PNAMP August 2024 Newsletter

Upcoming Events

Aug 7	Washington Salmon Recovery Funding Board Meeting
Aug 13-14	August Northwest Power and Conservation Council Meeting
Sep 10-11	September Northwest Power and Conservation Council Meeting
Sep 24-25	Washington Salmon Recovery Funding Board Meeting

If you would like your meetings posted on the PNAMP calendar, please email Quinnell Flanagan with details.

Local Job Announcements

We're bringing it back! Local job announcements will now be available in our newsletter. Below, you can find direct links to local jobs with PNAMP partners and more.

- ODFW Natural Research Specialist 2 (Roseburg, OR)
- USGS Research Biologist (Seattle or Cook, WA)
- ODFW Supervisor Fish and Wildlife Biologist (Newport, OR)
- DEQ Materials Management Specialist (Bend, Pendleton, The Dalles, Klamath Falls)

- ODF Community Wildfire Forester (John Day, OR)
- OWRD Field Services Division Administrator (Salem, OR)
- OBMEP Biologist II/Senior/Principal (Omak, WA)

Image Courtesy Jen Bayer

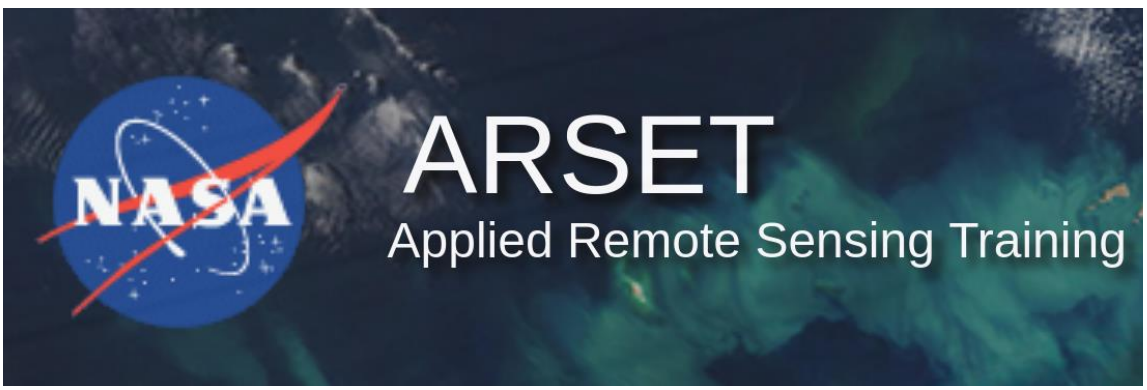
Coming Soon: ARSET Invasive Species Monitoring Training

NASA has an upcoming three-part training series as a part of their Applied Remote Sensing Training Program (ARSET). This training will allow participants to use their earth science data for invasive species monitoring.

This course will provide participants with an overview of typical NASA satellites and sensors used to map invasive plants such as Landsat, MODIS, and VIIRS, as well as innovative or upcoming data and missions such as the Global Ecosystem Dynamics Investigation (GEDI), HyMap, the Surface Biology and Geology (SBG) mission, and the Geosynchronous Littoral Imaging and Monitoring Radiometer (GLIMR).

You can register for the course at the NASA website.
Course dates, times, subjects, and instructors are listed below.

- Invasive Species Monitoring with Remote Sensing Part 1: An Intro to the Monitoring of Invasive Species with Remote Sensing Tools
  - 12:00 PM - 1:30 PM Aug 14, 2024 (UTC-04:00) Jeff Herring
- Invasive Species Monitoring with Remote Sensing Part 2: Monitoring of Aquatic Invasive Species with Remote Sensing
  - 12:00 PM - 1:30 PM Aug 21, 2024 (UTC-04:00) Jeff Herring
- Invasive Species Monitoring with Remote Sensing Part 3: Monitoring Invasive Grassland Species with Hyperspectral Remote Sensing
  - 12:00 PM - 1:30 PM Aug 28, 2024 (UTC-04:00) Jeff Herring



Picture Courtesy NASA ARSET (Applied Remote Sensing Training) Website

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ICYMI-- Dragonfly Larvae Help Reveal Information About Mercury Pollution

Scientists from the U.S. Geological Survey, National Park Service, the Appalachian Mountain Club and public participants have discovered new information about mercury pollution in the environment by examining dragonflies. Their findings were published in the journal Environmental Science & Technology.

The study used the Dragonfly Mercury Project, a nationwide program that works with public participants to collect dragonfly larvae for mercury analysis. Citizen scientists and community volunteers in 150 National Parks helped collect and measure dragonfly larvae from more than 750 sites. This project serves as the first national scale assessment of mercury stable isotopes using a single species, and provides valuable information on how mercury is delivered to ecosystems.

Image Courtesy of the USGS Dragonfly Mercury Project (https://www.usgs.gov/centers/forest-and-rangeland-ecosystem-science-center/science/dragonfly-mercury-project)

A Day in the Life of a USGS Hydrologic Technician: sUAS for Science

Written By: James Foreman, Hydrologic Technician, Watersheds and Fluvial Systems, USGS Washington Water Science Center, Tacoma, WA

One of the things I enjoy most about my work is the constant injection of new technology. Since 2016 I have been working with drones, small uncrewed aircraft systems (UAS), to develop their capacity as an environmental science tool. Their use has not only improved data accuracy and efficiency but has also reduced the risks and costs associated with traditional fieldwork. UAS equipped with sensors and cameras can capture high-resolution images of rivers, lakes, and wetlands, allowing us to monitor changes in water levels, vegetation, and erosion. With their ability to fly at low altitudes and access remote areas, UAS have become an essential tool for hydrologic research and monitoring.

But the big picture was not what I was thinking about on my four-hour drive to eastern Washington. I was focused on the truck bed full of equipment. As I rewound the packing process, I reviewed the contents of each box and bin in my mind, looking for things I may have missed and fretting about not being prepared. I have a clipboard full of checklists for a reason, I remembered. I thought about my field site, a small reservoir located below a burn scar and tucked in the hills just south of the Canadian border. The weather there was tricky and this week was about the best we could get. I was just about to review the NOAA forecast discussion for our area when a loud horn brought be back to the moment. The traffic light was green.

Our mission today is to map the inlet delta of the reservoir. This area is the primary source of sediment deposition and where we'll see the most change. Combined with recent bathymetric surveys and a reduced reservoir level, our plan is to generate digital elevation models of the target area and compare them to past data collection efforts. In this way, we can quantify any changes in the delta and relate those to the recent fire activity.

The first task on site is to establish some control points that will anchor our digital model to coordinates on the ground. Using high precision GNSS equipment, team members walk the flight area and place targets along the delta at specified coordinates. The locations of each target are used to calibrate the aerial photographs and provide the most accurate representation of where things are happening on the ground. These controls allow us to compare our data across time and space, providing anchor points for future aerial surveys. My team of two established a base station over a Geodetic Survey benchmark and spent a breezy morning getting our steps in.

Like terrestrial photography, aerial photographs benefit from good light. Things were timing out well, with ground control wrapping up just ahead of lunchtime. After a quick break for one of Safeway's better deli creations and some caffeine, we're ready to get the UAS out of the box. A landing pad is placed close to the shore, where takeoff and landing is free of obstacles. The aircraft is powered on and configured, with failsafe settings like maximum altitude, and return-to-home location receiving extra attention. The onboard camera is setup and the intervalometer programmed to trigger a picture every three seconds to maximize photo overlap.

This UAS can fly in autonomous mode, following a prescribed route within a specified target area. I had designated this delta as our focus area in the office, creating a flight route and altitude that gives us the best camera coverage on the ground. This program was loaded onto the UAS and the ground control system that manages auto-flight was fired up.

A quick aside: Anyone who has ever worked in the field knows that it can be a challenge to get your instruments to talk to each other. UAS work is no different, as I try to cajole three programs from three different manufacturers to all shake hands. Two out of three on the first try, a different two out of three the next. Cycle the power a third time and…we're connected.

The UAS is ready for takeoff. A gust of wind reminds me to check the anemometer one last time. Wind is still below our maximum allowed, but is forecast to build throughout the afternoon. Airspace around the launch site is cleared, the engines are started, and the aircraft lifts off. I fly the UAS up and out to check that the flight controls are working properly, testing the response to pitch, roll, yaw, and climb inputs. Satisfied that the UAS is in good working order, I turn the aircraft over to autonomous flight. Although auto flight is a critical component for replication and quality control of the data we collect, it is best described as mowing the sky. I keep my hands lightly on the controls in case of emergency, but there's not much to do except watch the UAS fly out and back, out and back. I have a real time camera feed on the UAS controller which gives me a feel for the data I am collecting during these 15 minute flights. Six flights and a few hours later, we've collected 10 gigs of data.

On our final approach to land, the weather comes over the mountains and into the reservoir. A squall of mixed precipitation and wind descends on us as we download and backup data to the field laptop. We get everything packed into the truck before it's soaked. Thanks for keeping that weather window open just long enough, Mother Nature. We recover our ground control targets from the delta and complete a survey of water surface elevation. This elevation will set the break point for where bathymetry ends and aerial photogrammetry begins, tying the two together through the power of GIS. It's wet and muddy, but we're safe on the ground with some really good data. We earned our Taco Tuesday!

Photo Courtesy James Foreman

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