The 2012 Drought

Jim Angel, State Climatologist
What is drought?

• An extended period of below-normal rainfall that leads to impacts on the environment and/or economy.
Why so hard to define

- drought, unlike a flood or blizzard, is not a distinct event,

- drought means different things to a homeowner, a farmer, or a water supply manager.
Types of droughts

- **Agricultural Drought** - a period when soil moisture is inadequate to meet the demands for crops to initiate and sustain plant growth.
• **Hydrological Drought** - a period of below-average streamflow and/or depleted reservoir storage.
Sequence of events

1. Stops raining
2. Soils dry out
3. Streamflows drop
4. Ponds and small lake levels drop
5. Shallow well levels drop
6. Larger lakes and rivers drop
January-July

• Rainfall:
  1. 1936 with 12.22 inches
  2. 1934 with 13.55 inches
  3. 2012 with 14.05 inches
  4. 1988 with 14.60 inches

• Temperatures:
  1. 2012 with 57.0 °F
## Champaign-Urbana

<table>
<thead>
<tr>
<th>Month</th>
<th>Days 90 degrees or hotter</th>
<th>Days 100 degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>June</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>July</td>
<td>27</td>
<td>7</td>
</tr>
<tr>
<td>August</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>September</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>55</td>
<td>10</td>
</tr>
</tbody>
</table>

10 days at 100 or above: third place behind 11 in 1934 and 15 in 1936

55 days at 90 or above: second place behind 56 in 1936, 1954, and 1988
Fraction of soil made up of water:
- 0.3 to 0.4 = Wet
- 0.2 to 0.3 = OK
- 0.1 to 0.2 = Dry
Preparing for a slow recovery ... until
Remains of Isaac

Multi-sensor Precipitation: Observed (inches)
7-Day Period Ending the Morning of 9/3/2012

- > 10.0
- 8.0 to 10.0
- 6.0 to 8.0
- 5.0 to 6.0
- 4.0 to 5.0
- 3.0 to 4.0
- 2.5 to 3.0
- 2.0 to 2.5
- 1.5 to 2.0
- 1.0 to 1.5
- 0.75 to 1.00
- 0.50 to 0.75
- 0.25 to 0.50
- 0.10 to 0.25
- 0.01 to 0.10
- < 0.01 (Not Shown)
- Missing Data

Precipitation data from NWS AHPS:
http://water.weather.gov/precip
30 Days – Departure From Normal

Multi-sensor Precipitation: Departure from Normal (inches)
30-Day Period Ending the Morning of 9/12/2012

Precipitation data from NWS AHPS:
http://water.weather.gov/precip
Fraction of soil made up of water

- 0.3 to 0.4 = Wet
- 0.2 to 0.3 = OK
- 0.1 to 0.2 = Dry
### Drought Severity

- **D0 - Abnormally Dry**
- **D1 Drought - Moderate**
- **D2 Drought - Severe**
- **D3 Drought - Extreme**
- **D4 Drought - Exceptional**

#### Illinois

<table>
<thead>
<tr>
<th>Week</th>
<th>Nothing</th>
<th>D0-D4</th>
<th>D1-D4</th>
<th>D2-D4</th>
<th>D3-D4</th>
<th>D4</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 28, 2012</td>
<td>0.00</td>
<td>100.00</td>
<td>98.80</td>
<td>94.11</td>
<td>69.56</td>
<td>7.82</td>
</tr>
<tr>
<td>September 4, 2012</td>
<td>0.00</td>
<td>100.00</td>
<td>93.95</td>
<td>56.33</td>
<td>6.96</td>
<td>0.00</td>
</tr>
</tbody>
</table>
U.S. Drought Monitor

September 18, 2012
Valid 7 a.m. EDT

Intensity:
- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:
- Delineates dominant impacts
- S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu/

Released Thursday, September 20, 2012
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ILLINOIS STATE
WATER SURVEY
PRAIRIE RESEARCH INSTITUTE
Key Points

• Warm, dry winter and spring precursor for drought
• Historic-level growing season drought
• Isaac was a real game changer in this drought
• Soil Moisture is much improved