

WINTER: Forecast could mean another year of low snowpack

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the same.

For the past several months, ocean temperatures in the tropical Pacific, stretching from about the International Date Line to just off the coast of Peru, have been steadily warming. At the same time the normal easterly trade winds have weakened and may even reverse direction and start blowing from the west. These are indications that a healthy El Niño may indeed be on the way.

The El Niño Southern Oscillation, or ENSO, is the single most important coupled ocean-atmosphere phenomenon to cause global climate variability. It describes the see-saw pattern of reversing atmospheric pressure between the eastern and western tropical Pacific that causes warm surface water to slosh back and forth.

An El Niño is said to exist when warm ocean water migrates eastward, pooling in the eastern Pacific Ocean. It's a La Niña if strong trade winds move the warmer water into the western Pacific. Both conditions disrupt normal weather patterns, to a greater or lesser degree, at many locations throughout the world.

Various indicators are used to determine the condition and strength of the ENSO, but perhaps the most widely used is the Multivariate ENSO Index (MEI). The MEI combines the effects of atmospheric pressure, wind, air and water

temperature and cloud cover. When the numerical value is between -0.5 and 0.5 the ENSO is said to be neutral. An El Niño is rated weak in the range between 0.5 and 0.75, moderate between 0.75 and 1.0, and strong when the number is greater than 1.0. The same scale is used to grade La Niñas, except the numbers are negative.

It turns out that winters here in the Pacific Northwest and northern Rockies are more strongly correlated to the ENSO than almost anywhere else in the country. During an El Niño winter, warmer and drier conditions prevail about 65-75 percent of the time. During very strong El Niños that likelihood goes up to 80 percent, according to information from the Western Regional Climate Center (WRCC) in Reno, Nevada.

The two strongest El Niños in the last 65 years occurred during the winters of 1982-83 and 1997-98. In both cases the maximum MEI value was 3.0.

These very powerful events, though, can behave differently from the typical El Niño. For example, during the record El Niño of 1982-83 the subtropical jet shifted so far to the north that it brought heavy precipitation and warm temperatures to Oregon and Washington. According to Kelly Redmond of WRCC, it was the only major exception in the last 70 years to the typically dry El Niño winters expected in the Pacific Northwest.

The current MEI value for the two-month period June-July 2015 is already 1.972, and many scientists say it will likely increase in the next few months.

So, it does look like the upcoming winter will be warm and dry. But what about the two previous winters? They were warm and extremely dry too, but the ENSO was neutral. Why? After being gone for six years, El Niño is returning, only to find that another weather-related entity currently occupies the ocean waters.

A mysterious accumulation of usually warm water off the coast of the Pacific Northwest began to emerge late in 2013. Originally, "the mass of water was 1,000 miles long, 1,000 miles wide, and 300 feet deep, with temperatures 2 to 7 degrees F above normal," says Washington State climatologist Nick Bond. He dubbed it "the blob."

In 2014, more blobs appeared.

"The whole pattern is, we really have warmer-than-normal temperatures in the Pacific all the way from the Gulf of Alaska down to the El Niño area," claims Redmond of WRCC.

While blobs of warm ocean water have occurred in the Pacific before, experts insist these are some of the biggest in the last 50 years. Many meteorologists and climatologists strongly suspect there is a link between the blob and the dry winters of 2013-2014 and 2014-2015.

An intriguing question is emerging: How will the blob and El Niño get along this winter? How will their interaction influence the coming winter? "They could accentuate each other or subtract from each other. They could multiply each other or they might cancel each other. The jury is out," says Redmond.

Archaeologists return to Fort Rock

Archaeologists from the University of Oregon (UO) will be returning to the site of the 1938 discovery of the oldest known footwear in the world.

Fort Rock Cave in northern Lake County is famous for dozens of approximately 10,000-year-old sagebrush-bark woven sandals that were found there by the "Father of Oregon Archaeology" Luther S. Cressman, who was on the UO faculty from 1929 until his retirement in 1963.

Scheduled for August 31 through September 4, archaeologists will follow up on Cressman's investigations.

Cressman discovered the sandals beneath a layer of volcanic ash produced by the 7,600-year-old eruption of Mt. Mazama — the same eruption that created Crater Lake. The age of the sandals was confirmed in the 1950s through radiocarbon dating. In 1966, Cressman returned to the site with graduate student Stephen Bedwell who uncovered a hearth in Pleistocene (Ice Age) gravels. Charcoal from the fire pit was radiocarbon dated to roughly 15,800 years before present,

the oldest reputed hearth in Oregon.

"As important as the site is to the human story of North America, the archaeological work there was done more than half a century ago. We still have important questions about the site that might be answered with recovery methods and analytical techniques that were not available to Cressman and his students," said Tom Connolly, project leader and director of archaeological research for the UO Museum of Natural and Cultural History.

"Our excavation will not be extensive, but will focus on the chronology and dating of the site deposits, and drawing critical samples for later analysis."

Limited public access to the site will be provided by the Oregon Parks and Recreation Department (OPRD) in partnership with UO. If interested in visiting Fort Rock Cave during the archaeological excavation, contact OPRD staff at 541-923-7551 x21 to make arrangements. Fort Rock Cave became part of the OPRD system in 2000 and is accessible only by guided tour.

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