

Antonia Chu

Water Resources Engineer
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Oak Ridge National Laboratory

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Education

Master of Science in Water Science and Engineering

2019– Sept. 2023 Master at KIT, *Karlsruhe (Germany)*

- Master thesis (in cooperation with Weber-Ingenieure GmbH): “Comparison of variants for the outlet structure of the Freistett/Rheinau/Kehl retention area as part of the integrated Rhine program under technical, economic and ecological aspects”

Bachelor of Science in Geoecology

2015–2019 Bachelor at KIT, *Karlsruhe (Germany)*

- Bachelor thesis: “Influence of the Ma Le Cave System on the Geochemistry and Mineralogy of Suspension Material from the Seo Ho River in North Vietnam”

Work experience in chronologically descending order

since Oct. 2023 **Water Resources Engineer** at Oak Ridge National Laboratory, *Oak Ridge, TN*

- **Water Power Program** Research regarding reservoir sedimentation in the US. Data gathering, management and analysis. Involved in low-impact Hydropower research, including non-powered dams resource assessment update and conduit hydropower development.

Sept. 2022 **Student Worker** at Weber-Ingenieure GmbH, *Freiburg (Germany)*

- April 2023
- **Flood Prevention and Retention Planning** Examination of existing outlet structure including material tests. Design of appropriately sized new structure based on hydraulic simulation with HEC-RAS. Measures in accordance with environmental protection plans regarding water retention, and flow dynamics.
 - **Report Writing:** Gathering of simulation results, and in-situ data to write a comprehensive project report. Evaluation and comparison of different outlet structure designs with respect to technical, economical and ecological aspects.

July 2021 **Student Researcher** at KIT, *Karlsruhe (Germany)*

- Sept. 2021
- **Literature Research** Viability of AI methods in environmental sciences with application to various fields in ecosystem services and behavioral modeling. Evaluation and categorization of different AI methods based on their applicability in remote monitoring of natural resource and land management, human-nature interactions.
 - **Project Management:** Data organization and management in Excel. Creation of a comprehensive overview.

Sept. 2019 **Student Teaching Assistant** at KIT, *Karlsruhe (Germany)*

- Dec. 2019
- **Lecture preparation:** Gathering and preparation of plant material for an undergraduate class in botany. Plant identification for lecture material.

April 2018 **Working student** at ICP Ingenieurgesellschaft Prof. Czurda und Partner mbH,
–Nov. 2018 *Karlsruhe (Germany)*

- **Geotechnics and Soil Mechanics:** Scientific assistant in the soil mechanics laboratory. Operation, execution, and documentation of experiments. Responsible for handling of contaminated samples from landfills.

Other professional experience in chronologically descending order

Sept. 2021 **Team Member** in a scientific excursion of KIT to the Enguri Reservoir, (*Georgia*)
–Oct. 2021

- **Sediment Management Modeling:** valuation of sediment management strategies for one of the largest reservoirs in Eurasia to ensure the safe operation of the hydro-power plant supplying 50% of Georgia's energy demand. Digital reservoir modeling and data evaluation.
- **Field Work:** On-site data gathering and sediment measurements.

March. 2019 **Team Member** in a scientific excursion of KIT to the Amazon River, (*Brazil*)
–April 2019

- **Field Work:** Field work experience in sample gathering, on-site sample preparation and preservation.

Feb. 2018 **Intern** at the Department of Water and Waste Management and Soil Protection,
–April 2018 *Neustadt an der Weinstraße (Germany)*

- **Project Supervision:** Flood protection measures and dike inspections. Pre- and post-processing of planning meetings and conflict talks involving multiple parties including an industry-leading chemical company. Contaminated site remediation.

Volunteering

April 2023 **Assistant Organizer** of the International Workshop on Moment Methods in Kinetic Theory IV, *Karlsruhe (Germany)*

Journal Articles

[Hou+21] John Ethan Householder et al. "Modeling the Ecological Responses of Tree Species to the Flood Pulse of the Amazon Negro River Floodplains". In: *Frontiers in Ecology and Evolution* 9 (2021). ISSN: 2296-701X. DOI: 10.3389/fevo.2021.628606. URL: <https://www.frontiersin.org/articles/10.3389/fevo.2021.628606>.

Theses

[Chu19] Antonia Chu. *Influence of the Ma Le Cave System on the Geochemistry and Mineralogy of Suspension Material from the Seo Ho River in North Vietnam*. 2019.

[Chu23] Antonia Chu. *Comparison of variants for the outlet structure of the Freistett/Rheinau/Kehl retention area as part of the integrated Rhine program under technical, economic and ecological aspects*. 2023.

Articles

DeNeale, S., L. Ashworth, **A. Chu**, and S.-C. Kao (2024), Tapping Municipal Water Supply Systems for Low-Impact Hydropower Growth, Hydro Review.

Technical Reports

DeNeale, S., **A. Chu**, L. Davis, L. Ashworth, and J. Wells (2024), Workshop Summary Report on Conduit Hydropower Development in the US – Opportunity and Challenges, ORNL/TM-2024/3409, Oak Ridge National Laboratory, Oak Ridge, TN.

Professional Organization Memberships

○ American Geophysical Union (AGU)

Technical and Language Skills

- Software: (Arc)GIS, EPANET, RESCON 2, SonarWiz, MATLAB, LaTeX, HEC-RAS, HY-8, MS Office
- Languages: German (native speaker), English (fluent)
- Science Specialities: Water Resources Engineering, Flood Retention Planning, Sediment Management in Reservoirs, Hydropower Engineering.