

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

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Perspectives on Disaster**



Downtown Sacramento in January 1862 during largest floods on record.

While the healthiest among us may live to be 100 or more, in the large geological scheme of things, this is really just a blink of an eye. The Earth is about 4.5 billion years old, give or take a few million years. Depending upon your definition of “human”, we have only been around for about 200,000 years.

To put our human existence into some perspective, if the entire 4.5 billion years of Earth history was compressed into a single year, human beings would have appeared at 11:36 pm on December 31st. The entire period of human occupancy of the Earth would have only covered the last 24 minutes of its one-year long history.

To reduce our geological significance a bit more - for the sake of argument - let's say that earliest human civilization began about 15,000 years ago. In our 365-day history of the Earth, this corresponds to 2 minutes before midnight on the last day of the year. I don't think anyone would disagree that we have had a disproportionate impact on the face of the Earth relative to our final two-minute presence.

Civilization's earliest written records first appeared about 3500 BCE in the Middle East. China began recording earthquakes about 3000 years ago, simply because they suffered repeatedly from some of the world's most damaging shocks. They also have a record of great floods that extends back about 2000 years.

The longer our observations or records extend back in time, the more complete and accurate a picture we have of what we might reasonably expect to experience in the future. With natural disasters, the old proverb- what you don't know won't hurt you- really doesn't hold true. Whether we are building a power plant, a shopping center, a school or our dream home, the more we know about past events in the neighborhood, the better.

In California we are hindered somewhat by our short history. Our written disaster accounts only extend back about 200 years to the time when Europeans first began to occupy Alta California. But practically speaking, until about 1850 or so, records in the Monterey Bay area were pretty sketchy.

A summary of the earliest flooding accounts in Santa Cruz, for example, from the old Pacific Sentinel newspaper of 1871 states: "A flood occurred in the year 1822, when the water covered all the lowlands and rose to a greater height than ever before. The next memorable flood occurred in 1832, the water not reaching the extreme heights of ten years before, but still covering the lowlands to a great extent. The pioneer settlers of California remember distinctly the flood of 1852, and it is not necessary to dwell upon the particulars."

In 1889, J.M. Guinn wrote "History of California Floods and Drought", which provides an interesting historical perspective: "If there is one characteristic of his State, of which the true Californian is prouder than another, it is its climate. With his tables of mean temperature and records of cloudless days and gentle sunshine, he is prepared to prove that California has the most glorious climate in the world."

"For the first fifty years after the settlement of California the weather reports are very meager....although the state of the weather was undoubtedly a topic of deep interest to the pastoral people of California...with their cattle... and their flocks and herds spread over the plains, an abundant rainfall meant prosperity; a dry season, death to their flocks and consequent poverty....A flood might be a temporary evil, but like the overflow of the Nile, a year of plenty always followed."

Beginning on Christmas Eve, 1861, and continuing into early 1862, a series of storms lasting 45 days struck California, Oregon, and Nevada and produced the largest floods in recorded history for much of the state. The severe flooding turned the Sacramento Valley into an inland sea, forcing the State Capital to be moved from Sacramento to San Francisco for a time, and requiring Governor elect Leland Stanford to take a rowboat to his inauguration.

William Brewer, author of “Up and down California,” wrote on January 19, 1862, “The great central valley of the state is under water—the Sacramento and San Joaquin valleys—a region 250 to 300 miles long and an average of at least twenty miles wide, or probably three to three and a half millions of acres!” The storms reportedly wiped out nearly a third of the taxable land in California, leaving the State bankrupt.

The 1861-62 series of storms were probably the largest and longest California storms on record, and the flooding of the Central Valley the most widespread in the state’s short history. However, geological evidence suggests that earlier, prehistoric floods were likely even larger. There is no reason to believe that such extreme storms could not happen again, and predictions with a warming ocean are for more evaporation, and subsequently, more winter rainfall and more flooding.

So relative to China, Japan or parts of the Middle East our record of past natural disasters, whether floods, earthquakes, droughts, tsunamis or other calamities, is really quite short. Nonetheless, we ought to pay attention to the history we have, and perhaps a lot more attention now that our climate is changing and the prognosis is not particularly encouraging for California in general, or the Monterey Bay region in particular.