# 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)**

> **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**

> **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**

> 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

## EMPLOYMENT:

**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

*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 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.*

## 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 dataRetrieval** **R Interface to the USGS data holdings**
https://usgs-r.github.io/dataRetrieval/

### Contributor To

[2] **USGS-R nhdplusTools** **An R API for manipulating hydrographic data using the 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:

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

# 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:

[9] **2020, 2019, 2018, 2016** **Living with Global Warming**
Lower-Division - *Dr. Catherine Gautier*

[8] **2020, 2019, 2017** **Conceptual Modeling and Programming for the Geo-Sciences**
Upper-Division and Graduate - *Dr. Krzysztof Janowicz*

[7] **2020** **Remote Sensing of the Environment 2**
Lower-Division - *Alana Ayasse*

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

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

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

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

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

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

## UNDERGRADUATE RESEARCH MENTORSHIP, UCSB:

Have served an 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:

| | | | |
|---|---|---|---|
| [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:

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

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

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

**David Blodgett**
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*dblodgett@usgs.gov*