

**GCC Faculty Share Insights from their JPL Externships**  
**Was All That Concrete Worth It? A Look into the History of the Los Angeles River**  
**Shelley Shaul-Regalado, Adjunct Geology Faculty at GCC**

**Abstract:**

*(William C. Patzert, JPL, NASA Pasadena, CA; S. Regalado (Shaul), S. LaDochy, and P. Ramirez, J. Willis)*

In 1938, heavy rains over the Los Angeles Basin resulted in widespread and costly flooding of the Los Angeles River floodplain. In response to the resultant damage, 51 miles of the River was concreted from the San Fernando Valley to the Pacific Ocean. Today, a proposal to modify the river to capture more water and to restore it to a more natural state has been approved. Through comparison of rainfall data, we test whether channelization can adequately handle the extreme flooding events occurring since 1938. Two major storms, from February 27<sup>th</sup> to March 3<sup>rd</sup> 1938, resulted in 14.1 inches of rain in Pasadena, CA leading to the flooding of the Los Angeles River, 115 fatalities, the destruction of 5,601 buildings, and a total of \$627 million (2011 dollars) in damages. Downtown Los Angeles averages 15 inches of precipitation a year, while the San Gabriel Mountains, where most of the Los Angeles River watershed rainfall is collected, typically receives more than 40 inches of rain annually. Eight record storms, each with rainfall totals over 11 inches, since the 1938 flood, could have created devastating deluges were it not for channelization. Presently, at full stage the channelized Los Angeles River can accommodate a discharge of 129,000 cfs. During the 1938 flood event the discharge peaked at 68,000 cfs above Arroyo Seco and 79,000 cfs below Firestone Blvd. A similar storm event today would have led to increased discharge due to urbanization. Since 1938, the greatest discharge recorded at the same stations was 52,200 and 74,400 cfs during the February 16<sup>th</sup> 1980 storm. Although damage was substantial during this storm, river channelization prevented fatalities and much damage. To date, the channelization of the Los Angeles River has been successful in flood control. However, our research shows that Southern California precipitation is becoming more intense which may result in increased flooding. Any future modifications to the river must be prepared to handle the extreme flooding events and water managers must also be mindful of these events.

**Bio:**

**Shelley Shaul-Regalado** has lived and worked in California most of her life; she attended Citrus College and graduated with high honors with both an AA in Behavioral Science and an AS in Natural Science. Shelley then transferred to Cal Poly San Luis Obispo and graduated with a B.S. in Biology. After graduation, she moved to St. Thomas and volunteered at the University of the Virgin Islands to determine sedimentation rates on coral reefs, assess coral health, and coral reef fish populations. Upon returning to Southern California, Shelley worked as an Agricultural Biologist for both Los Angeles and San Luis Obispo Counties in Pest Exclusion and Pesticide Use Enforcement. She also worked for Delta Environmental Consultants as a Lead Auditor specializing in Underground Storage Tank systems for major gasoline corporations. In 2009, she graduated from Cal State Los Angeles with a M.S. in Geology, specializing in Environmental Hydrogeology. For her thesis, Shelley conducted research in Upper Newport Bay in Orange County, CA to determine selenium and nitrate stratification and mixing dynamics. Currently, she is an adjunct Geology instructor for Cypress, Mt. SAC, Citrus, and Glendale Community Colleges.