

## **DROUGHT – Hazard Description**

### **What is drought?**

(from: Illinois State Climatologist Office)

"Drought is a complex physical and social phenomenon of widespread significance, and despite all the problems droughts have caused, drought has been difficult to define. There is no universally accepted definition because: 1) drought, unlike flood, is not a distinct event, and 2) drought is often the result of many complex factors acting on and interacting within the environment. Complicating the problem of drought is the fact that drought often has neither a distinct start nor end. It is usually recognizable only after a period of time and, because a drought may be interrupted by short spells of one or more wet months, its termination is difficult to recognize."

Drought is also a temporary feature of the climate of Illinois, and we know it occurs only when less than adequate precipitation exists for an extended period of time. Because of the complex nature of droughts, there are many definitions, often reflecting a specific area of concern of an individual, a city, or a region.

The most commonly used drought definitions are:

1. Meteorological or Climatological Drought - a period of well-below-average precipitation that spans from a few months to a few years.
2. Agricultural Drought - a period when soil moisture is inadequate to meet the demands for crops to initiate and sustain plant growth.
3. Hydrological Drought - a period of below-average streamflow and/or depleted reservoir storage.

### **How are droughts measured?**

The Illinois State Climatologist Office website offers one suggestion for determining drought conditions on a state-wide basis.

<b>Drought Duration</b>	<b>Moderate Drought</b>	<b>Severe Drought</b>
3 months	45 to 60%	less than 45%
6 months	56 to 70%	less than 56%
12 months	70 to 80%	less than 70%
24 months	78 to 90%	less than 78%

The normal precipitation by month for Sangamon County is shown in Figure 7-2.

**Figure 7-2 Normal Precipitation in Springfield from 1971-2000**

Month	Normal Precipitation in inches
January	1.62
February	1.80
March	3.15
April	3.36
May	4.06
June	3.77
July	3.53
August	3.41
September	2.83
October	2.62
November	2.87
December	2.54
TOTAL	35.56

**The extent of previous droughts in Sangamon County.**

According to Jim Angel, State Climatologist at the Illinois State Water Survey, the 1930s and 1950s were the periods when drought was most frequent and troublesome. Sangamon County experienced a severe drought in 1953-1955. In September 1983 all counties in the state were declared State disaster areas because of high temperatures and low precipitation conditions that began in June.

**The locations affected by drought.**

The entire County could be affected by a drought since the precipitation patterns throughout the region are similar. A large portion of the County is in crop production so a drought would have an impact on the agricultural community.

Many homes outside of municipalities use private wells to provide water although there are also several water districts that supply public water to some rural areas. Municipalities in the County provide water to their residents from surface water or ground water sources. Severe drought affects all these water sources.

**Probability of future drought events.**

(from: Illinois State Climatologist Office)

The persistence of drought from one season to the next in Illinois is not as high as in other parts of the U.S., especially the West where multi-year droughts are common. Therefore the ability to predict the onset or continuation of a drought is more problematic. Recent advances in our understanding of large-scale atmospheric and oceanic circulation features, such as El Niño and the Pacific Decadal Oscillation, may lead to some small degree of skill in predicting drought one or two seasons ahead. On the longer scale of multi-decades, no skill has been shown in forecasting drought, even with the application of so-called drought/solar cycles. As global and regional climate models improve we may begin to realize the ability to predict changes in frequency, intensity, or location of drought.

## **DROUGHT –Assessing Vulnerability**

A drought in Sangamon County would impact two major aspects of our communities – water supply and agricultural production. No damage to buildings generally results from drought conditions.

(from: Illinois State Climatologist Office)

The first part of the hydrological cycle to be impacted by drought is the soil moisture. The changes in soil moisture can be quite rapid during the growing season when demand for moisture is high due to plant growth. Dry periods in Illinois typically have a near-normal number of days with rain, but the rains are more spotty and less intense. As a result, stream flow usually drops as well due to a lack of heavy rainfall events. Any rain that does fall is first absorbed into the ground because of the depleted soil moisture, reducing runoff.

According to the 2002 Census of Agriculture there were 970 farms in Sangamon County accounting for 468,314 acres of land. Ninety-three percent of this land was in crop production. Crop sales were \$131,338,000. Livestock sales were \$14,572,000. A severe drought would have a financial impact on the large agricultural community in Sangamon County particularly if it occurred during the growing season.

Water supplies from private wells, ground water sources, and surface water sources would also be impacted by a severe drought.