

**The Tahoe Environmental Research Center (TERC)** is dedicated to interdisciplinary research and education to advance the knowledge of aquatic and terrestrial ecosystems and their interactions within natural and developed Earth systems, and to communicate science-informed solutions worldwide.

TERC educates the next generation of leaders and inspires environmental stewardship in thousands of students, community members and visitors annually through its outreach centers in Incline Village, Nevada and Tahoe City, California.



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Seeing clearly through Lake Tahoe

## RESEARCH UPDATES

### **BIG WINTER, LOW SECCHI? LET'S WAIT AND SEE**

It had only been two years since we had a record snowfall in the Tahoe Basin, and yet, it happened once again. A big winter always starts with excitement. The first major storms ensure long-term coverage of your favorite ski run, economic security for local businesses, and lines at the grocery store. However, what does a big snow year mean for lake clarity?

Many factors play a role including the

timing of snowmelt, the duration of spring winds, and the depth of lake mixing. More sediment is deposited into Lake Tahoe in years with large spring streamflows than during drought years. However, the impact of these flows on clarity depends on the temperature of the lake when they arrive. Sediment-laden snowmelt may dive deep, seeking water of similar density, thereby taking the associated fine particles out of contention for clouding Secchi measurements. Additionally, the

*Continued on Page 3*

## LETTER FROM THE DIRECTOR

Summer at Lake Tahoe brings with it so many memories of fun times to people from all over the world. With a summer visitation rate approaching that of many of the nation's most popular National Parks, it is small wonder that so many people have experienced Tahoe's great summers. Do they remember it as being the same as when they visited as a child, or even just a few years ago?

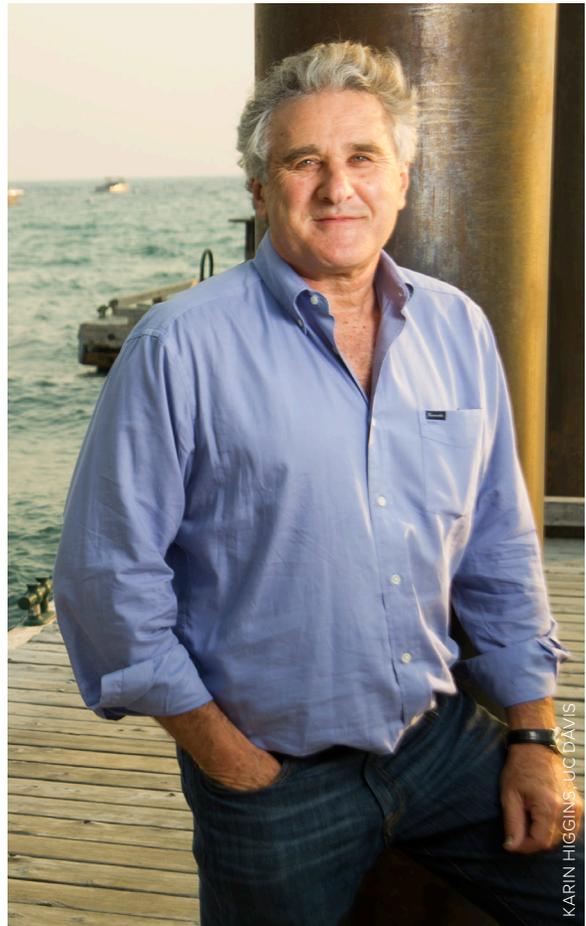
Most visitors I ask do have positive memories of Tahoe, then and now. Except, of course, there wasn't the traffic and the crowds. That's new. They remember the deep blue color of the water, the smell of the pines in the evening, the clean sand rubbing their soles as they walked barefoot on the beach. For those of us who have the luxury of spending the majority of each year here, we often get inured to the sights around us. The beaches, for instance, used to have pure, clean sand. Look more closely next time. Our beaches now have shells from invasive clams. They also have plastic. Lots of plastic. Straws, bags, wrappers, you name it. You'll find microplastics on any beach and they will be there for decades to come. Even mats of decomposing algae are finding their way onto our beaches in the summer.

Some of these problems are clearly of our own making. Plastic on the beach and in the water for example, is a problem that a little care could eliminate. But invasive species, the changing algal communities, and the decreasing clarity of the lake in summer time are among the challenges that we are playing an active role in trying to understand and solve. The solutions are not straightforward as the lake does not

stay the same from year to year. It never did, and climate change is accelerating the rate of change.

Most of what we know about Lake Tahoe, and all the great environmental success stories that have occurred here, have been underpinned by scientific research that has been going on for a long time. On June 6, 1959, Charles Goldman made the first Secchi depth measurement in Lake Tahoe – an impressive 89 feet. That was over 60 years ago. Without the established long-term record, we would have had no definitive evidence that the lake was changing, and no basis to fight to preserve it. In fact, had the research not been done to understand the causes of clarity decline, today's clarity would be closer to 30 feet than the current 70 feet.

So, as you enjoy summer here at Lake Tahoe, give a thought to what Lake Tahoe might have been like without the contributions of science done by generations of students, researchers, and technicians. Their collective contributions are immeasurable. What can you do to keep the science going? One thing you can do is become part of the science effort itself. Try downloading



**Geoffrey Schladow, Ph.D., Director,**  
UC Davis Tahoe Environmental Research Center

our Citizen Science Tahoe App the next time you are at the beach and recording what you see. Maybe stop by our Education Centers in Incline Village and Tahoe City to hear about the latest solutions. Or possibly even consider supporting science and research at Lake Tahoe.

## RESEARCH UPDATES *(Continued from Page 1)*



**Celebrating the 500th mid-lake sampling mission**

amount of fine particles will vary with how recently the streambeds have been washed. The heavy snows of 2017 were preceded by four years of drought. Accumulated material above high water in stream channels was suddenly flushed into the lake. Barring any flood events, this year's runoff would be expected to have a smaller sediment load, arriving on the heels of the previous record winter.

Deep lake mixing plays a large role in spring clarity. Nutrients that have accumulated in Tahoe's deep water are brought back to the photic zone where they can stimulate algae growth. During the winter of 2017, Tahoe only mixed to a depth of 335 meters (1,099 feet) and in 2018, Tahoe only mixed to a depth of 285 meters (935 feet). While winter storms were abundant and snow plentiful, temperatures remained relatively warm, and nutrients, stored at Tahoe's deepest depths, continued to accumulate.

Clearly, understanding how Tahoe

responds to a large winter snowpack is complicated. This year's story continues to unfold as the basin transitions from snow to wildflowers. Be sure to attend TERC's annual State of the Lake Report lecture on August 1 to gain insight on how the 2019 clarity reading will stack up against other years.

### **60TH YEAR OF SECCHI READINGS**

When Charles Goldman took his first Secchi depth measurement in Lake Tahoe on June 6, 1959, he had no idea what he was starting. Sixty years later, the same disk in the same lake remains the centerpiece of the longest lake data set in the western United States. While the data are fun to report, there is a deeper significance to their value.

A long-term data set can only be achieved with long-term funding. It is a tribute to TERC's multi-generational research staff, to the various funding agencies, and to

UC Davis as an institution that they have collectively maintained this one-of-a-kind data record. The value of one of the longest, continuous lake data sets in the world reaches far beyond the shoreline of Lake Tahoe. Investigators from around the world cite TERC's Tahoe data in their research papers and mine historical data sets to test modern theories. Meaningful environmental change is only illuminated through thoughtful analysis over time.

**COLDEST AIR TEMP WHILE DIVING : 2° F**

**COLDEST WATER TEMP WHILE DIVING: 32° F**

**500<sup>TH</sup> MID-LAKE SAMPLE : APRIL 3, 2018**

**1,600<sup>TH</sup> LTP SAMPLE : MAY 8, 2019**

### **USGS WORK IN THE SACRAMENTO RIVER DELTA**

The United States Geological Survey (USGS) California Water Science Center (CAWSC) is leading a multi-disciplinary project to understand the physical and biological processes that influence aquatic habitat quality in the Sacramento River Delta. UC Davis TERC is collaborating with the CAWSC to understand the physical mixing dynamics of the saltier ocean water as it flows into the Sacramento River. Of particular interest is how the location of the interface between the freshwater and saltwater changes as it moves upstream due to tidal action. TERC's Autonomous Underwater Vehicle (AUV), the UBC-Gavia, was deployed on a 15-mile mission between Pittsburg, CA and Rio Vista, CA. The team is now organizing a three-part AUV study over the summer in the

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## RESEARCH UPDATES *(Continued from Page 3)*



**USGS collaborator and UC Davis alum Paul Stumpner** on the Sacramento River waiting for the AUV to return to the boat

Carquinez Strait to measure breaking internal waves, in Suisun Bay to understand mixing of the water in this broad bay, and finally, up past Decker Island to understand how the physics of the system are changing nutrient concentrations.

### FOREST HEALTH UPDATE

TERC's Forest and Conservation Biology Lab transferred 10,000 sugar pine seedlings from the United States Forest Service (USFS) Placerville Nursery to the lab's lath house at the Tahoe City Field Station. These seedlings will be planted out on the north shore of Lake Tahoe from Crystal Bay to Tahoe City on public, private, and state lands in 2020 as a reforestation effort for bark beetle outbreak recovery. As part of this project, the lab will be setting up and mapping planting locations for sugar pine restoration plots. The Tahoe Fund and the California Tahoe Conservancy are funding this work.

This summer the Forest and Conservation Biology Lab will also

establish survey plots in aspen stands in the Lake Tahoe Basin to evaluate aspen leaf chemistry, quantify levels of defoliation by white satin moth (WSM), and measure the abundance of WSM.

### TERC IN CHILE

TERC, along with the League to Save Lake Tahoe and the Tahoe Regional Planning Agency, are engaged in bringing

the "Tahoe Process" to the lakes of southern Chile. Chile's lakes are in a state of rapid transition due to development pressures. Through a newly formed foundation, Chile Lagos Limpios, we are bringing the concept of research informing government and stakeholder action to the regions surrounding these lakes. A consortium of Chilean universities are also assisting in this research.

The first monitoring station was installed at Lake Panguipulli by TERC in December 2018. Another nine lakes will also be instrumented to provide the data needed to model the potential impacts of watershed

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**Seedlings in the lath house, healthy trees, caterpillars, and field research** (clockwise from left)

## RESEARCH UPDATES *(Continued from Page 4)*



**Installing the first monitoring station at Lake Panguipulli**

development and climate change on these lakes.

In September, a delegation from Chile will visit Lake Tahoe to meet local scientists and agencies, and to view restoration projects.

### GRADUATE STUDENTS

#### **Antarctica, Jasmin McInerney**

During this past Antarctic summer field season (January 2019), the team lead by Dr. Alex Forrest (UC Davis TERC), in collaboration with the Korea Polar Research Institute (KOPRI) and the École Polytechnique Fédérale de Lausanne (EPFL, Switzerland), sent the autonomous underwater glider Storm Petrel under the Nansen Ice Shelf to measure turbulent dissipation. This first ever attempt was successful in providing an important indicator of how fast ice shelves are melting. The field team consisted of UC Davis students Jasmin McInerney, Cordie Goodrich, and Drew Friedrichs, and

field technician Sebastien Lavanchy (EPFL, Switzerland).

Working with KOPRI scientists, the team was able to identify and track a plume of especially cold water coming out from beneath the ice shelf. Turbulence measurements show that where the water of the plume interacts with the surrounding ocean, there are enhanced levels of

turbulent mixing. From this, the researchers can look at mechanisms of heat transfer beneath the ice shelf itself.

Before sending Storm Petrel under the ice, the team conducted missions along the ice shelf front to locate the cold-water plume. These missions also allowed the team to get a good feel for the currents in the area. Working with the currents proved vital in designing a mission to fly 2.5 miles under the ice and back. The under-ice mission took a nail-biting 24 hours, and the vehicle surfaced exactly where the pilots expected.

The successful expedition was made possible by the testing and training the team conducted at TERC and in Lake Tahoe. Connections that the team made on the ship are leading to two more gliders coming from the National Oceanic and Atmospheric Administration (NOAA) to Tahoe later this year. These gliders will be used for testing in preparation for more work in Antarctica.

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**The Antarctica field team** out on the ice in front of the research vessel

## RESEARCH UPDATES *(Continued from Page 5)*



**Katie Stagl investigating the ice-on period on Lake Massawippi, Quebec**

### **Quebec, Katie Stagl**

An extensive winter field campaign was conducted in January 2019 to capture the temperature structure and mixing dynamics of Lake Massawippi, Quebec during the ice-on period. The ice-on period is characterized by circulation patterns that are present in the absence of wind. The causes of this circulation are not well defined, nor are predictions of when this circulation pattern will be expressed in lakes worldwide.

Three moorings were deployed and will be retrieved and redeployed after ice break-up. By observing the winter and summer seasons, the magnitude and variation of circulation can be compared throughout the year. Additionally, the seasons leading up to winter will provide a framework for the initial conditions during the ice-on period. By quantifying the thermal structure, sediment heat flux, and brine rejection, the mechanisms

for circulation under ice will be identified. This research has implications on the distribution of pollutants and/or nutrients for ecosystem function of ice-covered lakes. Additionally, climate change has a serious influence on these systems. Determining the impact is necessary for northern communities as they rely on the quality of the water in their lakes.

### **Clear Lake, Micah Swann**

Clear Lake is a naturally eutrophic, nutrient-rich watershed 80 miles northwest of Davis. While the lake is highly productive, supporting large populations of fish and wildlife, it is also susceptible to periodic cyanobacteria and algal blooms that pose serious human health risks

and create anoxic conditions in the water column. A team of TERC researchers is working to understand the dominant physical and biogeochemical processes that are preventing rehabilitation of the lake water quality and ecosystem health. In particular, they are determining if the dominant source of nutrients in the lake is external loading from human activity or internal loading due to a loss of oxygen by the lake's sediments.

An array of high-frequency in-situ water quality and meteorological sensors have been deployed around the Clear Lake watershed and within the lake itself in order to collect data to calibrate and validate a 3-D lake model. This model will be used to inform local and state water management decision-making.



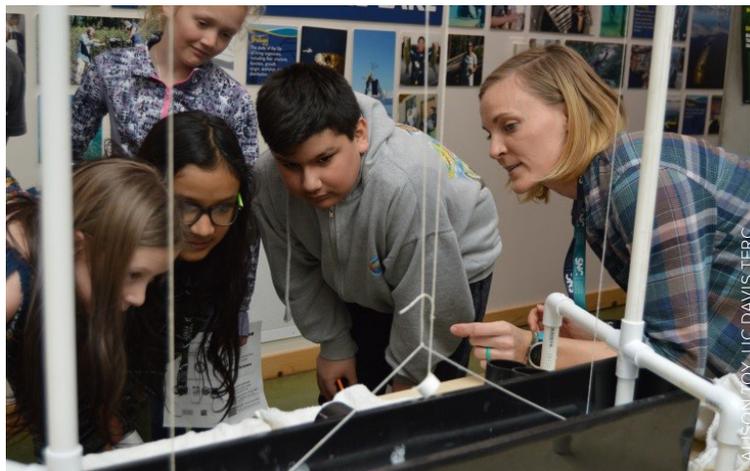
**UC Davis field technician Nick Framsted lowers a Seabird 19 to collect a vertical water quality profile in Clear Lake**

## EDUCATION AND OUTREACH

### 2019 SCIENCE EXPO: FUN WITH PHYSICAL SCIENCE

The 14th Annual North Lake Tahoe Science Expo filled the Tahoe Science Center with local elementary school students from the Tahoe and Truckee region during late March. Two weeks later, the gymnasium at Lake Tahoe Community College was transformed into a science center for the fourth annual South Lake Tahoe event.

TERC's Education and Outreach Team worked hard to develop and set-up 38 stations related to Physical Science. The lesson at each station aligned with the Next Generation Science Standards so that the information would reinforce in-class learning. This year's event featured



Students observe a bubble wall during the 2019 Science Expo

activities involving Energy, Forces and Motion, and Properties of Matter.

All activities included a hands-on experiment focused on conveying a specific concept. The volunteer at each station led the students through a mini-lesson, investigation, and discussion to help connect the activity to the principle being taught. Students traveled in groups from station to station, filling out passports with answers from each lesson.

Over 100 community members donated their time to share their love of science and education with local youth. The enthusiasm from the volunteers kept students engaged and

eager to learn. At the end of one session, one student was heard exclaiming, "I didn't know science could be so fun!"

The theme rotates every three years to provide local third-through fifth-graders with exposure to the three major branches of science, which include this year's Physical Science as

well as Life Science and

Earth and Space Science. TERC hosts Science Expo every year in early spring in Incline Village and South Lake Tahoe.

### YOUTH SCIENCE INSTITUTE

The 2019 Youth Science Institute (YSI) ended in May. Throughout the semester, high school students from Reno, Truckee, and Tahoe met at the Tahoe Center for Environmental Sciences on Wednesday evenings. AmeriCorps Member Siya Phillips worked with students weekly to expose them to different careers in science. Guest speakers covered topics including engineering, forensics, health, and ecology. Students participated in hands-on activities, including a chemistry exploration in the TERC labs and operating Autonomous Underwater Vehicles in the recreation center pool. The goal of the program is to foster the students' interest in STEM fields and provide exposure to potential career paths and fields of study.

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Graduates of the 2019 Youth Science Institute with the TERC AmeriCorps members

## EDUCATION AND OUTREACH *(Continued from Page 7)*

### DEMONSTRATION GARDENS

Despite the snow in May, warmer weather is here and that means work on the gardens has begun. There are several exciting events and updates for the garden in Tahoe City and the North Tahoe Education Garden in Incline Village.

### Garden Workshops

Our popular garden workshops have brought first-time gardeners and well-seasoned green thumbs together to learn about growing vegetables and fruit in the Lake Tahoe region. The workshops focus on a different plant each week: potatoes, raspberries, lettuce, kale, and tomatoes. Attendees not only received expert information on plant care from Master Gardeners, but also took home starter plants to put their new skills into practice. The program is also part of a phenology experiment to collect data on how different varieties grow in the Tahoe climate.

### New Signs at the Tahoe City Field Station

The demonstration garden at the Tahoe City Field Station is receiving two new signs this summer. One sign will inform visitors about the recently constructed lath house and the sugar pine seedlings that call it home. The other sign will educate visitors on phenology, the study of significant events in plants' and animals' lives, like spring flowering or fall color-changes. This sign also highlights citizen science programs. Visitors to the garden will be able to participate in phenology tracking, and additional data collection throughout the basin via the Citizen Science Tahoe App. Version 3.0.4



**Attendees at a High Elevation Gardening Workshop** learning about growing tomatoes in the Tahoe region

is available for free at the following links:

- AppStore: <http://itunes.apple.com/us/app/citizen-science-lake-tahoe/id1197661224?mt=8>
- GooglePlay: <http://play.google.com/store/apps/details?id=edu.ucdavis.citizenscience>

Visit the Citizen Science Tahoe website to learn more (<http://citizensciencetahoe.org/>).

### Paradise Park Interpretive Signs

The TERC education team designed interpretive signage for Paradise Park in South Lake Tahoe in partnership with the Tahoe Institute for Natural Science (TINS). The grand unveiling of these signs was held on Saturday, June 1. The signs inform visitors about the Lake Baron Loop Trail, where water flows in the park, local tree and wildflower species, how the area was formed, the importance of wetlands, and how to protect and play responsibly in Paradise Park. On your next visit to South Lake Tahoe, stop by Paradise

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**Heather Segale and Alison Toy, with Michelle Witte** of the Tahoe Institute for Natural Science, unveiling new interpretive signs at Paradise Park

## EDUCATION AND OUTREACH *(Continued from Page 8)*



**TERC AmeriCorps Member Siya Phillips** teaches fourth grade students about native species during a field trip

Park to see these signs and learn more!

### North Tahoe Education Garden

TERC has teamed up with Sierra Nevada College (SNC), the Boys and Girls Club of North Lake Tahoe, and Incline Village General Improvement District (IVGID) to care for the North Tahoe Education Garden on the SNC campus adjacent to the Tahoe Science Center. The organizations are working together to promote sustainable gardening in the region. Contact Alison Toy at [antoy@ucdavis.edu](mailto:antoy@ucdavis.edu) if you would like to get involved.

### FIELD TRIPS

Throughout the school year, the TERC Education team has hosted students from the Truckee and Lake Tahoe region, as well as students from outside of the local area. Most field trips include a tour of the Tahoe Science Center, where students learn about the

Tahoe watershed and aquatic food web. Each field trip is tailored to enhance what the class is learning in school. The subjects include the Tahoe water system, landforms, geology, the impacts of pollution, and more. During a stream monitoring activity, students

head down to Incline Creek, where they test water quality and search for benthic macroinvertebrates. The Education team has led over 40 field trips this school year and will continue hosting summer camp groups throughout the summer.

### 2019 DOCENT TRAINING

The Education and Outreach team welcomed a new group of

community members into the TERC Docent Program. The group ranges from high school students to retirees, but all are interested in understanding more about Lake Tahoe and sharing that information with the public.

The training included a history lesson on Lake Tahoe, an in depth look at the geology of the region, and an overview of the exhibits at the Tahoe Science Center and Eriksson Education Center. The new volunteers also enjoyed a boat ride on the R/V John Le Conte, where they learned first hand about the research at TERC from boat captain Brant Allen.

These new volunteers will join our current docents in dedicating their time to host tours at the Tahoe Science Center and Tahoe City Field Station. If you would like to join them, the 2020 Docent Training will occur next June, or contact Alison Toy at [antoy@ucdavis.edu](mailto:antoy@ucdavis.edu) to find out more.



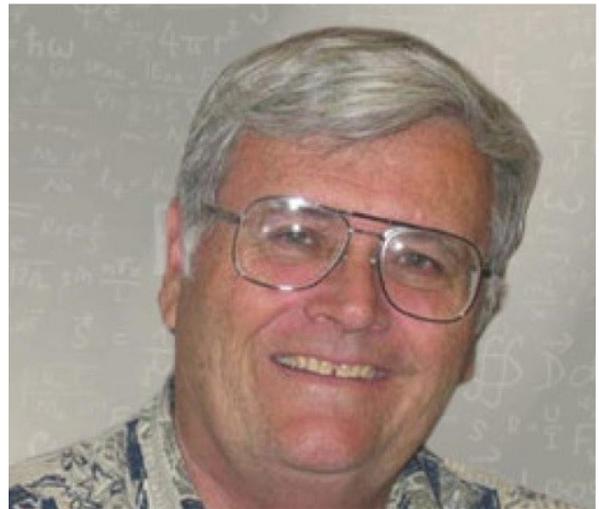
**Brant Allen** shows a zooplankton sample to new docents during the 2019 Docent Training

## IN MEMORIAM

### THOMAS CAHILL

ATMOSPHERIC SCIENTIST, GREAT FRIEND TO TERC

Thomas Cahill was professor emeritus of Physics and Atmospheric Sciences at UC Davis. Since the 1960s, Tom's research explored air quality issues and the impact of airborne particles on humans and the environment. His work at Lake Tahoe began with Charles Goldman in 1974 as they collaborated on the article "Danger Signs for Tahoe's Future." Tom was instrumental in the formation of the Lake Tahoe Air Basin by the California Air Resources Board in 1975, and continued to be involved in air quality work in the basin and the Sierra Nevada since then. His contribution to research on air quality around Lake Tahoe was invaluable, and his infectious love of science and humanity will be greatly missed.



### LOUISE KELLOGG

GEOPHYSICIST, SCIENCE VISUALIZER, AND A LONG-TERM COLLABORATOR

Louise Kellogg was a professor in the Department of Earth and Planetary Sciences in the UC Davis College of Letters and Science. Though starting her career studying the fluid processes of the earth's mantle, her later work included multiple contributions in the area of scientific visualization through 3-D visualization, and augmented and virtual reality. Louise was integral in the development of TERC's 3-D Theater and the watershed visualization sandbox that provides insights into topography, landscapes, and water flow. She travelled with TERC to demonstrate the Sandbox at a White House event in 2016, the USA Science and Engineering Festival in Washington DC, and to eventually donate the sandbox to the Howard University Math and Science Middle School. Louise's legacy will live on as visitors to the Tahoe Science Center continue to experience the visualizations she brought to science.

### DON MCNARY

LONG-TERM DONOR TO UC DAVIS TERC

Don McNary served as the director of development for the UC Davis Foundation for nearly three decades. As a Lake Tahoe homeowner since the 1960s, our scientific work to protect the lake and maintain clarity was of great importance to him and his family. Don was a generous supporter of TERC. In his own words, "I give to the Tahoe Environmental Research Center because Lake Tahoe has been an important part of my family's life for more than forty years and because UC Davis is leading the way in helping to keep it a special, beautiful and healthy place." Don has been a cherished member of the Lake Tahoe community and his presence and his unceasing optimism will be missed.



## FACULTY AND STAFF HIGHLIGHTS

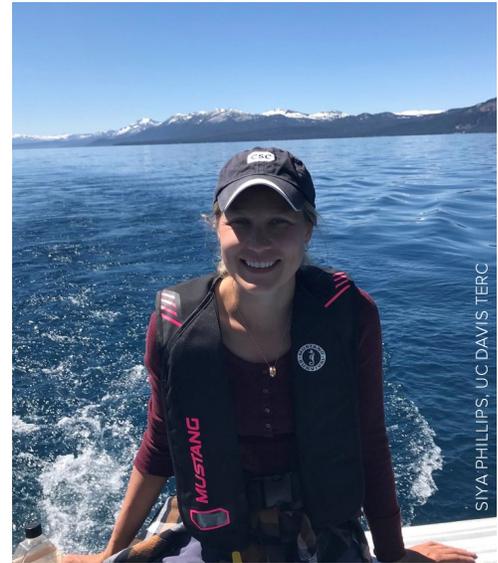
### ANTONINA MYSHYAKOVA DEVELOPMENT OFFICER

Please help us welcome our new Development Officer, Toni Myshyakova. Toni is from Arkhangelsk, Russia, a town known for being a gateway to the Arctic Circle. The winters in Tahoe are no match for her hometown, as Arkhangelsk gets about eight months of snow each year and summer temperatures rarely exceed the upper sixties.

Toni attended graduate school at Towson University in Baltimore, Maryland. Prior to joining UC Davis, she spent two years working in development, including time

in Washington, D.C. at the National Museum of Women in the Arts and the Newseum. She has also worked with a local non-profit in Sacramento.

Toni enjoys working in development as she gets to experience philanthropy on a daily basis. She is excited to apply her skills toward the mission of TERC. In her own words, “Tahoe is a very unique location with people who are extremely passionate about the Lake and environment, and being a small part of that group is an honor.”



**Toni Myshyakova** out on the lake aboard the R/V John Le Conte

### ALICIA CORTES ASSISTANT PROJECT SCIENTIST

Alicia Cortes is a Postdoctoral Scholar at the University of California, Santa Barbara who is shortly moving to UC Davis

as Assistant Project Scientist in the Department of Civil and Environmental Engineering. Her research interest focuses on improving the understanding of physical processes in inland water

bodies and their coupling with the biogeochemistry and ecology of the ecosystem. In particular, she is interested in transport and mixing processes in water bodies from the Arctic to the tropics affected by environmental and human challenges. During her research career, she has combined field observations, process-based numerical modeling, and laboratory experiments for improved understanding of hydrodynamic processes with application to physical-biogeochemical coupling.

Alicia gained her Ph.D. in physical limnology at the University of Granada (Spain), and prior to that, she completed a Masters in Environmental Hydraulics, also at the University of Granada, and a Masters in Water Management at the University of Cranfield (UK).



**Alicia Cortes** enjoying a peaceful morning on the lake

UC DAVIS TERC BY THE NUMBERS

**6** DECADES OF MONITORING LAKE HEALTH



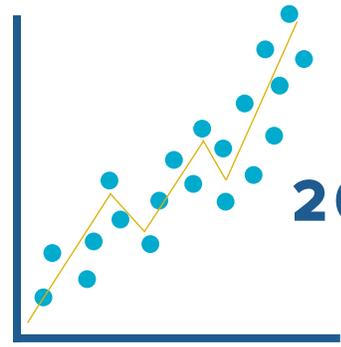
**84** MONITORED FOREST PLOTS ARE HELPING US UNDERSTAND FOREST RESILIENCE



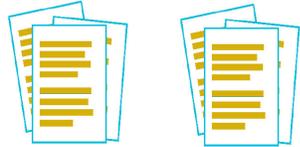
OVER **ONE-HUNDRED FIFTY** GRADUATE STUDENTS



ADVANCED TECHNOLOGIES COLLECTING **20 MILLION** DATA POINTS ANNUALLY

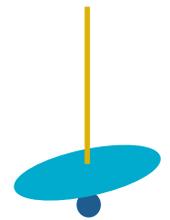


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# THOUSANDS

OF CLARITY AND WATER QUALITY SAMPLES MEASURED



**EIGHTY** SCHOOL FIELD TRIPS AND OVER

**136,000** PEOPLE REACHED BY EDUCATIONAL PROGRAMS



**FIVE THOUSAND** STUDENTS REACHED ANNUALLY



**1** LAKE TAHOE



**2** SCIENCE CENTERS AT THE LAKE



# GIVING TO THE TAHOE ENVIRONMENTAL RESEARCH CENTER

**Private Support** is critical to continuing the Tahoe Environmental Research Center's legacy of ground-breaking work in restoring and sustaining Lake Tahoe. Gifts at every level support research, education and outreach, and give the flexibility to address emerging needs and opportunities. Every gift makes a difference and there are many ways to give. Thank you!

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- Are you over 70 ½?
- Do you need all of your required minimum distribution from retirement assets?

» **Consider a gift via an IRA.** Visit <http://plannedgiving.ucdavis.edu/ira-charitable-rollover> for more details.

## UPCOMING EVENTS

**Jul. 19:** TERC Science Speaks Luncheon, with Dr. Geoff Schladow and Dr. Charles Goldman at the Tahoe Yacht Club

**Jul. 25:** Special Event: "How Safe Are We?" with University of California President Janet Napolitano, hosted by Classical Tahoe in the Classical Tahoe Pavilion at Sierra Nevada College

**Aug. 1:** Monthly Lecture: The State of the Lake with Dr. Geoff Schladow

**Aug. 3:** Family Science Day at Kings Beach State Recreation Area

**Aug. 16:** Special Event: "The Human Element" documentary film with director Matthew Testa at Crystal Bay Casino Crown Room

**Sep. 12:** Monthly Lecture: Scientific Analogs and the Development of Human Mission Architectures for the Exploration of the Moon, Deep Space and Mars with Dr. Darlene Lim, NASA/JPL

**Oct. 3:** Monthly Lecture: Photography and Atmospheric Science: A Symbiotic and Historical Relationship, with Dr. Terry Nathan, Professor in Atmospheric Science, UC Davis

For more information visit <https://tahoe.ucdavis.edu/events/>.