

Our Ocean Backyard — *Santa Cruz Sentinel* columns by Gary Griggs, Director, Institute of Marine Sciences, UC Santa Cruz.

#101 March 10, 2012

Santa Cruz- Going to Extremes

It's often been said that climate is what you predict and weather is what you get. Actually, climate is large scale and long-term, while weather is the day-to-day conditions and variations we experience.

We have a Mediterranean climate along the central coast, with the adjacent ocean serving as a buffer or climate moderator so that we're not usually nearly as warm or as cold as our inland neighbors. This winter has given us some nice summer weather, however, and also broken some heat records. We don't usually get 80 degree days in March, but last Sunday the temperature in Santa Cruz peaked at 83 degrees, shattering the previous March 4 record of 79 degrees set 75 years ago in 1937.

The balmy weather extended north and south along the coast. In Southern California, the National Weather Service reported a record high of 95 degrees in Fullerton, 91 degrees in Long Beach and 87 degrees at the Los Angeles International Airport. Beaches from Santa Cruz to San Diego were crowded with people looking for a winter tan.

While it was hot last weekend, other winter days in the past have been even hotter. On February 23, 1896, it was 89 degrees in Santa Cruz. March has also experienced some very warm days. On March 17, 1914 it was 89 degrees and a day later the temperature reached 90 degrees- in March!

The hottest day in Santa Cruz took place on August 1, 1900 when the thermometer hit 108 degrees. But the warmest continuous weather occurred in late-June 1976, in the middle of a two-year drought. On June 23 the temperature hit 100 degrees, and for the next 5 days, maximums were 106, 105, 103, 105, and then it cooled to 103 on June 28. This is not typical or normal but it may become more so in the future.

How about the other extreme? How cold has Santa Cruz ever gotten? Only twice since record keeping began in 1893 has the thermometer dropped below 20

degrees. On January 3, 1907, a low of 15 degrees was reached, and on December 23, 1990, the temperature dropped to 19.

Warmer climates are usually associated with lower rainfall, and California is no exception. While access to a reliable source of water was a critical factor historically in the development of civilizations and growths of cities, this has not been the case in recent time. Much of the west was replumbed by the Bureau of Reclamation and the Army Corps of Engineers to open up arid land for agriculture and to allow cities to expand where local water supplies were inadequate. Through a huge system of dams, pipes and canals, we moved water hundreds of miles to where politicians and engineers at the time decided that it was needed.

Los Angeles ran out of local water in the 1880s and its subsequent search for water, the wars over the ownership of that water, and the construction of a delivery system to transport water to Los Angeles has been well chronicled in books and movies. 2.4 million residents of San Francisco, San Mateo and Alameda counties obtain their water from the Hetch Hetchy reservoir in the Sierra Nevada, which was created by damming the Toulumne River in the 1920s amidst a large environmental outcry led by John Muir.

While large regions of California are completely dependent on imported water, Santa Cruz is somewhat unique in relying completely on our own water supply. We are hydrologically self-sufficient, with the only exception to this being the water we import in those cute little bottles at exorbitant cost and energy from Fiji and France.

Our local water availability, as a result, is dependent upon an adequate amount of rainfall over the watersheds of the county. The city of Santa Cruz averages 29 inches annually, although over the past 120 years this has varied from a low of just over 10 inches in 1898, to a high of 61.6 inches in 1941. While low rainfall years weren't a particular problem in 1898 when Santa Cruz had a population of about 5600 people, it's a different issue today with a population ten times larger.

California as well as Santa Cruz has experienced droughts in the past, and so far this year is shaping up to be one of the drier ones on record. The worst two year dry spell over the period of historic record is probably still clear in the minds of many longer-term residents. During the 1976-77 drought, a total of 29.1 inches of rain fell in two years, just half of the average annual rainfall for two years in a row. Other two-year droughts took place in 1912-13 (34.25 inches total) and 1917-18 (31.2 inches). The longest sustained dry period occurred fairly recently, between

1987 and 1991; rainfall was well below average for 5 years in a row, averaging just 19.5 inches annually.

Rainfall is often calculated beginning July 1 in one year, and extending through June 30 in the next year, so an entire winter of precipitation is counted within a single year. Between July 1, 2011 and February 29, 2012, Santa Cruz received just 10.6 inches of rainfall. And if you left town for a few days, you might have missed that. Historically, this represents the 8th driest 8-month period in 119 years. In the driest year, 1898, just 7 inches of rain fell during this 8-month period, but there were only 5600 people in the city at the time. More to come on Santa Cruz weather and climate.