

# J. MICHAEL JOHNSON

*Curriculum Vitae · December 31, 2020*

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

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## Keywords:

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

## EDUCATION

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|----------------------------------|--|
| <b>March 2021<br/>(Expected)</b> | <b>University of California, Santa Barbara, California (UCSB)</b> <ul style="list-style-type: none"><li>• <b>Degree:</b> PhD Candidate in Geography (ABD)</li><li>• <b>Advisor:</b> Dr. Keith C. Clarke</li><li>• <b>Committee:</b> Dr. Hugo Loaiciga, Dr. Kelly Caylor, David Blodgett</li><li>• <b>Emphasis:</b> Modeling, Measurement, and Computation</li><li>• <b>Title:</b> Spatial Challenges of 21st Century Water Resource Research</li></ul> |
| <b>2015</b>                      | <b>California Polytechnic State University, San Luis Obispo, CA</b> <ul style="list-style-type: none"><li>• <b>Degree:</b> B.S. Anthropology &amp; Geography</li><li>• <b>Honors:</b> Cum Laude</li><li>• <b>Minors:</b> Geographic Information Systems (GIS) for Agriculture<br/>Water Science (Watershed Management Emphasis)<br/>Statistics<br/>Economics<br/>Environmental Studies</li></ul>   |

## RESEARCH EXPERIENCE

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| <b>Post-Doctoral<br/>Researcher</b> | <b>Center for Spatial Studies, UCSB</b> <ul style="list-style-type: none"><li>• April 2021 (Offered Start)</li></ul>   |
| <b>Graduate Student</b>             | <b>University of California, Santa Barbara, California (UCSB)</b> <ul style="list-style-type: none"><li>• I seek to bridge data-intensive computational geography with water resources research</li><li>• Work with international and domestic collaborators across academia, the USGS, NCAR, and NOAA</li><li>• Develop open source software to ease community access to big data</li><li>• Served as research coordinator for the NOAA National Water Center Summer Institute</li><li>• Helped author and am a primary data scientist on a multi-million dollar NSF-funded project</li><li>• 10 peer-review articles; 2 in revision; 1 in review (8 first author)</li><li>• 47 citations; h-index 4; i-index 1</li></ul> |

## PUBLICATIONS

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### 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 Wiecezorek, 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 Magazine: 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

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

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- [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

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### Author, Creator

- [6] **AOI**      Fast & flexible geocoding and AOI creation [↗](#)
- [5] **climateR**      Compiling gridded and observation climate data [↗](#)
- [4] **FloodMapping**      Flood mapping using CFIM and the National Water Model [↗](#)
- [3] **nwmHistoric**      Accessing the National Water Model reanalysis streamflow [↗](#)
- [2] **NFHL**      Interface to the FEMA National Flood Hazards Layer [↗](#)
- [1] **NWM**      An R client for the operational National Water Model [↗](#)

### 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:

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### 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/](https://mikejohnson51.github.io/spds/)

## TEACHING ASSISTANT, DEPARTMENT OF GEOGRAPHY, UCSB:

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- [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

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- [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

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- 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

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<b>Lecturer</b>	<b>Department of Geography, UCSB</b> <ul style="list-style-type: none"><li>• Summer 2021 (Offered Position)</li></ul>
<b>Sep 2019 - Present</b>	<b>Data Scientist:</b> Urban Flooding Open Knowledge Network 
<b>Sep 2020 - Present</b>	<b>Water Resources Engineer II*:</b> Lynker Technologies/ NOAA-Affiliate <ul style="list-style-type: none"><li>• Assigned to the NOAA Next Generation Water Modeling Engine and Framework Prototype development group</li></ul>
<b>Visiting Researcher</b>	<b>Institute for Environmental Studies. Vrije Universiteit, Amsterdam</b> <ul style="list-style-type: none"><li>• June - July 2019</li><li>• January - March 2018</li></ul> <b>Research Applications Laboratory. NCAR, Boulder, Colorado</b> <ul style="list-style-type: none"><li>• August - September 2018</li></ul> <b>NOAA National Water Center. Tuscaloosa, Alabama</b> <ul style="list-style-type: none"><li>• June - August 2017</li><li>• June - August 2016</li></ul>

\*security clearance (secret)

## PROFESSIONAL SERVICE

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[9]	<b>2019-2021</b>	UCSB Geography Chair's Graduate Advisory Committee
[8]	<b>2020</b>	Advisory Board: Azavea NOAA SBIR Phase I
[7]	<b>2018-Present</b>	Reviewer for: European Journal of Environmental and Civil Engineering, Transactions in GIS, rOpenSci
[6]	<b>2014 - 2019</b>	Irrigation Association: Certified Agricultural Irrigation Specialist
[5]	<b>2019</b>	Spatial Discovery Experts Meeting
[4]	<b>2018</b>	UCSB Geography Spatial Data Science Faculty Search Committee
[3]	<b>2017</b>	NOAA National Water Center Summer Institute Research Coordinator
[2]	<b>2015-2017</b>	UCSB Geography Department Outreach Committee
[1]	<b>2016</b>	NOAA National Water Center Summer Institute Research Fellow

## PRESENTATIONS

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

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

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## REFERENCES

### **Keith Clarke, PhD**

Professor

Department of Geography, University of California, Santa Barbara

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### **Sankar Arumugam, PhD**

Professor and University Faculty Scholar

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