1988 Drought/Heat Wave - Summer 1988. Drought in central and eastern U.S. with very severe losses to
agriculture and related industries; estimated $40.0 (61.6) billion damage/costs; estimated 5,000 to 10,000
deaths (includes heat stress-related).

1988 - A major storm brought high winds to the western half of the country. A wind gust of 74 mph at Pueblo CO broke their May record established just four days earlier, and winds in the Arapahoe Ski Basin area of Colorado reached 85 mph. In North Dakota, the high winds reduced visibilities to near zero in blowing dust closing many roads. (The National Weather Summary) (Storm Data)

The North American **Drought of 1988** ranks among the worst episodes of **drought** in the United States. This multi-year **drought** began in most areas in **1988**and continued into 1989.
The **drought** caused $60 billion in damage ($120 billion in 2014 United States dollars, adjusting for inflation).

Remembering the Drought of 1988

The Pacific La Niña was intense in 1988. Scientists observed a series of processes that the cold surface temperature anomaly set into motion that made it directly responsible for the severe North American drought in the Great Plains region (Trenberth and Guillemot 1996; Mo et al. 1997; Dai et al. 1998). They found that the atmospheric circulation patterns leading to the dry spell began in April of that year, about 10 days before the onset of the drought, and persisted through June (Mo et al. 1997). Scientists also measured anomalously low values of outgoing longwave radiation (heat) over the eastern Pacific near Central America, signaling a northward shift of the ITCZ. At the same time, there were unusually high levels of outgoing longwave radiation over the Gulf of Mexico, the southeastern United States, and northeastern South America. Scientists have observed similar anomalies in outgoing longwave radiation in 16 of the last 19 major drought events in North America (Mo et al. 1997), suggesting there is a relationship between them and drought episodes.

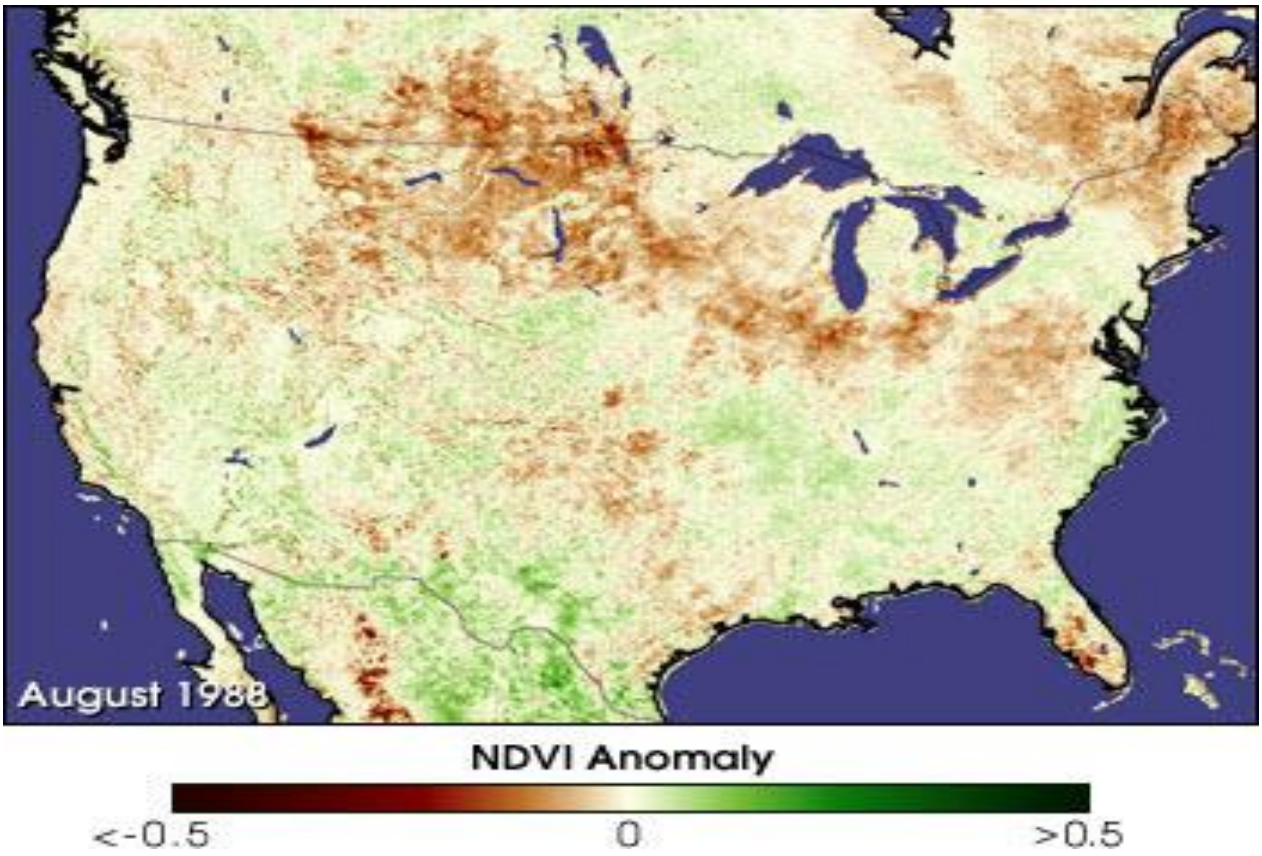

Image shows where anomalously low (brown pixels) and high (green pixels) plant growth occurred in August 1988. **Brown regions show drought**. The summer of 1988 was North America's worst drought on record since the infamous "dust bowl" years of the mid-1930s.

The 1988 Drought

One of the worst and most widespread droughts in recent decades was the one that parched much of the central United States in 1988.

The dryness started as early as late Winter, and conditions deteriorated through the Spring. By early June, many locations from the Canadian border to Texas had received less than 50% of normal precipitation, with some areas getting less than 40%.

For example, from March to May, Des Moines, Iowa, usually receives over 9 inches of rain; in 1988 they managed less than three inches - only 30% of average.

The precipitation deficits worsened into June and July, and soaring summer temperatures added to the misery. A mere 0.22 inches of rain fell in Minneapolis, Minnesota, during June - that's just 5% of the over 4 inches that typically falls!

Dozens of stations across the central part of the nation, particularly the Midwest, recorded record high temperatures. Temperatures in Valentine, Nebraska, and Sioux Falls, South Dakota, rocketed to 110°F, with readings topping the century mark in many other locations.

The drought peaked in early July. In stark contrast to conditions just five years later, the Mississippi River flowed at a relative trickle. Barge traffic was halted as extensive sandbars formed in the usually filled riverbed.

Forty-five percent of the nation was experiencing drought or severe drought conditions as defined by the Palmer Drought Severity Index.

The meteorological conditions that led to the extensive precipitation deficits and heat were complex. A large, persistent upper-level ridge of high pressure over the central part of the United States contributed to the dryness.

This "blocking" upper-air pattern was linked to ocean water temperature anomalies in the Pacific and Atlantic - but how these water temperatures changed is unclear.

The 1988 drought was the worst in the Midwest since the "Dust Bowl" years in the mid-1930s. Damage and costs related to the drought amounted to $40 billion, and there were over 5,000 related fatalities, including heat stress-related.