

RICH PAULOO

I have coded workflows that stream real-time data from remote sensor networks⁷, built dashboards to bring clarity to massive datasets², developed physical simulation models of groundwater flow and contaminant transport³, made visualizations to improve machine learning interpretability⁴, and built R packages⁵.

Completing a highly quantitative, computational PhD has taught me to how to stay organized, rapidly learn new material, use skepticism to identify opportunities for improvement, ask creative questions, effectively collaborate, and communicate to diverse audiences.

I am currently searching for positions where I can work on technical, challenging, data-intensive problems for the betterment of society.

EDUCATION

2020
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2015

- **PhD. Candidate, Hydrogeology**
University of California Davis 📍 Davis, CA
 - 3D physical simulation of groundwater flow & solute transport.
 - NSF fellow in Climate Change, Water, and Society IGERT.
 - Elected representative in the Graduate Student Assembly.
 - Built groundwaterstatement.org⁶, signed by over 1,000 groundwater experts worldwide.

2011
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2006

- **B.S., Integrative Biology (minor in Conflict Resolution)**
University of California Berkeley 📍 Berkeley, CA
 - Delivered departmental commencement speech⁷ to ~ 5,000 people.

RESEARCH EXPERIENCE

2020
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2018

- **Data Engineer**
UC Water 📍 Davis, CA
 - Built a data processing pipeline and web dashboard⁸ for real-time groundwater data via a wireless sensor network. View paper⁹.

2020
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2015

- **Graduate Student Researcher**
Fogg Lab 📍 UC Davis
 - Work with large hydrologic datasets, numerical groundwater flow and contaminant transport models, & network optimization models.
 - Developed novel models of well failure, groundwater salinization, and contaminant transport in porous media.
 - Regularly use R, Python, Git, Bash, MODFLOW, RW3D, Paraview, Illustrator, AWS, Linux, ArcGIS, Envi, LaTeX.



View this CV online with links at richpauloo.com/cv

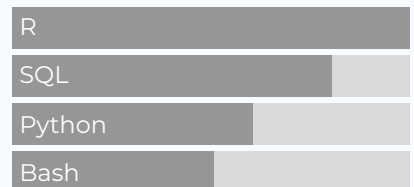
CONTACT

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🐦 [RichPauloo](https://twitter.com/RichPauloo)
🔗 github.com/richpauloo
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FOREIGN LANGUAGE SKILLS

Conversational Spanish





LANGUAGE SKILLS



Made with [pandoc](https://pandoc.org/) in R.




The source code is available at github.com/richpauloo/cv.

Last updated on 2020-05-19.

- 2019
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2018
- **Data Lab Researcher**
Computational Institute for Geodynamics (CIG)  UC Davis
 - NLP, text mining, and network analysis in R on a corpus of ~600 PDFs.
 - Developed an R Shiny dashboard⁷⁰ to understand the corpus.
 - Results published here⁷¹.
- 2012
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2011
- **Research Assistant**
Fine Lab  UC Berkeley
 - Experimental design, data collection, data analysis, and writing of a report on invasive plant species in Berkeley's Strawberry Canyon.
- 2012
- **Biological Research Assistant**
Rizzo Lab  UC Davis
 - Collected and managed field data to study intersection of fire, drought, and Phytophthora ramorum, the Sudden Oak Death agent.
- 2011
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2010
- **Biological Research Assistant**
Sinervo Lab  UC Santa Cruz
 - Backpacked to remote alpine field sites to deploy temperature sensors, and study climate change impacts to on the American pika.
 - Identified & selected high-alpine field survey sites via satellite imagery.



TEACHING & LEADERSHIP EXPERIENCE

- 2016
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2015
- **Expedition Leader**
National Geographic & Adventures Cross Country  Thailand
 - Coordinated all aspects of multi-week international travel.
 - Facilitated teambuilding, group dynamics, and cultural integration.
- 2015
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2013
- **Site Manager & Educator/Guide**
NatureBridge  Yosemite & the Marin Headlands, CA
 - Coordinated with Operations to run a 200-student, 60 employee campus, which involved frequent public speaking.
 - Lived and worked with a close team.
 - Trained in wilderness guiding and backcountry safety.
 - Served as primary liaison between the organization and clients.
- 2013
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2012
- **Environmental Science Educator**
San Mateo County Office of Education  La Honda, CA
 - Designed curriculum & taught science to diverse students.
 - Worked and lived with a close team of educators.
 - Frequent improvisational public speaking to large audiences.

Before pursuing my PhD, I spent 3 years teaching diverse audiences in environmental education. I worked in Yosemite, Thailand and the Marin Headlands, and honed skills in public speaking, interpersonal team development, group facilitation, and critical listening. Living with my coworkers in tight teams taught me patience and cooperation. During summers I guided expeditions in the wilderness and abroad with National Geographic.



GRANTS AND AWARDS

- 2019 ● **Microsoft AI for Earth (national)**
\$37,571
 - AI-enabled forecasting of domestic well failure.
- 2019 ● **AGU Outstanding Student Presentation (national)**
\$200 and free 2020 registration
 - Awarded to the top 3-5% of presenters. View presentation¹².
- 2019 ● **2019 California Water Data Challenge (statewide)**
\$1,500
 - Created calwaterquality.com¹³, a statewide data portal that integrates and visualizes massive water quality data sets, and auto-generates water quality reports for more than 2,000 California public water systems.
 - Blog post¹⁴ about the project summarizing my motivation.
- 2018 ● **NASA Data Visualization Competition (national)**
\$1,400
 - Machine learning for domestic well failure¹⁵.
- 2018 ● **2018 California Water Data Challenge (statewide)**
\$1,500
 - Used large state databases to build and calibrate a predictive model¹⁶ of domestic well failure in California's Central Valley.
- 2016 ● **NSF-GRFP Honorable Mention (national)**
- 2015 ● **NSF-IGERT in Climate Change, Water and Society (national)**
\$111,000



SELECTED PUBLICATIONS, POSTERS, AND TALKS

- 2020 ● **Development of a remote sensing based method to estimate changes in groundwater storage**
Water Resources Research (in preparation)
 - Ahmed, A. & Pauloo, R. & Knight, R. & Melton, F.
- 2020 ● **A low cost, open source wireless sensor network for real-time groundwater monitoring¹⁷**
[Water, 10.3390/w12041066](#)
 - Calderwood, A. & Pauloo, R. & Yoder, A. & Fogg, G.E.

- 2020 ● **Domestic Well Vulnerability to Drought Duration and Unsustainable Groundwater Management in California's Central Valley¹⁸**
[Environmental Research Letters, 10.1088/1748-9326/ab6f10](#)
 · Pauloo, R. & Dahlke, H. & Escrivá-Bou, A. & Fencel, A. & Guillon, H. & Fogg, G.E.
- 2019 ● **Assessing Impact of Outreach through Software Citation for Community Software in Geodynamics¹⁹**
[Computing in Science & Engineering, 10.1109/MCSE.2019.2940221](#)
 · Hwang, L. & Pauloo, R. & Carlen, J.
- 2019 ● **Anthropogenic Basin Closure and Groundwater SALinization (ABCSAL)²⁰**
 Water Resources Research (in review). [View preprint.](#)
 · Pauloo, R. & Fogg, G.E. & Guo, Z. & Harter, T.
- 2019 ● **Show me the Data²¹**
 California Water Data Summit 📍 Davis, CA
- 2019 ● **An Overview of Domestic Well Vulnerability in California's Central Valley: Opportunities for Informed Risk Assessment²²**
 California Environmental Protection Agency 📍 Sacramento, CA
- 2019 ● **Hydraulic gradients modulate non-Fickian transport in heterogeneous porous media²³**
 American Geophysical Union 📍 San Francisco, CA
 · Pauloo, R. & Fogg, G.E. & Guo, Z. & Henri, C.V.
- 2019 ● **Anthropogenic Basin Closure and Groundwater Salinization²⁴**
 Chapman Conference on Aquifer Sustainability 📍 Valencia, Spain
 · Pauloo, R. & Fogg, G.E. & Guo, Z. & Harter, T.
- 2018 ● **An Interactive Mapping Interface to the California Online State Well Completion Report Database²⁵**
 UC Water Annual Meeting 📍 Sacramento, CA
 · Pauloo, R.
- 2015 ● **The Past Present and Future: Long-term climate trends and water management history in California²⁶**
 Water Scarcity in the West 📍 Davis, CA
 · Pauloo, R. & Pinheiro, M.



SELECTED DATA SCIENCE WRITING

I regularly write about data science, visualization, machine learning, and hydrology on [my blog](#).

- 2019 ● **Using Twilio to Text Myself After Long Running Jobs²⁷**
- 2019 ● **Race to the Bottom²⁸**
Exploratory data analysis and science journalism California well construction trends.
- 2019 ● **Text Analysis of the Mueller Report²⁹**
Text mining and sentiment analysis.
- 2018 ● **Installing the R kernel in Jupyter Lab³⁰**
How-to guide visited ~2,000 times per month.
- 2018 ● **Tidy Chi Squared stats in infer³¹**

★ CERTIFICATIONS

- **Wilderness First Responder** 📍 National Outdoor Leadership School
- **Software Carpentry Instructor** 📍 Software Carpentry

🔗 LINKS

- 1: <https://www.richpauloo.com/project/lcsn/>
- 2: <https://caccr.github.io/>
- 3: <https://www.richpauloo.com/publication/vhgr/>
- 4: <https://twitter.com/RichPauloo/status/1124470765095538688>
- 5: <https://github.com/richpauloo/textme>
- 6: <https://www.groundwaterstatement.org>
- 7: <https://www.youtube.com/watch?v=vBnvVL6XQTW&t=2s>
- 8: <https://www.richpauloo.com/project/lcsn/>
- 9: <https://doi.org/10.3390/w12041066>
- 10: https://richpauloo.shinyapps.io/cig_nlp
- 11: <https://ieeexplore.ieee.org/document/8827910>
- 12: <https://www.richpauloo.com/talk/2019-agu/>
- 13: <http://calwaterquality.com>
- 14: <https://www.richpauloo.com/post/cawdc-2019/>
- 15: <https://www.richpauloo.com/talk/2018-nasa/>
- 16: <https://www.richpauloo.com/publication/well-failure/>
- 17: <https://www.richpauloo.com/publication/lcsn/>

- 18: <https://www.richpauloo.com/publication/well-failure/>
- 19: <https://www.richpauloo.com/publication/cig/>
- 20: ABCSAL] <https://www.richpauloo.com/publication/abcsal/>
- 21: <https://www.richpauloo.com/talk/2019-water-data-summit/>
- 22: <https://www.richpauloo.com/talk/2019-cal-epa/>
- 23: <https://www.richpauloo.com/talk/2019-agu/>
- 24: <https://www.richpauloo.com/publication/abcsal/>
- 25: <https://shiny.lawr.ucdavis.edu/shiny/oswcrd/>
- 26: <https://speakerdeck.com/richpauloo/weathering-change>
- 27: <https://www.richpauloo.com/post/textme/>
- 28: <https://www.richpauloo.com/post/race-to-the-bottom/>
- 29: <https://www.richpauloo.com/post/mueller/>
- 30: <https://www.richpauloo.com/post/jupyter/>
- 31: <https://www.richpauloo.com/post/infer/>