

J. MICHAEL JOHNSON

Curriculum Vitae · December 13, 2020

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

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Keywords:

Geoinformatics (GIS); Hydroinformatics; Water Resource Modeling; Computational Hydrology

EDUCATION:

- | | |
|----------------------------------|---|
| March 2021 (Expected) | University of California, Santa Barbara, California (UCSB) <ul style="list-style-type: none">> Degree: PhD Candidate in Geography (ABD)> Emphasis: Modeling, Measurement, and Computation> Advisor: Dr. Keith C. Clarke> Committee: Dr(s) Hugo Loaiciga, Kelly Caylor, David Blodgett (USGS) |
| 2015 | California Polytechnic State University, San Luis Obispo, CA <ul style="list-style-type: none">> Degree: B.S. Anthropology & Geography> Honors: Cum Laude> Minors: Geographic Information Systems (GIS) for Agriculture Statistics Water Science (Watershed Management Emphasis) Environmental Studies Economics |
| Visiting Researcher | Institute for Environmental Studies. Vrije Universiteit, Amsterdam <ul style="list-style-type: none">> June - July 2019> January - March 2018 Research Applications Laboratory. NCAR, Boulder Colorado <ul style="list-style-type: none">> August - September 2018 NOAA National Water Center. Tuscaloosa, Alabama <ul style="list-style-type: none">> June - August 2017> June - August 2016 |

EMPLOYMENT:

- | | |
|---------------------------|---|
| Sep 2019 - Present | Data Scientist: Urban Flooding Open Knowledge Network 🔗 |
| Sep 2020 - Present | Water Resources Engineer II*: Lynker Technologies/ NOAA-Affiliate Assigned to the NOAA Next Generation Water Modeling Engine and Framework Prototype development group |

*security clearance (secret)

Research

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. (2020). "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. (2020). "Characterizing Roughness in Terrain Based Synthetic Rating Curves". *Water Resources Research*.
- [1] **J.M. Johnson**, Amir Mazrooei, A.Sankarasubramanian, Keith C. Clarke, Lilit Yeghiazarian. (2020). "Diagnosing performance in continental-scale, high-resolution, processed-based hydrologic models: The National Water Model". *JGR: Atmospheres*.

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*.

SCIENTIFIC SOFTWARE:

Author, Creator

- | | |
|-------------------------|--|
| [6] AOI | An R package for fast & flexible geocoding, boundary query, and AOI generation https://mikejohnson51.github.io/AOI/ |
| [5] climateR | An R client for compiling gridded and observation climate data https://mikejohnson51.github.io/climateR-intro |
| [4] FloodMapping | An R Package for flood mapping using HAND and the National Water Model https://mikejohnson51.github.io/FloodMapping/ |
| [3] nwmHistoric | An R package for accessing the National Water Model reanalysis streamflow mikejohnson51.github.io/nwmhistoric/ |
| [2] NFHL | R Interface to the FEMA National Flood Hazards Layer https://github.com/mikejohnson51/NFHL |


- [1] **NWM** **An R client for the operational National Water Model**
<https://mikejohnson51.github.io/NWM/>

Author On

- [1] **USGS-R** **R Interface to the USGS data holdings**
dataRetrieval <https://usgs-r.github.io/dataRetrieval/>

Contributor To

- [2] **USGS-R** **An R API for manipulating hydrographic data using the**
nhdplusTools **NHDPlus data model**
<https://usgs-r.github.io/nhdplusTools/>
- [1] **elevatr** **An R package for accessing elevation data from various sources**
<https://github.com/jhollist/elevatr>

Roles as assigned in package description and defined here 

FUNDED PROJECTS:


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| [1] | 2020-2022 Lead Data Scientist | The Urban Flooding Open Knowledge Network (UFOKN): Delivering Flood Information to AnyOne, AnyTime, AnyWhere <i>(National Science Foundation)</i> | <i>\$2,853,561</i> |
| [2] | 2020-2021 Principal Investigator | Programmatic and GUI-driven retrieval and visualization of streamflow for all CONUS rivers <i>(Consortium of Universities for the Advancement of Hydrologic Science)</i> | <i>\$5,000</i> |
| [3] | 2019-2020 Data Scientist | Convergence Accelerator Phase I (RAISE): The Urban Flooding Open Knowledge Network <i>(National Science Foundation)</i> | <i>\$1,027,958</i> |
| [4] | 2018-2019 Co-Principal Investigator | A National Water Model R Package: Improving access and application of model output <i>(UCAR COMET)</i> | <i>\$15,000</i> |
| [5] | 2017-2018 Contributor | FOSSFlood: The LivingFlood Application Built on Free Open Source Software <i>(UCAR COMET)</i> | <i>\$5,000</i> |
| [6] | 2017-2018 Co-Principal Investigator | Integrating farmers' adaptive behaviors in California's Central Valley to assess water and food security risks under climate change <i>(UCGHI Planetary Health Seed Grant)</i> | <i>\$10,000</i> |

Teaching

INSTRUCTOR, DEPARTMENT OF GEOGRAPHY, UCSB:

Summer 2020

Introduction to Geoinformatics

- > Independently developed a complete Geoinformatics course to address the growing need for data science and programming in GIS profession.
- > Designed for remote instruction during COVID-19
- > Taught the foundations of reproducible data science, spatial data models, and programming to a class of 48 students
- > Will become new prerequisite spatial data/programming course for the UCSB Geography Department and new Masters is GIS Curriculum
- > Content Available here:  <https://mikejohnson51.github.io/spds/>

TEACHING ASSISTANT, DEPARTMENT OF GEOGRAPHY, UCSB:

- | | | |
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| [9] | 2020, 2019, 2018, 2016 | Living with Global Warming Lower-Division - <i>Dr. Catherine Gautier</i> |
| [8] | 2020, 2019, 2017 | Conceptual Modeling and Programming for the Geo-Sciences Upper-Division and Graduate - <i>Dr. Krzysztof Janowicz</i> |
| [7] | 2020 | Remote Sensing of the Environment 2 Lower-Division - <i>Alana Ayasse</i> |
| [6] | 2020 | Remote Sensing of the Environment 1 Upper-Division - <i>Dr. Joe McFadden</i> |
| [5] | 2019 | Remote Sensing of the Environment 3 Upper-Division - <i>Dr. Vena Chu</i> |
| [4] | 2019, 2018, 2017 | Maps and Spatial Reasoning Lower-Division - <i>Dr. Werner Kuhn, Dr. Keith Clarke</i> |
| [3] | 2018 | Cartographic Design and Geovisualization Upper-Division - <i>Dr. Keith Clarke</i> |
| [2] | 2017 | Environmental Water Quality Upper-Division - <i>Dr. Hugo Loaiciga</i> |
| [1] | 2016 | Oceans and Atmosphere Lower-Division - <i>Dr. Tim DeVeries</i> |

UNDERGRADUATE RESEARCH MENTORSHIP, UCSB:

Have served as a mentor for 9 undergraduates in formal capacities including independent research projects, inclusion in research efforts, and instructional independent study.

Serving as a faculty mentor for the Gene & Susan Lucas Undergraduate Research Fund which was created to help first-generation undergraduate students experience research

Other

AWARDS, FELLOWSHIPS, EXPERIANCE:

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| [18] | 2020 | Advisory Board: Sentinel-1 flood inundation map extraction via deep learning | Azavea NOAA SBIR Phase I |
| [17] | 2019-2020 | Jack and Laura Dangermond Fellow | UCSB |
| [16] | 2020, 2019 | Nominated for UCSB Geography Excellence in Teaching Award | Nominated by Faculty Member |
| [15] | 2020, 2019 | Nominated for UCSB GSA Excellence in Teaching Award | Nominated by Students |
| [14] | 2020, 2018 | Summer Support Research Grant | UCSB Geography |
| [13] | 2014 - 2019 | Certified Agricultural Irrigation Specialist | Irrigation Association |
| [12] | 2019 | Spatial Discovery Experts Meeting | Santa Barbara |
| [11] | 2019 | Visiting Scholar Research Grant | Vrije Universiteit Amsterdam |
| [10] | 2017 | Summer Institute Course Coordinator | NOAA National Water Center |
| [9] | 2016 | Head Poster Judge | California Geographical Society |
| [8] | 2016 | Summer Institute Research Fellow | NOAA National Water Center |
| [7] | 2015 | County GIS Technician | El Paso County, Colorado |
| [6] | 2015 | Disciplines Fellowship | University of California Regents |
| [5] | 2014 - 2015 | GIS Peer Assistant | Cal Poly Data Studio |
| [4] | 2015 | Outstanding Senior | Cal Poly Department of Geography |
| [3] | 2015 | Top Undergraduate Paper | California Geographical Society |
| [2] | 2014 | County GIS Intern | San Luis Obispo County, California |
| [1] | 2013 | Piedras Blancas Mapping and Restoration | Bureau of Land Management |

SERVICE:

- [4] Chair's Graduate Advisory Committee: *2019-2021 Academic Year(s)*
- [3] Spatial Data Science Faculty Search Committee: *2018*
- [2] Reviewer for: European Journal of Environmental and Civil Engineering, Transactions in GIS
- [1] Department Outreach Committee: *2015-2017*

PRESENTATIONS:

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|------|-----------------|--|--------------|
| [25] | Nov 2020 | University of Kansas GIS day <i>Climate Analysis with R</i> | presentation |
| [24] | Nov 2020 | Unidata Users Committee <i>Fall 2020 Student Panel</i> | panel |
| [23] | Oct 2020 | Eco Data Science <i>Working with Gridded Climate Data in R</i> | presentation |

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| [22] | July 2020 | ESIP Summer Meeting <i>Does slightly better data equal much better information?</i> | presentation |
| [21] | Feb 2020 | USGS Water Mission Area <i>Urban Flooding Open Knowledge Network</i> | presentation |
| [20] | Feb 2020 | Microsoft Research and Development Team <i>Urban Flooding Open Knowledge Network</i> | presentation |
| [19] | Feb 2020 | ESIP: Interoperability and Technology/Tech Dive Webinar Series <i>Urban Flooding Open Knowledge Network</i> | presentation |
| [18] | Dec 2019 | American Geophysical Union Fall Meeting <i>Representing Landcover in the National Water Model</i> | poster |
| [17] | Dec 2019 | American Geophysical Union Fall Meeting <i>Identifying distrubed watersheds using 20 years of MODIS and Google Earth Engine</i> | poster |
| [16] | Dec 2019 | American Geophysical Union Fall Meeting <i>Using Google Earth Engine and MODIS to detect watershed disturbance</i> | presentation (Google Booth) |
| [15] | Dec 2018 | American Geophysical Union Fall Meeting <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 | American Geophysical Union Fall Meeting <i>Drought adaptation behavior of agricultural stakeholders: An Agent Based Model for Kenya</i> | presentation |
| [13] | June 2018 | International Congress on Environmental Modelling and Software <i>An agent-based approach to evaluating sustainable drought adaptation policy</i> | presentation |
| [12] | June 2018 | International Congress on Environmental Modelling and Software <i>Simulating dynamic drought adaptation behavior of agricultural stakeholders using Agent-Based Models</i> | presentation |
| [11] | April 2018 | European Geophysical Union <i>Integrating Adaption behavior in drought risk analysis</i> | poster |
| [10] | Dec 2017 | American Geophysical Union Fall Meeting <i>HydroData: Discover Earth Systems Data with R</i> | eLightning talk |
| [9] | July 2017 | CUAHSI Hydroinformatics Conference <i>Real-time Discharge-to-Damage Flood Mapping 'Anywhere, USA'</i> | presentation |
| [8] | May 2017 | @Spatial Tech Talk UCSB Spatial Center <i>Accessing National Water Model Output</i> | presentation |
| [7] | Nov 2016 | UCGIS Webinar <i>2017 CUAHSI SI: Collaborative Problem Solving at the National Water Center</i> | presentation |
| [6] | Nov 2016 | HAZUS Users Conference <i>Reimagining Disaster Alert Systems: OPERA</i> | presentation |

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| [5] | Oct 2016 | UCSB-SDSU Retreat <i>The Five Meanings of Water Security</i> | presentation |
| [4] | July 2016 | CUAHSI Biennial Conference <i>Densified Radar Measurement and Flow Modeling</i> | poster |
| [3] | May 2016 | California Geography Society 2016 Annual Conference <i>Rising Temperatures and Water Supply: Tools for Water Security</i> | presentation |
| [2] | April 2016 | UC Student Lobby Conference <i>Water Research: Problems with Scale</i> | presentation |
| [1] | May 2015 | California Geography Society 2015 Annual Conference <i>Developing a Decision Support System for California Surface Water</i> | presentation |

REFERENCES:

Keith Clarke, PhD

Department of Geography University of California, Santa Barbara, USA
kcclarke@ucsb.edu

Krzysztof Janowicz, PhD

Department of Geography University of California, Santa Barbara, USA
janowicz@ucsb.edu

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Trey Flowers, PhD

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David Blodgett

USGS Office of Water Information Center for Integrated Data Analytics
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