



Water Matters

News for the
Orange County
Water Community

MARCH, 2018



Atmospheric Rivers: A Blessing & a Curse

The two storms that hit Southern California at the turn of the month were quite different from each other.

The first storm originated near Alaska, like many of California's winter storms do, but it packed little rain because it tracked over land instead of the Pacific Ocean.

The second storm is what's known as an atmospheric river. It's a type of storm that begins far out at sea, allowing it to gather abundant moisture as it barrels toward land driven by high winds.

They can be bigger than 300 miles across and hold more than 10 times the amount of water found in the Mississippi River.

This latest downpour is likely welcomed in parts of Santa Barbara, Ventura and Los Angeles counties, which are experiencing severe drought conditions, even after California's wet winter last year.

At the same time, there are areas on high alert. The volume and force of the water falling on naked soil, exposed by the Thomas Fire, and the loss of vegetation and the alteration of soil characteristics following the largest wildfire in state history, means the land is less able to absorb water and stay in place. Coupled with the particularly steep mountains in the area, the rain means mudslides are more likely.

According to U.S. Geological Survey hydrologist Jason Keane, half an inch of rain over the course of an hour is all it could take to trigger debris flows in the mountains of Santa Barbara and Ventura counties.

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The science behind atmospheric rivers

An atmospheric river (AR) is a flowing column of condensed water vapor in the atmosphere responsible for producing significant levels of rain and snow, especially in the Western United States. When ARs move inland and sweep over the mountains, the water vapor rises and cools to create heavy precipitation. Though many ARs are weak systems that simply provide beneficial rain or snow, some of the larger, more powerful ARs can create extreme rainfall and floods capable of disrupting travel, inducing mudslides and causing catastrophic damage to life and property. Visit www.research.noaa.gov to learn more.

6 strong AR transports an amount of water vapor roughly equivalent to 7.5 to 10 times the average flow of water at the mouth of the Mississippi River.

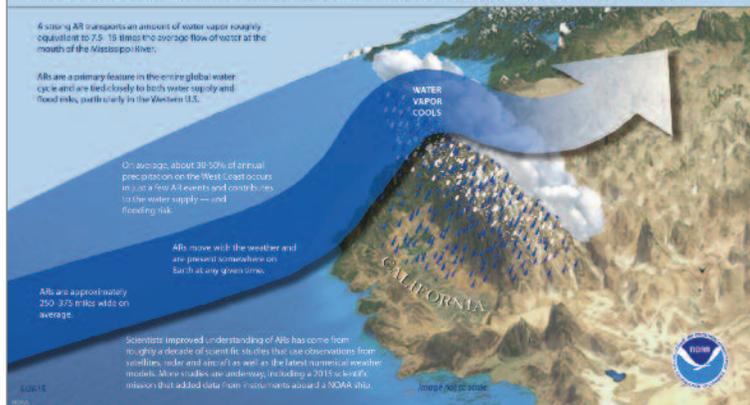
ARs are a primary feature in the entire global water cycle and are tied closely to both ocean salinity and flood risks, particularly in the Western U.S.

On average, about 20-30% of annual precipitation on the West Coast occurs in just a few AR events and contributes to the water supply — and flooding risk.

ARs move with the weather and are present somewhere on Earth at any given time.

ARs are responsible for 25-30% of the state's water supply.

Scientists improved understanding of ARs has come from using a variety of scientific studies that use observations from satellites, radar and aircraft as well as the latest numerical weather models. More studies are underway, including a 2015 to 2016 mission that added satellite measurements to a NOAA ship.



Atmospheric rivers can dump significant rainfall in a short period of time. One was responsible for the mudslides in Montecito in January that were triggered by a half inch of rain within five minutes. At least 21 people were killed.

The threat of further mudslides prompted officials in Santa Barbara County to issue mandatory evacuation notices for communities adjacent to areas burned in the Thomas fire in December.

But as destructive as they can be, California also relies on atmospheric rivers for much of its water supply.

"They benefit our water supply, but if they come with too much intensity or on top of the previous storm that's already made the ground real wet, they can also create major hazards," said Marty Ralph, director at the Center for Western Weather and Water Extremes at UC San Diego, who studies the storm systems.

Atmospheric rivers are unique in that there are only a handful of them that funnel water onto California each year. Even so, they're responsible for roughly 50 percent of the state's precipitation.

March Luncheon:

New Forecast Techniques Promise Better Capture of Atmospheric River Rains

Speakers: **F. Martin Ralph, Ph.D.**

UC San Diego/

Scripps Institution of Oceanography

Wednesday, March 21

Dave & Buster's Restaurant
Irvine Spectrum Entertainment Center

11:30 am: Registration

12:00 – 1:30: Lunch & Presentation

To make reservations, please go to www.OCWater.org

Reservations must be made by EOB, Tuesday, March 20, to qualify for the Reservation Rate. Cancellations received AFTER this date CANNOT be refunded.

For more information, contact Leticia Villarreal at
(714) 378-3203

Please identify yourself by name and membership number.

RSVP IS A FINANCIAL COMMITMENT. NO-SHOWS WILL BE BILLED

FOR COMPLETE INFORMATION, SEE PAGE 7 OR VISIT OCWATER.ORG

February's Luncheon was Sold Out!
Make Your Reservations Today

39th Annual Golf Tourney Set for Strawberry Farms Country Club

Monday, June 4, 2018

7:30 am Check-In • 10:00 am Shotgun Start



It's that time of the year again! Time to start thinking about the Annual OCWA Golf Tournament.

Due to higher costs at Newport Beach Country Club (NBCC), we will be moving the event to Strawberry Farms Golf Club (SFGC). The SFGC staff has been very welcoming to our planned OCWA golf event and we will be able to make a few changes for the better.

First – and possibly best – golf entry fees will go back to \$150. How many times do you see price reductions! We will also start the event earlier in the day. SFGC will allow us out on their course by 10:00 a.m., which will allow us to be finished with the awards ceremony by 5:00 p.m. or so. Check-in will be 7:30 a.m.

Singles and twosomes are welcomed and appreciated. As a reminder, the event is for OCWA members & their Water Professional guests. The OCWA Board requires a minimum of one OCWA Member per cart or two OCWA Members per foursome.

Lastly, please check your OCWA Membership status as we will be reviewing your status more closely this year as that is a requirement to be in the event. The benefits of membership far outweigh the modest \$70 per year cost. Check the Membership tab on this website for complete information.

For additional information about the Tournament, please e-mail Mike Sinacori at Msinacori@newportbeachca.gov or give him a call at (949) 644-3342.

[CLICK HERE TO DOWNLOAD REGISTRATION FORM AND EVENT RULES](#)

FEBRUARY
LUNCHEON SPONSOR:



HDR is a proud sponsor of OCWA. We bring vision, value and service to our communities by providing solutions for strategic long-range management plans that are both cost-effective and sustainable in response to evolving regulations and advances in technology. We will partner with you to develop customized infrastructure management plans to help you identify operational strategies for key program elements like failure mitigation, useful life extension, and lower maintenance costs.

Our practice is built on a foundation of service-oriented professionals driven to help you identify the best course of action.

- Water & Wastewater Treatment
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- Condition Assessment/Rehabilitation and Asset Management
- Utility Management Services and Planning
- Odor Control
- Hydraulic modeling
- Biosolids Management
- Alternative Delivery and Construction Services
- Dams, Levees & Civil Works
- Pump Station and Pipelines
- Stormwater
- Optimization and Resiliency Planning
- Financing and Rate Planning

Interested in sponsoring an OCWA Luncheon? Sponsorship is available for only \$250 – this includes a table set up before the event, two free lunches, an announcement in the newsletter, and recognition before and after the luncheon. If interested, contact John Robinson at johnrobinson91007@gmail.com or call him at (626) 375-9389.

Sponsorship Opportunities!

Sponsorship pricing has been REDUCED to \$250, same price it was for several years prior to 2016. And as noted above, how many times do you see price reductions?

Your sponsorship helps buy the prizes for the event. It also pays for the planned breakfast and awards ceremony, where SFGC's famous barbeque and no-host bar will be provided. Your sponsorship also provides for a company tee sign and company name, contact and phone number on the reverse of the rules, which goes to every player the day of the event. Sponsors are also listed in the OCWA monthly newsletter to all association members starting in April, as well as on the OCWA website. What a great good marketing deal!

To become a priority sponsor, simply print the form, fill it out and send it in with a check for \$250.

Lastly, please check your OCWA Membership status as we will be reviewing your status more closely this year as that is a requirement to be in the event. The benefits of membership far outweigh the modest \$70 per year cost. You can sign up for Membership on-line at www.ocwater.org.

For additional information, please e-mail Mike Sinacori at Msinacori@newportbeachca.gov or call him at (949) 644-3342.

[CLICK HERE TO DOWNLOAD SPONSORSHIP AND REGISTRATION FORM](#)

New Prediction Possibilities for Atmospheric Rivers

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For weather events that can have such a huge impact on the state, the storm systems are near impossible to predict. When trying to determine where an atmospheric river might touch down, three days out, the margin of error is about 190 miles, according to Ralph. That's roughly the distance between San Luis Obispo and Los Angeles.

Scientists have been studying the storm systems with the hopes of being able to better understand them. This winter, Ralph boarded multiple planes and flew out over atmospheric rivers off the coast of California. While in the air, the crew released dropsondes, or instruments that can measure temperature, wind, humidity and pressure, in the river itself. With the data, Ralph said that they hope to better understand the weather systems and improve their prediction models.

There's only about one month left in California's traditional rainy season, and this atmospheric river's not going to eliminate drought conditions across the state.



Santa Margarita Water District Breaks Ground on New Recycled Water Reservoir

The Santa Margarita Water District (“SMWD”) hosted a ground-breaking for its new 5,000 acre foot Trampas Canyon Recycled Water Reservoir in south Orange County.

The new reservoir will enable SMWD to collect and store up to sixty percent of the treated water from its Chiquita Water Reclamation Plant doubling the District’s overall recycled storage capacity and ensuring greater year-round water reliability throughout the District’s service area. It will be the largest surface reservoir constructed in south Orange County in the past twenty years. The costs of the project will be paid utilizing a combination of Proposition 1 State grant funds, a low-interest State loan through the State Water Resources Control Board and future Community Facilities Districts (CFDs) assessments.

According to the District, the new reservoir will allow SMWD to store much of its treated recycled water during the cooler months of the year for use during the Spring and Summer months when demand is high. The new reservoir will help the District reach its goals for water recycling and reuse and will provide for the

development of new recycled water uses and the reduction of dependence on imported water.

Earlier this year, the SMWD Board finalized its agreement with Rancho Mission Viejo LLC (The Ranch), owners of the historic 23,000-acre Rancho Mission Viejo cattle ranch, habitat reserve and master planned community, for the land where the reservoir will be constructed. The site is located southeast of the intersection of Antonio Parkway and Ortega Highway in unincorporated Orange County adjacent to an existing industrial sands enterprise.

FAST FACTS ABOUT TRAMPAS RESERVOIR

PROJECT: Trampas Canyon Dam & Reservoir
PURPOSE: Seasonal storage of recycled water, maximizes local resource
CAPACITY: 1.6 billion gallons (5,000 acre-feet) = 2,500 Olympic size swimming pools
LOCATION: Southwest of Ortega Highway and Christianitos Road
FACILITY OWNER/OPERATOR: Santa Margarita Water District
COST: \$123 million
FUNDING SOURCES: State grants, Low-interest loans, Rancho Mission Viejo, SMWD designated reserve funds
CONSTRUCTION PERIOD: 24 months
ANTICIPATED COMPLETION: Spring 2020
ADDITIONAL USES: Potential for future indirect/direct potable reuse
CONSTRUCTION: Sukut Construction
ENGINEERING: AECOM

Moulton Niguel Launches New Water Conservation Program

Moulton Niguel Water District, which has conserved more than 500 million gallons of water through its turf replacement program, is launching a new initiative to help its customers save even more.

Beginning this month, Moulton Niguel’s NatureScape program will connect customers with a local landscape designer and nursery that will handle all of the hassles that come with replacing lawns with native, climate-appropriate plants. The goal is to make it even easier for customers to take advantage of the district’s generous rebates for replacing turf with water-efficient landscaping.

“Moulton Niguel has been extremely successful in finding innovative ways to help our customers save water and money,” said Donald Froelich, President of the Moulton Niguel Water District Board of Directors. “This new program is designed for people who’ve wanted to take advantage of our turf replacement program but are overwhelmed by the thought of taking on a major landscaping project.”

As a result of its turf replacement program, the district estimates that it has conserved more than 500 million gallons of water – with 228.5 million gallons of water added each year.

To learn more about the NatureScape program, visit the MNWD website at www.mnwd.com/NatureScape.

Interested in Participating in OCWA?

There are Many Volunteer Opportunities Available

Looking for a way to give back to your professional community, meet new people within the industry, and contribute — in a meaningful way — to the mission and goals of the Orange County Water Association? Your help is wanted in a variety of posts. We need social support for the summer Golf Tournament and winter Holiday Party, and professional assistance with SafetyFest and our Operator Training events.

It’s an exciting, fun way to expand your contacts, gain visibility within the profession, and find rewarding benefit in helping others.

Talk to one of the officers or members of our Board, or the chair of the committee you’d like to assist. Contact information is on Page 7, or visit our website, www.OCWater.org.

2018 OCWA CALENDAR OF EVENTS

Date	Event/Topic	Location
April 18	Luncheon/Speaker TBA	Dave & Busters
May 16	Luncheon/Speaker TBA	Dave & Busters
May 24	10 th Annual SafetyFest	Santa Ana Public Works Yard
June 4	O.C.W.A. 39 th Annual Golf Tournament	Strawberry Farms Golf Club (Irvine)
July 18	Luncheon/Speaker TBA	Dave & Busters

Date	Event/Topic	Location
August 15	Luncheon/Speaker TBA	Dave & Busters
September 19	Exhibition & Operator Competition	Rattlesnake Reservoir
October 17	Luncheon/Speaker TBA	Dave & Busters
November 14	Luncheon/Speaker TBA	Dave & Busters
December 7	61 st Annual Holiday Dinner Dance	Marconi Automotive Museum

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OCWA's Board of Directors meets on the third Wednesday of each month, unless notified otherwise. The next meeting is scheduled for:

March 21, 2018
10:30 am to Noon

Dave & Buster's Restaurant
Irvine Spectrum
Entertainment Center

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March Luncheon Topic

New Forecast Techniques Promise Better Capture of Atmospheric River Rains

Presenter: F. Martin Ralph, Ph.D.

UC San Diego/Scripps Institution of Oceanography

Just a few hundred miles wide, atmospheric rivers stretch over thousands of miles, from the tropical oceans to the poles, carrying up to 20 times as much water as the Mississippi River. That moisture gets tugged along by the windy paddle wheels of spinning storms ahead of its path. When the atmospheric rivers make landfall, they can release a staggering amount of rain and snow.

But despite their destructive potential, atmospheric rivers are vital to the West Coast's way of life. They account for 30-50% of our annual precipitation. Lately, fewer atmospheric rivers have reached California, which is partly responsible for the state's severe drought. Experts aren't sure if the numbers will ever return to normal.

Scientists are now working to unravel their physics so they can provide better forecasts, now and in a future, hotter world. "They make or break precipitation in places like California," says Marty Ralph, an atmospheric scientist at the University of California, San Diego, and director of the Center for Western Weather and Water Extremes.

In recent years, Ralph has been working on a project called "Forecast Informed Reservoir Operations" (FIRO), a proposed strategy exploring how to incorporate improved forecasting about atmospheric rivers into West Coast reservoir operations.

The first testbed for this improved hydrometeorological forecasting has been Northern California's Lake Mendocino, a large reservoir in Mendocino County, northeast of Ukiah. Lessons from that study are now being applied to explore the potential viability of FIRO for our local Prado Reservoir.

Join us this month as Marty Ralph provides an overview of the creation of the Lake Mendocino FIRO and a summary of its Preliminary Viability Assessment. A look ahead to activities related to Prado Reservoir, and description of the next steps to come in conjunction with OCWD and the United States Army Corp of Engineers will be summarized as well.

Wednesday, March 21, 2018

Dave & Buster's Restaurant ◆ Irvine Spectrum Entertainment Center

11:30 am: Registration ◆ 12:00 – 1:30: Lunch & Presentation

OCWA Members with Reservations..... \$30 Non-Members with Reservations \$45
OCWA Members without Reservations... \$45 Non-Members without Reservations..... \$45

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About Our Speaker

Dr. F. Martin Ralph is a Researcher at UC San Diego's Scripps Institution of Oceanography, and is the founding Director of the "Center for Western Weather and Water Extremes" (cw3e.ucsd.edu). He is a scientist, manager, and program developer who focuses on developing and carrying out programs that bridge science and its applications to practical problems, especially related to information on extreme weather events and associated issues in precipitation, drought and flood. He has published over 100 scientific articles, received several awards and is a Fellow of the American Meteorological Society.

His technical background is in atmospheric science (PhD. from UCLA, 1992; BS from University of Arizona, 1984) focused on understanding the physical processes that create extremes in precipitation ranging from flood to drought, and on advancing associated observations, predictions, climate projections and decision support tools. A primary topic has been atmospheric rivers and their role in mid latitude precipitation.