



The UPP Newsletter

A bi-monthly newsletter about the people and activities of the USGS-PSU Partnership, water science in Oregon, and related topics.

Coming Up:

- **Application Window for Funding Support Still Open** - The UPP is providing support this summer for teams of researchers who want to secure external research funding. While the application window for Track 2 has closed, applications are still being accepted for Track 1: Research Idea



Klamath County by Andrea Coan

Development. The UPP will likely fund one more team in Track 1, and funding will be awarded on a first-come, first-served basis. More information is available in the [RFA](#). The simple and short online application form is [here](#).

- **Women in Water Scholarship** - The Women in Water Scholarship Fund has opened applications for their 2021-22 scholarship opportunity. Women pursuing an undergraduate or graduate degree with any relation to western water resources are encouraged to apply for this \$5,000 scholarship. The application must be submitted by **July 1, 2021**, to info@fundingwomeninwater.com. [Click here](#) to find the application requirements and more information about this opportunity. Please share this opportunity with students who may be interested.

- **CUAHSI Biennial Colloquium 2021** - Every two years, The Consortium of Universities for the Advancement of Hydrologic Science (CUAHSI) holds a symposium that highlights water science advancements from various scientific fields. This colloquium will be held from **Monday, July 19th to Wednesday, July 21st**, and is an excellent opportunity for attendees to network and discuss ideas with their colleagues. Students are also highly encouraged to attend. [Click here](#) for more information about the event schedule and registration.
- **Are you doing fieldwork or research this summer?** - Please send us photos of you and your team conducting research/fieldwork, your research site, or anything water science-related. Send photo submissions to upp@pdx.edu. Submitted photos may be featured in a future edition of the UPP newsletter.

A Year-In-Review: UPP Tuition Remission Recipients

A core component of the USGS-PSU Partnership (UPP) is supporting PSU students interested in water science. We do this by connecting them with USGS staff and projects, funding student research and education, and creating professional development opportunities like internships and volunteer positions that will produce a skilled future workforce. Funding for student research and education happens in a variety of ways. UPP research grants that include student research assistant positions and UPP graduate tuition remissions are a few examples. In Fall 2020, USGS employees and incoming PSU graduate students Benjamin Totten, Will Long, and Wesley Noone were awarded UPP tuition remissions to support their graduate studies. Their master's projects will connect their work at USGS and their education at PSU. To celebrate their hard work, we invited them to share a year-in-review about their studies, work at the Oregon Water Science Center, and how the UPP has supported their professional trajectory.

PARTNER PROFILE



Eric Burns

Research Hydrologist

*USGS Geology, Minerals,
Energy, and Geophysics
Science Center*

Biography:

I've been with the USGS for 13 years, steadily transitioning from classical hydrogeology work to water-energy work. Prior to USGS, as a hydrogeologist, I've worked as a regulator for the Oregon Department of Agriculture and for an environmental consulting firm (both post-MS and pre-PhD). Before that I operated nuclear power plants, painted houses, repaired



Benjamin Totten

This past year has been an incredible time. Despite the pandemic conditions, the USGS and Portland State University have continued to provide great science and great educational opportunities for both the Portland metro area and Oregon as a whole. As a part of both organizations, I've

been incredibly grateful to the UPP for helping connect me to the greater science community and for funding my continuing education. This year, not only have I completed my first year of graduate school, but I've also been able to spend the year assisting hydrologists, hydrological technicians, and the greater USGS with various technical problems, research, and projects. This has challenged me in a range of Computer Science disciplines, from simple software support to web security, system administration, and collaborative scripting/software development. Assisting with the Oregon wildfires this past summer as a Radio Operator with the USGS was a meaningful experience that I am also deeply grateful for.

I hope to continue to work with the USGS and their large network of water sensor gauges for my thesis. I haven't quite narrowed down a specific topic yet, but I'm strongly leaning towards investigating either the API vulnerabilities that enable water sensors to be compromised or the lightweight cryptography being used in large sensor networks themselves. I find it interesting that many sensors use an RSA algorithm, even though Elliptic Curve cryptography is faster and more efficient on hardware-limited devices. With TSMC and MIT announcing a breakthrough with 1-nanometer transistors, are hardware limitations becoming a thing of the past? With Quantum computing and Quantum cryptography on the horizon, it may be time for a fresh set of eyes (and maybe a friend in the Mathematics department) to reevaluate where we stand regarding encrypting sensor data over cellular networks.

automobiles, and poured coffee. I've ridden in/on several unusual things, perhaps the most notable being the Goodyear blimp and a fast-attack submarine.

What do you do? I am the co-chief of the USGS Geothermal Resources Investigation Project. I do research on topics such as the water energy nexus, particularly where geothermal energy meets hydrology.

Why do you do what you do? I like working on interesting research topics with practical applications that help people better manage resources.

Why should others care that you do it? We provide tools so that people can make informed decisions into the future.

What would you be doing if you weren't in your current job? I like to teach interested audiences (e.g. advanced students or motivated public peoples). I might go to a national energy lab for a while; they do fun stuff!

Any hobbies? Travel, reading fiction (bubblegum for the brain), Xbox, and board games with friends!

William Long

The western United States is experiencing a prolonged drought which is one factor driving the frequency, variability, and severity of wildfire. With the water resiliency of western communities in mind, it is more important than ever to gain an understanding of the hydrological response to



wildfire. I became interested in disturbed watershed hydrology through my fieldwork with Oregon Water Science Center, where I experienced firsthand the expansive changes to land cover in the Oregon Cascades. I plan to conduct a multi-scale spatial analysis of burned watersheds to investigate the role of unique catchment characteristics and the distribution of burn severity patchiness on streamflow response. I am curious how the influence of these characteristics might vary throughout the western U.S. and what implications they might hold for the hydrology of Oregon watersheds burned in 2020.

In the first year of the MS in Geography program at Portland State University, I developed an improved understanding of hydrology through the lens of geographic thought, selected a thesis topic that captures my interest, and successfully completed course work applicable to both my job and research pursuit. These achievements have helped me invest in my knowledge of hydrological systems through the acquisition of new methods to conduct hydrological studies and convey scientific information. The UPP has provided me with a unique opportunity to enhance my professional experience in the early stages of my career while also contributing to the lively discord taking place at PSU and the greater academic community.

Monthly Read:

Foreign Firms Sucking "Virtual" Water from America's Parched Southwest

EPA awards \$723,000 in grants for beach water quality monitoring in Alaska, Oregon, and Washington

LISTEN: Understanding Water Challenges facing Native, Black, Latinx, and Migrant Communities (14 minute podcast)

Good Energy: Hood River farmers use irrigation water to make energy

PSU's Climate Science Lab Gets NASA Grant to Better Simulate Extreme Precipitation