



DROUGHT UPDATE

June 19, 2012, Updated June 21, 2012

Illinois in Drought

The ISWS now considers central and southern Illinois to be fully in drought based on several impacts including the early-season onset of reservoir drawdown at many water supply lakes as well as the continuing seasonally-low water levels in many streams and shallow groundwater resources. Impacts to agriculture appear to be at a cusp. Crops in many locations are experiencing some stress and soil moisture is short; but, with timely rainfalls over the next month, there is a possibility that damage to crops could be largely averted. Hydrologic conditions, however, will likely continue to worsen in upcoming months even with normal rainfall. Northern Illinois is also dry, and if dry conditions continue through the next month, might also be considered to be in drought.

Precipitation

Many locations in central and northern Illinois received an inch of precipitation over the June 16-17 weekend, temporarily alleviating drought impacts particularly for the agricultural sector. Over the past 4 weeks since the last ISWS drought update, however, the average precipitation across Illinois has been less than 2 inches – roughly half of normal. Much of the southern half of the State has received only 1 to 1.5 inches during that time.

Most central and southern Illinois locations (south of I-80) now have a cumulative deficit in precipitation of 5 inches or more dating back to either July of last year (Figure 1) or early this year (Figure 2). The cumulative deficit exceeds 8 inches for the southeastern corner of Illinois and much of central Illinois, and is as great as 12 inches for portions of west-central Illinois. The precipitation deficit is further enhanced by the very warm temperatures this spring (the warmest on record), which, through increased evapotranspiration, have the effect of adding 2-3 inches to the deficit. Significant hydrologic impacts to streams, reservoirs, and groundwater are typically to be expected whenever the precipitation deficit reaches 10 inches.

Agricultural Conditions

According to the June 18 Illinois Weather and Crops Report, most of the corn and soybean crop conditions are fair to good, but reporting signs of stress due to low soil moisture. Seventy percent of the soils in the State are listed as having short or very short moisture levels

in the topsoil, with southern Illinois soils reporting the driest conditions. For most locations in central Illinois, rainfalls experienced over the past week were sufficient to make up for crop water use over that time, but not to replenish dry soils. Soils in southern Illinois continue to become drier.

Streamflows

Most central and southern Illinois streams (locations south of I-80) are experiencing below normal to much-below normal flow levels for this time of year (Figure 3). Regions that are experiencing much-below normal flows (in the lowest 10th percentile for this time of year) are the central, eastern, and southeastern parts of the State. For these regions of the State, hydrologic conditions are similar to that experienced in 1988 – Illinois’ last major drought. Streamflows in northern Illinois are also declining and are below their average, but most are not yet in their lowest 25th percentile for June.

Although flows in many streams are below normal for June, none of the current flow levels are yet close to their normal annual minimum levels. June is still in the “wet season” of the year in regards to expected streamflow levels. Thus, many environmental impacts associated with low stream levels have yet to be experienced this year. However, with the accumulated precipitation deficit and low groundwater recharge this year, stream levels may be expected to decline throughout the summer without substantial rainfalls reversing the normal seasonal pattern of streamflow recession.

Shallow Groundwater

The ISWS maintains long-term monthly records of groundwater levels at 15 shallow wells throughout the State. Water levels at all wells are lower than they were at this time last year. Thirteen wells have shown a decline over the past month. Ten of these wells are reporting lower levels than they did in November of 2011, which is significant because the period between November and May is almost always a season where groundwater is recharged from above. The greatest well declines have been experienced in southern Illinois. Two of the 15 long-term observation wells are currently experiencing their lowest levels on record for this time of year.

Figure 4 compares observed well levels over the past 12 months to the long-term average conditions at the Coffman well in Pike County, the region of the State that has experienced the greatest precipitation deficit since last year. Under average conditions the well level falls during the summer, begins to recover in the fall, and continues to gain recharge through April of the following spring. Levels in the Coffman well dropped substantially during dry conditions last summer. However, of greater concern is the small amount of recharge and recovery that has happened since last fall compared to what would be expected in most years.

We are now entering the time of the year when groundwater levels are expected to decline more quickly. The current low shallow groundwater levels suggest an increased probability of

problems with a number of water supply wells this summer. In addition, shallow groundwater also provides baseflow to maintain stream levels during dry seasons, and the current conditions are a bad omen regarding the potential occurrence of very low streamflows later this summer and fall.

Water Supply Reservoirs

The ISWS maintains long-term monthly records of water levels at over 30 water supply reservoirs located primarily in central and southern Illinois. As of the end of May, a majority of these reservoirs were slightly below full pool. Typically, even during many drought years, these reservoirs remain at full pool into July. In addition, there are only a few historical early-season hydrologic droughts on record where water supply reservoirs might be expected to begin their seasonal summer drawdown prior to mid-June. For supplies that tend to be vulnerable to drought, it is recommended that communities may want to be more aggressive than normal in issuing water-use restrictions.

The water level in Lake Springfield began its drawdown around the 1st of June and has since fallen roughly 0.25 feet. The Lake Decatur level began to decline around June 6 and has since fallen roughly 0.35 feet. The water level in Canton Lake never recovered over the winter and spring and is already over 5 feet below its normal pool. Canton is in the process of developing and switching over to a groundwater source, although the timing of that is not yet known.

Federal Reservoirs and Lake Michigan

Lake Shelbyville is currently 0.7 feet below normal and without substantial rains would not be expected to reach its summer target pool level this year. Lake Carlyle is roughly 0.2 feet above its summer target pool and may fall to that level by the end of the month. Rend Lake is roughly a foot above its summer target pool, which is lower than normal for June. Lake Michigan is at an elevation of 577.6. This level has remained relatively level over the past 2 weeks, and it is possible that it has already reached its maximum level for the year – more than a month earlier than normal. Lake Michigan levels generally do not change quickly, and over the past several years the lake level has remained over a foot below its long-term historical average.

Prognosis

With the current impacts to streamflow, shallow groundwater, and reservoirs, it appears that we are entering an “early-season” hydrologic drought, and it would take substantially above-normal rainfall amounts to reverse this course. Agricultural impacts often provide the more visible face to droughts. Many of the most memorable drought periods of recent decades, such as that in 1988 and 2005, were characterized by a very dry 3-4 week period in which little rainfall was received, severely impacting crop conditions sending the state into an “agricultural drought.” It is yet to be seen whether crops this year will be impacted to such a degree. Although rainfall has been below normal over the past month, especially for southern Illinois, much of the state has experienced periodic rains that have maintained crops. It is possible,

with normal or slightly below normal rainfall amounts, occurring in a timely fashion, that agriculture could survive the ongoing drought conditions with only low levels of stress and damage to the crop.

The latest National Weather Service forecasts (as of June 21) for the rest of June and all of July call for an increased chance of above normal temperatures and below normal precipitation. In addition, their outlook for July-September calls for an increased chance of above normal temperatures with equal chances of above, below, or near-normal precipitation.

Accumulated Precipitation (in): Departure from Mean
July 1, 2011 to June 21, 2012

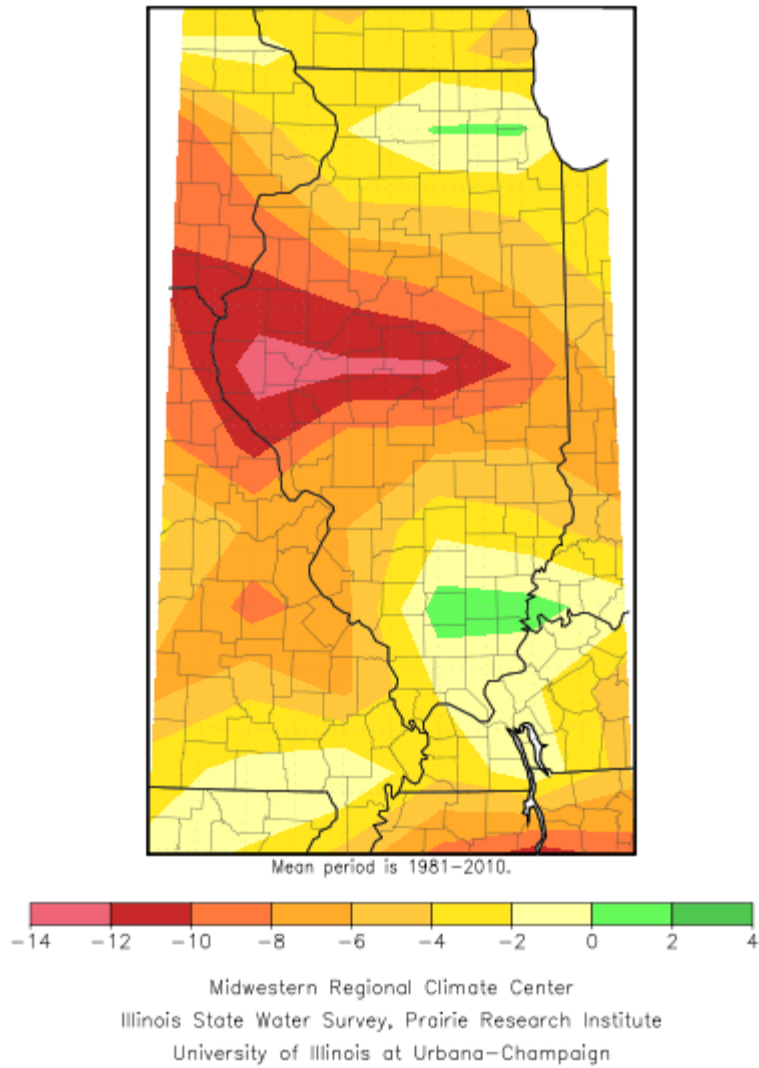


Figure 1. Precipitation departures from average in inches from July 1, 2011, to June 21, 2012.

Accumulated Precipitation (in): Departure from Mean
March 24, 2012 to June 21, 2012

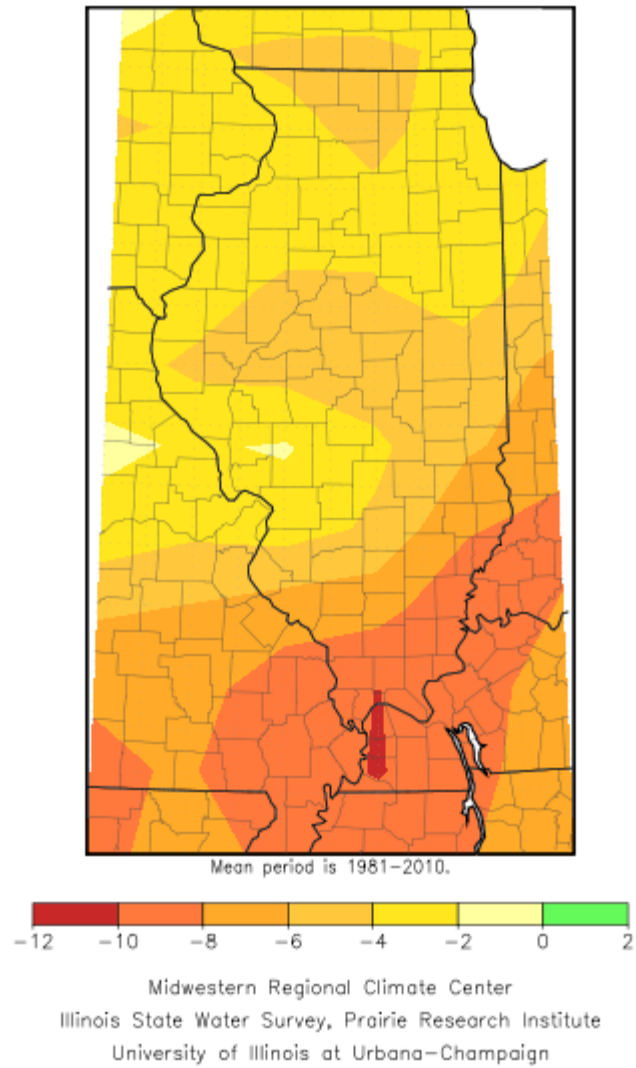
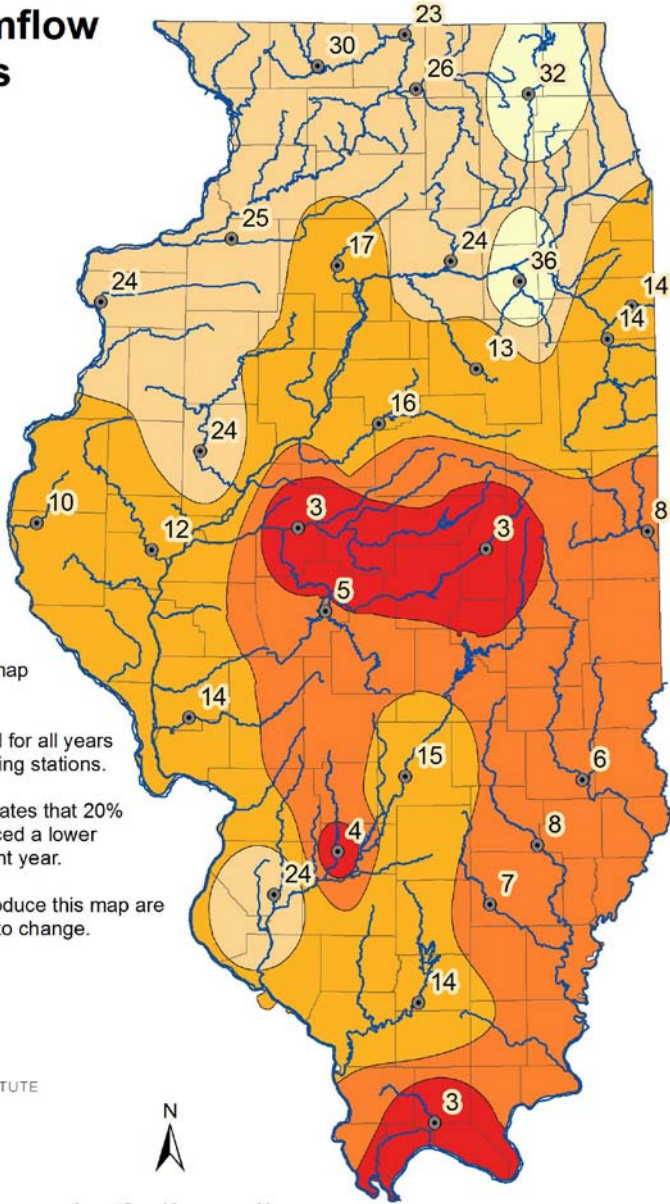
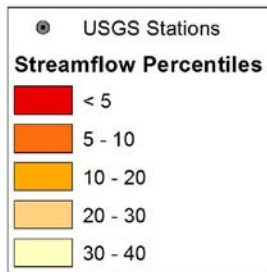


Figure 2. Precipitation departures from average in inches from March 24 to June 21, 2012 (last 90 days).

June 1 - June 17 Average Streamflow Percentiles



The percentage values on this map describe Illinois streamflows for June 1, 2012 - June 17, 2012, as compared to the same period for all years of record at selected USGS gaging stations.

For example, a value of 20 indicates that 20% of the years on record experienced a lower total flow amount than the current year.

The streamflow data used to produce this map are provisional and may be subject to change.



Figure 3. June 1-17 average streamflow percentiles for Illinois.

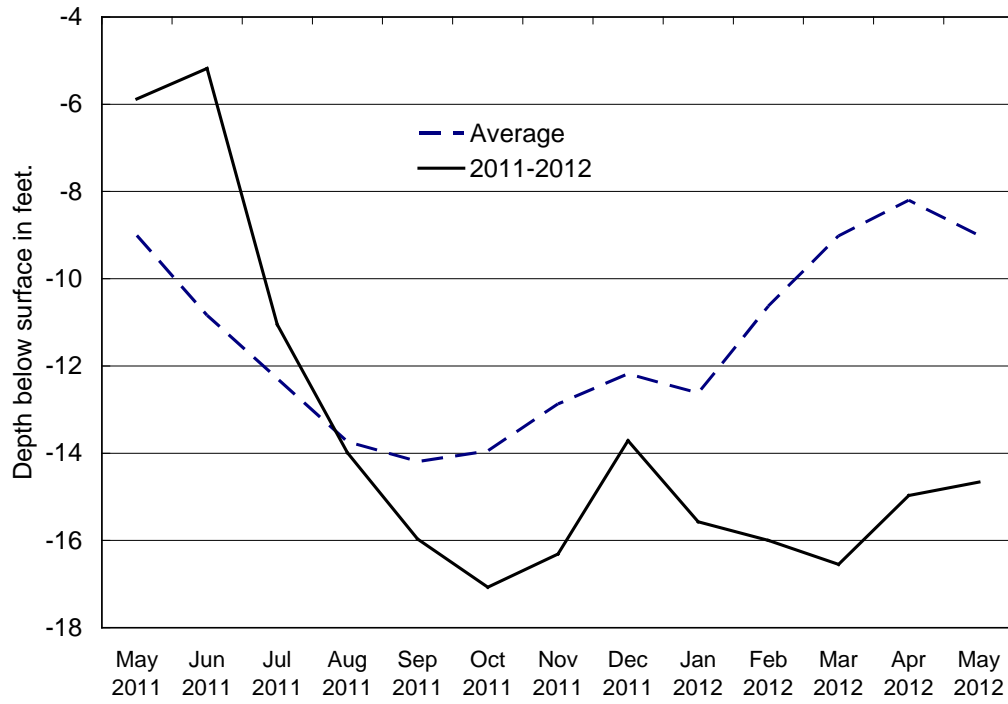


Figure 4. Water level depths observed at the Coffman well, Pike County