COLLEGE OF ENGINEERING
THE CHARLES E. VIA, JR. DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING
VIRGINIA TECH.

Opportunity: Join a Global Consortium Transforming Water Science

Positions: Postdoctoral Researcher (1) & Ph.D. Research Fellows (2)

Institution: Virginia Tech | Department of Civil & Environmental Engineering

Project: Re-Analysis of Water for Society (RAWS)

Advisor: Dr. Landon Marston

Location: Blacksburg, Virginia (with international travel)

About the Initiative

The Marston Research Group is a core partner in the newly funded Re-Analysis of Water for Society (RAWS) project, a 5-year, $9.5 million global initiative. RAWS is a transformative project that aims to create the first-ever high-resolution (~1 km, daily), 60-year reanalysis of the global terrestrial water system.

By joining our team, you will help build the next generation of global water intelligence. We are integrating physical hydrology, human water use, and water quality into a unified framework driven by cutting-edge processed-based models, artificial intelligence, and stakeholder needs.

Why Apply?

- **Global Network:** Work directly with partners at Utrecht University (Netherlands), Politecnico di Milano (Italy), and the University of Oklahoma, among others.
- **Real-World Impact:** Collaborate with major global organizations including the National Geographic Society, World Wildlife Fund (WWF), and World Resources Institute (WRI) to ensure your research informs policy and public awareness.
- **Cutting-Edge Tech:** Gain expertise in AI/ML (CNNs, Random Forest), High-Performance Computing (HPC), and 4D-VAR data assimilation.
- **Travel:** Participate in international team meetings and fieldwork in "deep dive" water scarcity hotspots around the world.
- **Research Leadership:** You will have the opportunity to expand your research portfolio by leading several high-impact research papers, and contribute to others.

Position 1: Postdoctoral Researcher – Global Water Data Science & AI

Start Date: March 1, 2026 (Negotiable)

We are seeking a visionary researcher to lead the development of transformative global water and infrastructure datasets that underpin AI and process-based hydrologic models. You will be responsible for creating the human-dimension inputs that power the Global Water Model.

Responsibilities:

- **AI-Driven Data Creation** *(Effort: 40%)***:** Develop novel global datasets for urban and irrigation water sources, groundwater wells, water allocation and governance rules, and interbasin transfers using existing records, semi-automated AI classification methods (e.g., CNN, Transfer Learning), and remote sensing.
- **Deep Dive Leadership** *(30%)***:** Lead "Deep Dive" studies in water-scarce regions—including the Rio Grande, Southeast Asia, and Australia—to validate models against local data and co-develop adaptation pathways.
- **Strategic Dissemination** *(20%)***:** Collaborate with the project partners to create visualization tools and narratives that communicate water risks to a global audience. Prepare high-impact manuscripts for publication and ensure all generated data products adhere to FAIR principles (Findable, Accessible, Interoperable, and Reusable) for maximum usability and long-term scientific value.
- **Mentorship & Advising** *(10%)***:** Be responsible for mentoring and advising undergraduate and graduate students involved in the research activities of the Marston Research Group.

Qualifications:

Required:

- Ph.D. in Civil Engineering, Hydrology, Computer Science, Earth System Science, or related fields.
- Strong proficiency in Python or R and experience with High-Performance Computing.
- Proficient communication skills in oral and written English.
- Track record of conducting original research and publishing in peer-reviewed scientific journals.

Preferred:

- Experience in remote sensing or machine learning applications in environmental systems.
- Experience with Google Earth Engine, GIS, and/or AI agents for data processing.

Salary & Benefits:

This position is a full-time, benefits-eligible position appointed on a 12-month service basis, with the possibility of an extension based on performance. Starting salary will be competitive and commensurate with experience and qualifications. As permitted, an additional salary supplement and professional development stipend will be provided to candidates with external funding or postdoctoral fellowship.

Positions 2 & 3: Ph.D. Research Fellows – Water Systems Intelligence

Start Date: June or August 2026 | Fully Funded (Tuition + Stipend + Travel)

We are recruiting two high-potential Ph.D. students to become experts in global water sustainability. You will work at the intersection of big data, hydrology, and policy. Both positions will contribute to "Deep Dive" studies in water-scarce regions globally to validate models against local data and co-develop adaptation pathways.

Focus Area A: Infrastructure & Allocation Data

You will develop new data, models, and insights in how humans interact with and shape the global water system. Using machine learning and novel water and infrastructure data products developed through this project, you will map global water infrastructure and allocation schemes to improve accuracy of global-scale hydrologic models.

Focus Area B: Data-Driven Water Use

You will identify the socioeconomic, climate, and land-use predictors that drive water demand. You will help build AI models to fill spatial and temporal data gaps in agricultural, industrial, energy, and municipal water use sectors.

The Ph.D. Experience:

- **Global Collaboration:** Engage in a highly collaborative environment, working closely with a multidisciplinary set of international faculty, students, and researchers across co-host institutions in the Netherlands, Italy, and the U.S..
- **Team Dynamics:** Benefit from a dynamic and diverse research group here at Virginia Tech, where you will integrate into a highly collaborative team environment alongside postdocs and other graduate students.
- **Mentorship:** Receive structured mentorship from a diverse, multi-national team of senior scientists.
- **Fieldwork:** Participate in stakeholder dialogues in global hotspot regions to ground-truth your data.
- **Publication:** Lead high-impact papers on human-water interactions and sustainability challenges.

Qualifications:

- B.S. or M.S. in Engineering, Environmental Science, Data Science, or a related field.
- Strong quantitative skills and experience with programming (Python/R).
- Proficient communication skills in oral and written English.
- A passion for interdisciplinary research and global sustainability.

Additional Information (all positions):

The successful candidates will join the Marston Research Group within the Department of Civil and Environmental Engineering at Virginia Tech. While the primary focus is to conduct and

disseminate high-impact research on human-water systems, each position is designed to accelerate your professional growth. Opportunities are provided for diverse career development activities, including:

- **Skill Development:** Acquiring new research techniques (e.g., AI/ML, data assimilation).
- **Networking:** Establishing a strong professional network within a multinational research consortium.
- **Funding Acumen:** Participating in proposal development.
- **Leadership:** Mentoring undergraduate and graduate students.
- **Reporting:** Preparing detailed research and progress reports.
- **Teaching:** Pursuing limited teaching opportunities as appropriate.

A formalized mentoring plan will be co-developed with Dr. Marston at the start of the position to align these opportunities with your long-term career goals.

The Charles E. Via Department of Civil and Environmental Engineering (CEE) is home to 55 tenure and tenure-track faculty members, 350 full-time graduate students and 625 undergraduate students, making it among the largest CEE departments in the country. Both the graduate and undergraduate programs are consistently ranked in the top 10 CEE programs nationally by US News and World Rankings and ranked among the top 100 civil engineering departments globally.

Virginia Tech is a public land-grant university, committed to teaching and learning, research, and outreach to the Commonwealth of Virginia, the nation, and the world. Building on its motto of Ut Prosim (that I may serve), Virginia Tech is dedicated to InclusiveVT—serving in the spirit of community, diversity, and excellence. We seek candidates who adopt and practice the Principles of Community, which are fundamental to our on-going efforts to increase access and inclusion, and to create a community that nurtures learning and growth for all of its members. Virginia Tech actively seeks a broad spectrum of candidates to join our community in preparing leaders for the world.

Virginia Tech's main campus is located in the vibrant town of Blacksburg, VA, which sits within the beautiful Appalachian Mountains of Southwest Virginia and is regularly ranked among the country's best places to live.

How to Apply

Review Date: PhD applications will be reviewed starting **January 15, 2026**. Postdoc applications will be reviewed starting **January 26, 2026** and will continue until positions are filled. The successful candidate will be required to have a criminal conviction check.

- **For Postdocs:** Please submit a detailed Curriculum Vitae (CV) listing at least three professional references via https://jobs.vt.edu/. Please also include unofficial copies of your transcripts and up to two relevant publications. The application requires a one-page cover letter that includes i) your key scientific contributions to date and their relevance to this position; ii) the specific research questions and skills you aim to develop; and iii) how the position aligns with your immediate and long-term professional goals.

- **For Ph.D. Candidates:** Apply to the Civil & Environmental Engineering Graduate Program through the Virginia Tech Graduate School at https://graduateschool.vt.edu/admissions/how-to-apply.html.

Questions? Email Dr. Landon Marston directly at ***lmarston@vt.edu****.*