*security clearance (secret)

PROSFESSIONAL SERVICE

[9] **2019-2021** — UCSB Geography Chair's Graduate Advisory Committee

[8] **2020** — Advisory Board: Azavea NOAA SBIR Phase I

[7] **2018-Present** — Reviewer for: European Journal of Environmental and Civil Engineering, Transactions in GIS, rOpenSci

[6] **2014 - 2019** — Irrigation Association: Certified Agricultural Irrigation Specialist

[5] **2019** — Spatial Discovery Experts Meeting

[4] **2018** — UCSB Geography Spatial Data Science Faculty Search Committee

[3] **2017** — NOAA National Water Center Summer Institute Research Coordinator

[2] **2015-2017** — UCSB Geography Department Outreach Committee

[1] **2016** — NOAA National Water Center Summer Institute Research Fellow

PRESENTATIONS

[25]	**Nov 2020**	**University of Kansas GIS day** *Climate Analysis with R*	presentation
[24]	**Nov 2020**	**Unidata Users Committee** *Fall 2020 Student Panel*	panel
[23]	**Oct 2020**	**Eco Data Science** *Working with Gridded Climate Data in R*	presentation
[22]	**July 2020**	**ESIP Summer Meeting** *Does slightly better data equal much better information?*	presentation
[21]	**Feb 2020**	**USGS Water Mission Area** *Urban Flooding Open Knowledge Network*	presentation
[20]	**Feb 2020**	**Microsoft Research and Development Team** *Urban Flooding Open Knowledge Network*	presentation
[19]	**Feb 2020**	**ESIP: Interoperability and Technology/Tech Dive Webinar Series** *Urban Flooding Open Knowledge Network*	presentation
[18]	**Dec 2019**	**American Geophysical Union Fall Meeting** *Representing Landcover in the National Water Model*	poster
[17]	**Dec 2019**	**American Geophysical Union Fall Meeting** *Identifying distrubed watersheds using 20 years of MODIS and Google Earth Engine*	poster
[16]	**Dec 2019**	**American Geophysical Union Fall Meeting** *Using Google Earth Engine and MODIS to detect watershed disturbance*	presentation (Google Booth)
[15]	**Dec 2018**	**American Geophysical Union Fall Meeting** *The National Water Model and R: Providing fast discovery, access, and usability of NWM output and earth systems data*	presentation
[14]	**Dec 2018**	**American Geophysical Union Fall Meeting** *Drought adaptation behavior of agricultural stakeholders: An Agent Based Model for Kenya*	presentation
[13]	**June 2018**	**International Congress on Environmental Modelling and Software** *An agent-based approach to evaluating sustainable drought adaptation policy*	presentation
[12]	**June 2018**	**International Congress on Environmental Modelling and Software** *Simulating dynamic drought adaptation behavior of agricultural stakeholders using Agent-Based Models*	presentation
[11]	**April 2018**	**European Geophysical Union** *Integrating Adaption behavior in drought risk analysis*	poster
[10]	**Dec 2017**	**American Geophysical Union Fall Meeting** *HydroData: Discover Earth Systems Data with R*	eLightning talk

[9]	**July 2017**	**CUAHSI Hydroinformatics Conference** *Real-time Discharge-to-Damage Flood Mapping 'Anywhere, USA'*	presentation
[8]	**May 2017**	**@Spatial Tech Talk UCSB Spatial Center** *Accessing National Water Model Output*	presentation
[7]	**Nov 2016**	**UCGIS Webinar** *2017 CUAHSI SI: Collaborative Problem Solving at the National Water Center*	presentation
[6]	**Nov 2016**	**HAZUS Users Conference** *Reimagining Disaster Alert Systems: OPERA*	presentation
[5]	**Oct 2016**	**UCSB-SDSU Retreat** *The Five Meanings of Water Security*	presentation
[4]	**July 2016**	**CUAHSI Biennial Conference** *Densified Radar Measurement and Flow Modeling*	poster
[3]	**May 2016**	**California Geography Society 2016 Annual Conference** *Rising Temperatures and Water Supply: Tools for Water Security*	presentation
[2]	**April 2016**	**UC Student Lobby Conference** *Water Research: Problems with Scale*	presentation
[1]	**May 2015**	**California Geography Society 2015 Annual Conference** *Developing a Decision Support System for California Surface Water*	presentation

REFERENCES

Keith Clarke, PhD
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Sankar Arumugam, PhD
Professor and University Faculty Scholar
Department of Civil, Construction, and Environmental Engineering, North Carolina State University
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Krzysztof Janowicz, PhD
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Lilit Yeghiazarian, PhD
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Trey Flowers, PhD
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NOAA National Water Center
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David Blodgett
Civil Engineer
USGS Office of Water Information Center for Integrated Data Analytics
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