El Nino - Causes and Effects

by Doug Fleming

Noticed anything strange about the weather this year? If so, you have probably also joined in the ranks of millions who have been discussing El Nino. But what is El Nino, and what are its real effects?

El Nino is the most powerful weather event on Earth. Usually, the wind blows strongly from east to west along the equator in the Pacific Ocean. This piles up water in the western part of the Pacific. In the eastern part, deeper, cold water gets pulled up from below to replace the water pushed west. So, the normal situation is warm water in the west moves back to the east and not as much cold water gets pulled up from below. Both of these occurrences tend to make the water in the eastern Pacific warmer.

Interestingly, the phenomenon does not stop there. The warmer ocean then affects the winds--it make the winds weaker! So if the winds get weaker, then the ocean gets warmer, which makes the winds get weaker, which makes the ocean warmer, etc. Because of the cause and effect loop of warmer water currents and weaker winds, El Nino enters into what is called a "positive feedback cycle." This means that it naturally increases in strength until waves that it caused cross the Pacific Ocean and bounce back to break the cycle.

Scientists have also discovered that El Nino increases in intensity each time it occurs. This year's El Nino was much larger that the 1982-83 El Nino, making it the strongest storm on record thus far.

El Nino is most developed from January to March during an El Nino year. Its name means "Christ Child" because El Nino's effects begin to be felt around Christmas time. El Nino events occur irregularly at intervals of two to seven years.

El Nino affects weather patterns throughout the world. When currents in the Pacific Ocean shift, warm water moves eastward from Australia to Peru and Ecuador. Rainfall follows the warm water and causes flooding in the southern tier of the United States and in Peru. High temperatures also cause increased evaporation, which produces excessive rain on some land areas. It also causes droughts in Indonesia and Australia. Trade winds relax in the Central and Western Pacific. Low sea level pressures develop in the southeastern tropical Pacific.

In El Nino years there are more Pacific Ocean hurricanes, floods and droughts. El Nino is also the cause for unusual storms in California. Violent rains and destructive floods affect Ecuador and Peru. Winters in America are more mild. There is torrential flooding in southern California and in the Midwest. Severe droughts affect Southeastern Africa. Massive warming of the waters along the coast kills many fish and sea organisms. Unusual weather and short-term climate changes cause the losses of many crops.

So, what lies ahead for us this year? In most El Nino years, the summer on the East Coast of the United States is either warm and dry or cool and dry. If the past is any prediction of this summer, we will be counting on our irrigation systems this season.