



California Water Boards 6th Annual Water Data Science Symposium



Mono Lake, Photo Credit: Mick Haupt



Owens River, Photo Credit: Dane Deaner

***Beyond Open Data:
Radical Inclusivity for
Water Data Equity***



California Water Boards
[6th Annual California Water Data Science Symposium](#)
Beyond Open Data: Radical Inclusivity for Water Data Equity

Agenda & Resources

Monday, June 28, 2021

[Paya: The Water Story of the Paiute - Panel Discussion Recording](#)

Time	Topic
4:00 - 4:05	Welcome & Logistics <i>Greg Gearheart</i> <i>State Water Resources Control Board</i>
4:05 - 4:45	Film Screening - Paya: The Water Story of the Paiute
4:45 - 5:30	Panel Discussion <i>Panelists: Teri Red Owl¹, Paul Huette^{1,2}, Monty Bengochia^{1,3}</i> <i>Moderators: Kyndall Noah¹, Amanda Ford⁴</i> <i>(1) Owens Valley Indian Water Commission, (2) Big Pine Paiute Tribe of the Owens Valley, (3) Bishop Paiute Tribe Board Representative, (4) State Water Resources Control Board</i>

[Paya: The Water Story of the Paiute](#) tells the untold story of America's longest lived water war between the Owens Valley Paiute and the city of Los Angeles. Using in-depth interviews, 2-d animation, archival footage and photography, Paya documents the history of the Owens Valley Paiute who constructed and managed sixty square miles of intricate irrigation systems for millennia, long before Los Angeles diverted the Owens River through the Los Angeles Aqueduct, 220 miles across the Mojave Desert. After the Indian War of 1863, surviving Paiute returned to the valley from the Eastern Sierra and White Mountains to find their ancient waterworks taken over by white settlers. Over 150-years later, the Paiute continue the fight to save their waterworks, which are remnant in the Owens Valley landscape. Using archival maps from 1856, the filmmakers spent four years working with Paiute elders to locate and map their remnant irrigation systems using GIS technology, ultimately laying the foundation for a 'first use' water rights case now underway. Paya is currently being used by the Owens Valley Paiute and the Native American and academic communities nationally to mobilize tribes.

[Owens Valley Indian Water Commission Call to Action](#)

For questions about [Tribal Affairs at the California Water Boards](#), please contact:
Tribal-Liaison@waterboards.ca.gov

Tuesday, June 29, 2021

Plenary Session Recording

Time	Topic
9:00 - 9:05	Symposium and Webinar Logistics <i>Greg Gearheart</i> <i>State Water Resources Control Board</i>
9:05 - 9:20	Welcome <i>E. Joaquin Esquivel</i> <i>State Water Resources Control Board</i>
9:20 - 10:00	<i>Keynote Conversation</i> <i>Ebony Harper</i> <u>California TRANScends</u>

Session 1: From Data to Insight Recording

Examples of data visualization, exploration, and application

Time	Topic
10:05 - 10:25	<u>Bay-Delta data sandbox</u> : a web-based analytics and visualization environment for accessing and experimenting with integrated Bay-Delta data <i><u>Emily Richardson</u>, Jeffrey A. Hansen, Jeniffer Soto Perez, Tom Bergamaschi, Brendan F. Wakefield, Brian Bergamaschi</i> <i>United States Geological Survey</i>
10:25 - 10:45	DELVE: a cloud-based data management and visualization system for standardization, exploration, and collaboration <i><u>Mike Leech</u>¹, <u>Laura Nickelhoff</u>²</i> <i>(1) Environmental Science Associates, (2) Sitka Technology Group</i>

Time	Topic
<p>10:45 - 10:55 <i>Lightning Talk</i></p>	<p>Untangling the multi-variable microplastics toxicity issue with an interactive data exploration application (Twitter: @ToMExApp)</p> <p><i>Scott Coffin¹, Leah Thornton Hampton²</i></p> <p><i>(1) State Water Resources Control Board, (2) Southern California Coastal Water Research Project</i></p>
<p>10:55 - 11:15</p>	<p>Groundwater Quality Map</p> <p>Hung Bui</p> <p><i>State Water Resources Control Board</i></p> <p>Modified Drinking Water Watch (intranet site serving DDW staff)</p> <p>Public Drinking Water Watch (internet site serving the public)</p> <p>Google Maps JavaScript API</p> <p>Water System Boundary GeoJSON Layer</p>
<p>11:15 - 11:35</p>	<p>Advancing sustainable groundwater management with open-source technology: from vision to reality</p> <p>Christina Babbitt¹, John Burns²</p> <p><i>(1) Environmental Defense Fund, (2) Sitka Technology Group</i></p> <p>Water Accounting and Trading Demo Platform</p> <p>Story Map</p> <p>Source Code</p>
<p>11:35 - 11:55</p>	<p>gspdrywells.com: an open-source tool to estimate impacts to vulnerable wells and support gsp development</p> <p>Rich Pauloo¹, Darcy Bostic², Amanda Monaco³, Kaylon Hammond³</p> <p><i>(1) Water Data Lab, (2) Pacific Institute, (3) Leadership Counsel for Justice and Accountability</i></p> <p>California Water Data Challenge</p> <p>GSP Dry Wells Methodology</p>

Session 2: From Insight to Action Recording

Example tools that support data-driven decision making

Time	Topic
12:30 - 12:50	<p>Unnatural water balance and biological beneficial uses: a data driven framework to support flow management decisions</p> <p>Amanda Aprahamian¹, Aaron Poresky²</p> <p><i>(1) Orange County Public Works, (2) Geosyntec Consultants</i></p> <p>H₂OC Stormwater Program</p> <p>Flow Ecology Special Study Website</p> <p>Outfall Capture Feasibility Study Report</p>
12:50 - 1:10	<p>Water budget development: putting data to work</p> <p>Paul Shipman, Abdul Khan</p> <p><i>California Department of Water Resources</i></p> <p>California Natural Resources Agency Open Data Portal</p> <p>California Open Data Portal</p> <p>Comprehensive Water Budget: A Story of Innovations for Water Accounting</p> <p>Handbook for Water Budget Development: With or Without Models</p> <p>Templates from and FAQs about the Handbook</p> <p>Example Water Budget Dashboards from 2017 pilot project</p>
1:10 - 1:30	<p>OC stormwater tools: an open-source platform for stormwater asset inventory and performance modeling</p> <p>Austin Orr¹, Eric Rademacher²</p> <p><i>(1) Geosyntec Consultants, (2) Orange County Public Works</i></p> <p>OC Stormwater Tools Platform</p> <p>OC Stormwater Tools (Project Neptune) GitHub</p> <p>OC Stormwater Tools Water Quality Computing Engine (Nereid) GitHub</p>

Time	Topic
<p>1:30 - 1:40 <i>Lightning Talk</i></p>	<p>Waste discharge requirement data management: past, present, future <i>TJ Middlemis-Clark¹, Kristina Olmos², Stephanie Torres³, Laurel Warddrip³</i></p> <p><i>(1) Lahontan Regional Water Quality Control Board, (2) Central Coast Regional Water Quality Control Board, (3) State Water Resources Control Board</i></p> <p>GeoTracker</p>
<p>1:40 - 2:00</p>	<p>Open-source dashboards for operational control at wastewater facilities Ryan Shepherd¹, Patrick McGrath²</p> <p><i>(1) Databrook LLC, (2) San Luis Obispo Water Resource and Reclamation Facility</i></p>
<p>2:00 - 2:20</p>	<p>Beach water quality data in the County of San Diego and the future directions Farnaz Farhang</p> <p><i>County of San Diego</i></p> <p>San Diego County Beach & Bay Water Quality Program Search Beach Monitoring Data Twitter: @SDBeachH2O Facebook: @SDEnvirohealth</p>

Session 3: From Prediction to Protection Recording

Using machine learning to improve California's water resources

Time	Topic
2:35 - 2:55	<p>Identifying meaningful water quality parameters for resource constrained local government's data collection using large open access state datasets: a Clear Lake case study, Lake County, CA.</p> <p>Liam Healey, Angela De Palma-Dow</p> <p><i>Lake County Water Resources Department</i></p> <p>California Department of Water Resources Water Data Library California Water Boards Water Data Training & Resources - Machine Learning Handbook</p>
2:55 - 3:15	<p>A day at the beach: enabling coastal water quality prediction with high-frequency sampling and data-driven models</p> <p>Ryan T. Searcy, Dr. Alexandria Boehm</p> <p><i>Stanford University</i></p> <p>GitHub Repository A Day at the Beach Publication in <i>Environ. Sci. Technol.</i> 2021</p>
3:15 - 3:35	<p>Leveraging big data to predict microplastics toxicity for aquatic organisms (Twitter: @ToMExApp)</p> <p>Scott Coffin¹ (Twitter: @DrSCoffin), Leah Thornton Hampton², Bart Koelmans³, Merel Kooi³, Win Cowger⁴</p> <p>(1) <i>State Water Resources Control Board</i>, (2) <i>Southern California Coastal Water Research Project</i>, (3) <i>Wageningen University, Netherlands</i>, (4) <i>University of California, Riverside</i></p>
3:35 - 3:55	<p>Detecting cigarette butts from an eye in the sky</p> <p>Lorenzo Flores</p> <p><i>San Francisco Estuary Institute</i></p>
3:55 - 4:00	<p>Daily wrap-up and adjourn</p> <p>Greg Gearheart</p> <p><i>State Water Resources Control Board</i></p>

Wednesday, June 30, 2021

[Plenary & Session 1: California Chapter of the Society for Freshwater Science Recording](#)

Time	Topic
9:00 - 9:05	Welcome and Webinar Logistics <i>Greg Gearheart</i> <i>State Water Resources Control Board</i>
9:05 - 9:15	Introduction to Cal-SFS: the future of freshwater facilitated through Cal-SFS Fellowships <i>Angela De Palma-Dow¹, John Olson²</i> <i>(1) Cal-SFS Chair/President; County of Lake Water Resources, (2) Cal-SFS Treasurer; California State University, Monterey Bay</i> Cal-SFS Website Cal-SFS Email Address Twitter: @CalSFSsocial
9:15 - 9:30	What is a “natural” river? Understanding ecological opportunities and cultural values as flows decrease in Southern California urban rivers Melissa von Mayrhauser (Twitter: @melissavonmay) <i>University of California, Berkeley</i>
9:30 - 9:45	Ecological racism: seeking equity and justice via social and cultural competency <i>Robin López</i> (Twitter: @HoodEcologist) <i>University of California, Berkeley</i>
9:45 - 10:00	Thermal vulnerability in Sierra Nevada streams: spatial scales and drivers Kyle Leathers (Twitter: @KyleLeathers2) <i>University of California, Berkeley</i>

Time	Topic
10:00 - 10:15	<p>Using functional flows to establish flow criteria in California's South Fork Eel River watershed</p> <p>Alyssa Obester</p> <p><i>California Department of Fish and Wildlife</i></p> <p>California Water Action Plan</p> <p>California Department of Fish and Wildlife Water Action Plan Efforts</p> <p>California Water Boards Water Action Plan Efforts</p> <p>UC Davis California Environmental Flows Framework (CEFF)</p> <p>California Environmental Flows Workgroup</p>
10:15 - 10:30	<p>The Santa Ana River: opportunities from working in an extremely disturbed system</p> <p>William Ota</p> <p><i>University of California, Riverside</i></p> <p>U.S. Geological Survey Science Data Catalog</p>
10:35 - 10:45	<p>Cal-SFS follow-up and upcoming events</p> <p><i>Angela De Palma-Dow</i></p> <p><i>Cal-SFS Chair/President; County of Lake Water Resources</i></p> <p>Cal-SFS Website</p> <p>Cal-SFS Email Address</p> <p>Twitter: @CalSFSsocial</p> <p>California Aquatic Bioassessment Workgroup (CABW) Information</p> <ul style="list-style-type: none"> - Cal-SFS CABW Webpage - California Water Boards CABW Webpage - 2021 CABW Presenter and Poster Interest Form (Due July 30, 2021) - 2021 CABW Registration Form (Registration is required to attend)

Session 2: Using Data to Address Water and Racial Inequities Recording

Time	Topic
11:00 - 11:05	<p>Welcome, panelist introductions and panel objectives</p> <p><i>Panel Moderator: Greg Gearheart</i></p> <p><i>State Water Resources Control Board</i></p>
11:05 - 11:35	<p>Indigenous data sovereignty: how researchers can empower data governance</p> <p>Lydia Jennings (Twitter: @1NativeSoilNerd)</p> <p><i>University of Arizona</i></p> <p>Native Land Map</p> <p>United States Indigenous Data Sovereignty Network (Twitter: @USIDSN)</p> <p>CARE Principles for Indigenous Data Governance (Twitter: @GidaGlobal)</p> <p>Traditional Knowledge Labels</p> <p>Mukurtu (MOOK-oo-too) CMS</p> <p>Collaboratory for Indigenous Data Governance (Twitter: @IndigiDataLab)</p> <p>The University of Arizona Native Nations Institute (Twitter: @NNIarizona)</p>
11:35 - 12:40	<p>Brief panelist presentations and panel discussion</p> <p><i>Panelists: Anna Holder¹, Jaimie Huynh², Lydia Jennings³, Tara Moran⁴, Walker Wieland⁵</i></p> <p><i>Moderator: Greg Gearheart¹</i></p> <p><i>(1) State Water Resources Control Board, (2) CalRecycle, (3) University of Arizona, (4) California Water Data Consortium, (5) California Office of Environmental Health Hazard Assessment</i></p> <p>Panel & Discussion Notes</p> <p>CalEnviroScreen Related Resources</p> <ul style="list-style-type: none"> - CalEnviroScreen Website - CalEnviroScreen Hub - Draft CalEnviroScreen 4.0

Time	Topic
	<p>Pollution and Prejudice Related Resources</p> <ul style="list-style-type: none"> - Pollution and Prejudice: Redlining and Environmental Injustice in California - CalEPA Redlining and Environmental Justice Tool - Mapping Inequality (redlining data treasure trove) - Not Even Past: Social Vulnerability and the Legacy of Redlining - New York Times Article: How Decades of Racist Housing Policy Left Neighborhoods Sweltering - Pollution and Prejudice Webinar Registration (August 19) <p>Bioaccumulation Monitoring Program Realignment Related Resources</p> <ul style="list-style-type: none"> - Bioaccumulation Monitoring Program Website - Bioaccumulation Monitoring Program Realignment Website - Bioaccumulation Monitoring Program Realignment Plan (Executive Summary) <p>California Water Data Consortium Related Resources</p> <ul style="list-style-type: none"> - California Water Data Consortium Website - AB-1755: The Open and Transparent Water Data Act - Open and Transparent Water Data Act Information
12:40 - 12:50	<p>Symposium wrap-up and upcoming events</p> <p><i>Greg Gearheart</i></p> <p><i>State Water Resources Control Board</i></p> <p>Upcoming Events</p> <ul style="list-style-type: none"> - Pollution and Prejudice Webinar (Aug. 19) - California Aquatic Bioassessment Workgroup Meeting (Oct. 12-13)

Bay-Delta Data Sandbox Workshop

Time	Topic
1:30 - 4:00	<p>Bay-Delta data access: a how-to workshop for accessing and analyzing environmental data in the U.S. Geological Survey Bay-Delta Data Sandbox</p> <p><i>Brendan F. Wakefield, Jeffrey A. Hansen, Emily Richardson, Jeniffer Soto Perez, Tom Bergamaschi, Brian Bergamaschi</i></p> <p><i>United States Geological Survey</i></p>

About The 2021 Mascot

Brine shrimp and vernal pool fairy shrimp are this year's symbol of hope because of their amazing resilience, abundance, and support of life for California's original inhabitants, and their (sometimes under celebrated) beauty for being themselves.



Did you know?

1. Two species of brine shrimp (*Artemia monica* and *A. franciscana*) can be found in California's saltwater lakes; the Mono Lake brine shrimp (*A. monica*) is endemic to Mono Lake in Mono County, California. Vernal pool fairy shrimp (*Branchinecta lynchi*) are endemic to vernal pools in California and Oregon.
2. These freshwater crustaceans may be tiny, but they are a crucial food source for millions of birds during their arduous annual migrations along the Pacific coast. This Water Data Community continues to grow, but no matter how large we get we will continue to embody the "small but mighty" spirit!
3. Brine shrimp eggs were taken on the Apollo 16 and Apollo 17 missions to the moon to test the impact of radiation on life. Likewise, this Water Data Community continues to experiment and innovate to find water data solutions that will benefit all Californians.
4. These hearty little crustaceans can tolerate living in very salty waters, and their eggs can survive for extended periods without being exposed to any water at all! Similarly, this Water Data Community is resilient and has become a place where we can discuss and - most importantly - work together to overcome the environmental and social challenges we are facing now and will continue to face in the future.

Thank you for joining the 2021 California Water Data Science Symposium!

Stay connected with the water data science community by:

Registering for the [Water Boards College of Water Informatics Email List](#)
(under the General Interests drop down)

Attending future [water data science events!](#)



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