



CUAHSI
universities allied for water research

UNIVERSITIES ALLIED FOR WATER RESEARCH

The Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) is a non-profit organization that serves the interdisciplinary water science community. We foster a diverse and dynamic water science community enabled by shared scientific infrastructure that supports the development and communication of an integrated understanding of interactions among water, earth, ecosystems, and society. CUAHSI's membership consists of more than 140 academic institutions and affiliate members, including non-governmental organizations and international institutions, but CUAHSI's services are available to all.

Since 2001, CUAHSI has provided resources and services that are not typically offered by any single institution, particularly in the academic community. We provide water data services, specialized training, support for the development and application of community models, student and early career travel grant

programs, and community meetings. CUAHSI's programs and resources are available to everyone, and have been utilized by students, educators, citizen scientists, outreach coordinators, environmental and watershed organizations, federal and state agencies, corporate entities, and more!

"CUAHSI has sparked new collaborations and unlocked resources that have significantly enhanced research and education. I would highly recommend becoming involved in the diverse CUAHSI community, as it is a nexus of integrative and innovative water research."

2018 Instrumentation Discovery Travel Grant (IDTG) Recipient

CUAHSI
pronounced
coo-AH-see



WATER DATA SERVICES

CUAHSI provides open source tools that support managing, archiving, sharing, discovering, publishing, and analyzing all types of water data. CUAHSI Water Data Services support documentation of workflows and enable hydrologic modeling in a collaborative environment. All CUAHSI Water Data Services are free and open source.

Manage and Publish Hydrologic Data with HydroShare

HydroShare is a comprehensive platform for data management. HydroShare users upload complex data sets, create workflows, and add value to data through annotation and collaboration with colleagues. HydroShare can be used for data archival and publication, including provision of a Digital Object Identifier upon publication, allowing greater possibilities for data re-use through a domain-specific data repository. Users can discover and download data, as well as use data in existing apps (or develop new ones) to analyze and visualize data within HydroShare.

"Not only does HydroShare allow members of my lab the opportunity to safely store and share our results, but it allows us to identify data and other studies that are complementary to our research. HydroShare has provided a bridge between our efforts and our community's work, which undoubtedly strengthens the research products and results we produce." HydroShare User

Find and Publish Time-Series Data with the Hydrologic Information System (HIS)

CUAHSI's Hydrologic Information System (HIS) provides a ready solution for discovering, accessing, and publishing time-series data. Data from more than 100 providers are accessible through an intuitive geographic or parameter search interface; data from multiple providers can be downloaded in a common format thereby reducing the time required to find and reformat data. The HIS is a standards-based system that allows anyone to upload time series data to CUAHSI's cloud storage to make the data accessible.

"Collaboration is an integral part of the scientific process, but having worked on a cross-disciplinary project involving hydrology, data sharing and communication are two major challenges in collaboration. CUAHSI plays an important role in facilitating collaborative research and allowing scientists to build on each other's work." Former CUAHSI Water Data Services Intern, 2017

JupyterHub

Through the CUAHSI JupyterHub, users can explore, modify, and interact with data inside a remote execution environment using the Python and/or R Programming language. The CUAHSI JupyterHub is integrated with HydroShare through an open application programming interface (API) to facilitate the seamless transfer of data to and from the compute environment. This close integration makes it easy to leverage community data sets, collaborate, and disseminate research workflows. Moreover, this makes the CUAHSI JupyterHub an ideal platform for teaching water science using real-world data, as well as disseminating published research findings. CUAHSI JupyterHub also works in a stand-alone environment.

Hydroinformatics Innovation Fellowship

The competitive Hydroinformatics Innovation Fellowships are meant to encourage the community to build a hydroinformatics product that is dependent on CUAHSI Water Data Services and can be disseminated broadly. Products can be apps integrated into CUAHSI Water Data Services or STEM curricula or other informatics-related application.



"With vast data contributors shared on the CUAHSI service, we proposed an application providing tools for configuring quality control tests to run on their data with customizable parameters, to ensure that all CUAHSI-hosted data will have, at minimum, a base level of quality control." 2018 Hydroinformatics Innovation Fellow

COMMUNITY SERVICES

CUAHSI provides diverse community services that help train the next generation of water scientists and support continuing education for professionals.

Travel Grants

Instrumentation Discovery Travel Grants (IDTGs) enable graduate students and early career scientists to visit experts in hydrologic instrumentation so they can expand their knowledge of a specific instrument or technique. Past grantees' visits include the USGS Water Science Center to train in the use of an absorption and attenuation meter and the University of Wyoming to train in the use of their borehole and surface Nuclear Magnetic Resonance (NMR) instrument. **Pathfinder Graduate Student Fellowships** provide travel funds for graduate students to broaden their research and go beyond one site, one view by performing comparative studies at other field sites. Recent Pathfinder Fellow site visits include the Chugach Mountains near Valdez, Alaska, and the Yangtze River in China.

"Dr. Parsekian [University of Wyoming] spent much time training me...in such a short period. Not only the data I interpreted here was fruitful, but the passion revealed from his active-thinking of the problems that we encountered was encouraging. The knowledge I learned...will help me strengthen my research skill in the future."
2018 IDTG Recipient

Training Workshops and Short Courses

CUAHSI's training workshops and short courses increase access to advanced instrumentation techniques, field methodologies, data services, modeling tools, and multidisciplinary perspectives on water science. Training workshops and short courses are hosted throughout the U.S., are taught by experts in the field, and occur at field sites and in classroom settings. CUAHSI typically provides some travel support to graduate students participating in the courses. Since 2014, CUAHSI has offered more than 30 training activities including, for example, training workshops on the Community WRF-Hydro Modeling System and Snow Measurement Field Schools.

"My expectations for this course were exceeded by the quality of instruction, the enthusiasm and passion for snow research of both the instructors and course participants, and the academic caliber of everyone involved, the accommodations, and the efficient coordination/logistics/planning."
2019 Snow Measurement Field School Attendee

National Water Center Innovators Program: Summer Institute (SI)

The Summer Institute is a unique seven-week immersive experience that brings together graduate students, academic researchers, and National Water Center staff. Participants, residents at the National Water Center, design and collaborate on projects that advance National Water Model capabilities, enhancing the nation's ability to respond to water hazards. Previous projects included comparison of coarse and high-resolution hydrologic modeling in mountainous areas and new algorithms for groundwater discharge estimation for National Water Model streamflow forecasts. Results from the Summer Institute are published in CUAHSI technical reports and in the Journal of the American Water Resources Association.

"The SI provides a great opportunity for students to walk out of school and cooperate with people from different backgrounds. Working with them not only enabled me to integrate my technical skills into other principles, but also made us build friendship we would value through years."
2016 SI Participant

Let's Talk About Water

This competitive program invests in scientists to host science communication workshops. This program also has provided a framework for developing successful water science education events that use film to motivate a conversation between a panel of scientists and the community on critical water issues.

"We are carrying on the Let's Talk About Water tradition...Thanks to your generous support last year [2018], the event has already earned a reputation of excellence."
2018 LTAW Grantee from Northern Arizona University

Cyberseminars

CUAHSI's cyberseminars provide a platform for scientists to easily disseminate their most recent work to the community. Cyberseminars may be a single presentation of interest or may consist of a series of themed talks occurring over several weeks. In addition to the live event, CUAHSI has an archive of more than 200 cyberseminar recordings that are freely available. The community can browse talks on diverse topics including recent advances in big data machine learning in hydrology, major challenges in key river basins around the world, and the U.S. food, energy, and water system at the mesoscale.

CUAHSI Virtual University (CVU)

The CUAHSI Virtual University is a unique multi-institution, one-semester graduate course consisting of a diverse set of 4-week modules on highly specialized hydrology topics. The program is designed to enhance the depth of graduate course offerings at universities across the U.S. Students from the participating universities enroll in modules of their choosing, resulting in collaborations between instructors and students at a range of universities that might not happen otherwise. The modules are taught, live and online, to students at participating universities. Students earn course credits at their home institutions and instructors earn teaching credits at their institution. Since 2017, thirteen universities have participated in this program and topics have included ecohydrology of groundwater dependent ecosystems, advances in drone-based remote sensing for hydrologic applications, and measuring stream transport and transformation with tracers.

"The CVU definitely exceeded my expectations. I learned so much in just a short period of time. The modules really drilled down into the specific fields, but also gave me a broad overview of important questions in each field. I think it may help direct my own research focus as well."
2018 CVU Participant



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“While good science can come from an individual, great science comes from collaborations... The community that CUAHSI brings together, and the conferences / trainings / opportunities that they offer, provides the vehicle in which to launch meaningful and impactful research topics that would otherwise take months if not years to develop.” 2017 CUAHSI newsletter interview with a 2017 SI Course Coordinator

JOIN CUAHSI IN ADVANCING INTERDISCIPLINARY WATER SCIENCE

Become part of the growing national and international water science community:

- **CONTRIBUTE** to innovations in community modeling, data science, and education
- **PARTICIPATE** in CUAHSI's many educational and outreach opportunities
- **REPRESENT** your organization within the multi-disciplinary CUAHSI community
- **RECEIVE** member registration discounts on CUAHSI events and workshops

To learn more about becoming a CUAHSI member, contact commgr@cuahsi.org.

“CUAHSI provides our community with workshops, conferences, tools, and databases that ensure the transfer of knowledge to anyone interested. CUAHSI also serves as a community hub and provides opportunities for networking and sharing of ideas. Finally, CUAHSI serves as a support system. This is a unique and important aspect of CUAHSI, especially for early career researchers.” 2019 CUAHSI newsletter interview with an avid HydroShare user

Explore our services at www.cuahsi.org

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