

RYOKO ARAKI (*REE-OH-KOH AH-RAH-KEE*)

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EDUCATION

- 2021 – In progress **Ph.D. student**, Geography, Joint Program at University of California, Santa Barbara, and San Diego State University (Current GPA 4.0/4.0)
- Thesis committee: Dr. Hilary McMillan (SDSU-Geography), Dr. Kelly Caylor (UCSB-Geography), Dr. Trent Biggs (SDSU-Geography), Dr. Christina Naomi Tague (UCSB-Bren)
- 2019 – 2021 **Master of Science, Watershed Science**, San Diego State University (GPA 4.0/4.0)
- Thesis committee: Dr. Hilary McMillan, Dr. Trent Biggs, Dr. Alicia Kinoshita
- 2015 – 2019 **Bachelor of Engineering**, Global Engineering (Civil Engineering), with top 20% Distinction (GPA 3.79/4.0), Kyoto University
- Thesis committee: Dr. Takahiro Sayama
- 2017 Exchange Program (non-degree seeking), Applied Science and Engineering, University of Toronto

WORK HISTORY

- 2019 – Present Teaching and Research Assistant, San Diego State University
- Assisted faculty members with research and course works
- Led five undergraduate students in designing, setting up, and implementing field surveys at more than 40 locations across 4 rivers in San Diego
- Summer 2023 Summer Institute Intern, Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI) & National Water Center NOAA-OWP
- Evaluating alternative numerical scheme for soil moisture module in the Next-gen National Water Model CFE
- Developing differentiable version of CFE, enabling physics-based machine-learning in the Next-gen National Water Model
- 2020 – 2022 Laboratory Assistant, CW3E Scripps Institution of Oceanography (Multiple hires in June-August 2020, June-August 2021, January 2022)
- Investigated performance of National Water Model during rain-on-snow events in the Pacific Northwest
- Created a real-time situational awareness map of rain-on-snow risks for decision-makers using Python, Leaflet, Bash, Cron
- Summer 2022 Associate Consultant Intern, Bain & Company
- Implemented business due diligence on material business

Updated in September 2023

- Summer 2018 Policy Maker Intern, the Ministry of Land, Infrastructure, Transportation and Tourism, Japan
- Proposed fleet-transport backup scheme for Tokyo Port in an event of earthquake, based on literature review and interview to the officials of Port and Harbor Authority
- Summer 2017 Civil Engineer Intern, Tobishima Corporation Myanmar Office
- Designed retaining walls for installing water pipes, prepared contract letters to Myanmar City Development Center
- Proofread method statements written by the subcontractor, and visited sites with engineers

PUBLICATION

1. McMillan, H., Coxon, G., **Araki, R.**, Salwey, S., Kelleher, C., Zheng, Y., Knoben, W., Gnann, S., Seibert, J., Bolotin, L. (2023). When good signatures go bad: Applying hydrologic signatures in large sample studies. *Hydrological Process* 37(9). DOI: [10.1002/hyp.14987](https://doi.org/10.1002/hyp.14987)
2. **Araki, R.**, Mu, Y. & McMillan, H. (2023) Evaluation of GLDAS soil moisture seasonality in arid climates. *Hydrological Sciences Journal* (In press). DOI: [10.1080/02626667.2023.2206032](https://doi.org/10.1080/02626667.2023.2206032)
3. McMillan, H., **Araki, R.**, Gnann, S., Woods, R. & Wagener, T. (2023). How do hydrologists perceive watersheds? A survey and analysis of perceptual model figures for experimental watersheds. *Hydrological Process* e14845. DOI: [10.1002/hyp.14845](https://doi.org/10.1002/hyp.14845)
4. McMillan, H. K., Gnann, S. J., & **Araki, R.** (2022). Large-scale evaluation of relationships between hydrologic signatures and processes. *Water Resources Research* e2021WR031751. DOI: [10.1029/2021WR031751](https://doi.org/10.1029/2021WR031751)
5. **Araki, R.**, Branger, F., Wiekenkamp, I., & McMillan, H. (2022). A signature-based approach to quantify soil moisture dynamics under contrasting land-uses *Hydrological Process* e14553. DOI: [10.1002/hyp.14553](https://doi.org/10.1002/hyp.14553)
6. Sayama, T., **Araki, R.**, Yamamoto, K., Apip, A (2021). Characteristics of soil and hillslope runoff in a humid tropical forest and in Sumatra, Indonesia, *Hydrological Research Letters* 15 (2) 23-30. DOI: [10.3178/hrl.15.23](https://doi.org/10.3178/hrl.15.23)

CONFERENCE PRESENTATIONS

1. **Araki, R.**, McMillan H.K., Salwey, S., Kelleher, C., Zheng, Y., Knoben, W., Gnann, S., Seibert, J., Bolotin, L. (2023). When good signatures go bad: unintended failures of applying hydrologic signatures in large-sample studies. Poster presentation at the American Geographical Union Fall Meeting 2023. San Francisco, CA, United States.

2. Li, B., Sprenger, M., Xu, Tianfang, Nimmo, J.R., Ajami, H., **Araki, R.**, Crompton, O., Gimenez, D., Groh, J., Hirmas, D., Singh, N., Wyatt, B.M., Wiekenkamp, I., Sullivan, P.L. (2023). The occurrence of preferential flow based on high-frequency, multi-depth soil moisture observations across diverse ecoclimate regions. Poster presentation at the American Geographical Union Fall Meeting 2023. San Francisco, CA, United States.
3. **Araki, R.**, Bindas, T., Aafnan Bhuiyan, S., Rapp, J., Ogden, F.L., Frame, J.M. (2023). Enhancing the Conceptual Functional Equivalent (CFE) rainfall-runoff model via a differentiable modeling approach. Poster presentation at the American Geographical Union Fall Meeting 2023. San Francisco, CA, United States.
4. Aafnan Bhuiyan, S., **Araki, R.**, Bindas, T., Rapp, J., Ogden, F.L., Frame, J.M. (2023). Representing soil physical processes in Conceptual Framework Equivalent (CFE) through the implementation of Ordinary Differential Equation (ODE). Poster presentation at the American Geographical Union Fall Meeting 2023. San Francisco, CA, United States.
5. Rapp, J., Frame, J.M., **Araki, R.**, Bindas, T., Aafnan Bhuiyan, S. (2023). Value of Hydrofabric Artifact Static Parameters for Deep Learning Next Generation National Water Model (NextGen) Development. Poster presentation at the American Geographical Union Fall Meeting 2023. San Francisco, CA, United States.
6. Bindas, T., Follette, P.L., Jan, A., Rapp, J., **Araki, R.**, Aafnan Bhuiyan, S., Ogden, F.L., Frame, J.M. (2023). dpLGAR: a differentiable parameter learning implementation of the Layered Green & Ampt with redistribution (LGAR) model. Poster presentation at the American Geographical Union Fall Meeting 2023. San Francisco, CA, United States.
7. **Araki, R.**, McMillan, K. (2022) Does model calibration with soil moisture seasonality as objective metrics improve the reproducibility of streamflow seasonality? Poster presentation at the American Geographical Union Fall Meeting 2022 (H12M-0844), Chicago. December 2022.
8. Branger F, **Araki R**, Wiekenkamp I, McMillan H. (2022). Improving hydrological process understanding and model prediction using soil moisture data. Oral presentation at the *EGU General Assembly*, Vienna. May 2022. [\[Abstract\]](#)
9. **Araki, R.**, McMillan, K., (2021) Diagnostic tools to differentiate soil moisture dynamics under contrasting land-uses. Poster presentation at the American Geographical Union Fall Meeting 2021 (H55I-0839), New Orleans. December 2021. [\[Abstract\]](#)
10. McMillan H, Gnann S, **Araki R**. (2021). Large Scale Evaluation of Relationships Between Hydrological Signatures and Processes. Poster presentation at the *AGU Fall Meeting* (H15N-1210), New Orleans. December 2021. [\[Abstract\]](#)
11. **Araki, R.**, McMillan, K., (2020) Developing diagnostic signatures from in-situ soil moisture networks under different land-uses. Poster presentation at the *AGU Fall Meeting*

(H195-0005), Online. December 2020. [\[Abstract\]](#)

12. **Araki, R.**, Sayama, T., Yamamoto, K., Apip, A. (2019): Characteristics of soil and hillslope runoff in a humid tropical forest and in Sumatra, Indonesia: the impact of land-use change. Electronic poster presentation at the American Geographical Union Fall Meeting 2019 (B41F-03), San Francisco, CA, United States. December 2019. [Electronic poster] [\[Abstract\]](#) [\[Electronic poster\]](#)
13. Sayama, T., **Araki, R.**, Yamamoto, K. (2019): Field Observation and Modeling of Rainfall-Runoff Process in a Humid Tropical Forest in Sumatra, Indonesia [in Japanese]. Presented at Annual Conference, Japan Society of Hydrology and Water Resources, Chiba, Japan. 2019.9.12. [DOI:10.11520/jshwr.32.0_206](https://doi.org/10.11520/jshwr.32.0_206)
14. Sayama, T., Yamamoto, K., **Araki, R.**, Apip, A., Siska, E.M., Takara, K. (2019) Rainfall-Runoff-Inundation Processes and Modeling in a Humid Tropical River Basin. Presented at the 8th International Conference on Water Resources and Environment Research, Nanjing, China. [\[Abstract\]](#)
15. **Araki, R.**, Sayama, T., Yamamoto, K. (2019) Characteristics of soil and hillslope runoff in humid tropical forest in Sumatra, Indonesia. Presented at the Japan Society of Civil Engineers Kansai Chapter Scientific Conference, Osaka, Japan. **Excellent Presentation Award.** [\[Media, in Japanese\]](#)
16. Sayama, T., **Araki, R.**, Yamamoto, K., Apip, Takara, K. (2019): Characteristics of Soil and Hillslope Runoff in Humid Tropical Forest in Sumatra, Indonesia, JASTIP-WP4 Seminar on Hydrometeorological Disasters in Humid Tropics, DPRI, Kyoto University, March 2019.

CONFERENCE CONVENER

Nanda, A., Singh, N., Sen, S., **Araki, R***. Runoff Generation Processes: Exploring Thresholds, Sources, and Pathways from Plot to Continental Scales. The American Geographical Union Fall Meeting 2023 (H117), San Francisco, CA, United States. December 2023.

* *Early career convener*

SCHOLARLY AWARDS

- 2019 Best Presentation Award, the Japan Society of Civil Engineers Kansai Chapter
- 2019 Excellent Student Award, selected as the top 20% of students, the Undergraduate course in Civil Engineering, Kyoto University

SCHOLARSHIPS AND FELLOWSHIPS

- 2023 [Quad Fellowships, Schmidt Futures](#)
- For the international leaders in STEM, supported by the governments of United States, Japan, India, and Australia
- 2021 General Scholarship, San Diego State University
- 2019 – 2023 Study Abroad Scholarship, Japan Student Service Organization

2020 McFarland Geography Scholarship, San Diego State University
2020 Master's Research Scholarship, San Diego State University
2020 Scholarship, American Association of Japanese University Women
2019 [Daishin Corporation Study Abroad Scholarship](#)
2017 Fellowship, Kyoto University Yoshida Kishichiro Foundation
- For the top 2 students in the International Course Program
2017 Study Abroad Scholarship, Gyomusuper Japan Dream Foundation

PROFESSIONAL AFFILIATIONS

American Geophysical Union

PROFESSIONAL SERVICES

2019 – Present Founder, [Blue Gold Graduates](#), San Diego State University
- Founded an inter-departmental group of watershed science students.
Organizing a bi-weekly research seminar.

Spring 2016 Volunteer, NGO Community Road Empowerment
- Transferred road-repairing technique with plastic soil-bags in three villages in Myanmar

2018 – 2020 Mentor of students participating in an exchange program,
Kyoto University

2016 – 2019 Mentor of newly-admitted students, International Course Program,
Kyoto University

2016 – 2017 Public Relations, international students' community iAT, Kyoto University

Reviewing journal

Water Resources Research 2021, 2022, 2023; Journal of Hydrology Regional Studies 2023;

INVITED TALK

To be edited