National Integrated Drought Information System

Drought Early Warning for the Apalachicola-Chattahoochee-Flint River Basin

18 August 2015
Outline

Welcome — Eric Reutebuch, AU Water Resources Center

- Current drought status, seasonal forecasts and outlooks — David Zierden, Florida Climate Center, FSU
- Streamflows and groundwater — Tony Gotvald, USGS
- Streamflow forecasts — Todd Hamill, SERFC
- ACF reservoir conditions — Bailey Crane, United States Army Corps of Engineers
- Alabama drought status — Tom Littlepage, AL OWR
- Summary and Discussion
Current drought status

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

Figure 1. Water response/use curve for peanut.

Figure 2. Seasonal water demand curve for cotton (Source: Sansone, C. et al. Texas Cotton Production Emphasizing Integrated Pest Management. Texas AgriLife Extension Service).
Rainfall – Last 7 Days

Dothan, AL – 1.22 inches thus far in August
30-Day Rainfall

Totals

Departure from Normal
90-day Rainfall Departures
Lawn and Garden Moisture Index

Lawn-and-Garden Moisture Index for August 17, 2015

Alabama Office of the State Climatologist

-2.0 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 2.0
Current SST Anomalies
Nino 3.4 Index

- Current weekly value at +2.0, into the “very strong” range
- Reached weekly peak value of 2.8 in Nov. 1997
Nino 3.4 Forecasts

NINO3.4 SST anomaly plume
ECMWF forecast from 1 Aug 2015
Monthly mean anomalies relative to NCEP ONI 1981-2010 climatology

Mid-Jul 2015 Plume of Model ENSO Predictions

IRI/CPC

Dynamical Model:
- NCEP CFSv2
- NASA GMAO
- JMA
- ECMWF
- UKMO
- KMA
- ESSIC ICM
- COLA CCSM3
- MFRANCE
- CSIRO
- GFDDCM
- CMC CANSIP
- GFDFLOR

Statistical Model:
- CPC MREK
- CGCM
- CPC CA
- CPC CCA
- CSU CLIF
- USD NET
- FSU HEG
- UCLA-TCDD
El Nino Composites vs. Reality

July-Aug. El Nino Rainfall

Last 30 days
El Nino and Winter Rainfall

- El Nino typically brings enhanced winter rainfall to California and the southern U.S., including Texas and Florida.

- California Rainfall more hit or miss than other Southern States

- Strong El Nino does not necessarily mean even more rainfall, just more confidence in following the pattern.
Official NOAA Outlook

• NOAA’s fall (Sept. – Nov.) and winter (Dec. – Feb.) outlooks

• Enhanced fall rainfall favored over entire southern U.S. consistent with El Nino

• Strong forecast for winter rainfall along Southern U.S., dry in Pacific NW.
Will El Nino End California Drought?

“Super El Nino’s” of 1982/83 and 1997/98 brought heavy rain totals, others not so much....

• Sufficient snowpack is also needed in the winter

• One good winter unlikely to make up 4 years of historic drought
Will 2016 in Florida Repeat 1998?

- Super El Nino of 1998 brought record winter rainfall to Florida
- April-June brought record dryness
- Over half million acres burned in worst wildfire season in memory
Atlantic Hurricane Outlook

NOAA Seasonal Outlook

70% chance of:

• 6-11 named storms
• 3-6 hurricanes
• 0-3 major hurricanes
U.S. Drought Outlook

U.S. Seasonal Drought Outlook
Drought Tendency During the Valid Period
Valid for July 16 - October 31, 2015
Released July 16, 2015

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short-lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

Author:
Brad Pugh
NOAA/NWS/NCEP/Climate Prediction Center

http://go.usa.gov/hHTe
Streamflows and Groundwater
Realtime stream flow compared with historical monthly averages

Previous Brief:

Current:

http://waterwatch.usgs.gov
Below Normal 7-day Average Streamflows

Previous brief:

Below normal 7-day average streamflow as compared with historical streamflow for day shown

Current:

http://waterwatch.usgs.gov
Lake Lanier Inflows

Chattahoochee near Cornelia (02331600)

http://waterwatch.usgs.gov

Chestatee near Dahlonega (02333500)
Current Streamflows

Chattahoochee at Atlanta (02336000)

http://waterwatch.usgs.gov

Chattahoochee near Whitesburg (02338000)
Current Streamflows

Chattahoochee at West Point (02339500)

http://waterwatch.usgs.gov

Chattahoochee at Columbus (02341460)
Current Streamflows

Flint River near Griffin (02344500)

http://waterwatch.usgs.gov

Flint River near Carsonville (02347500)
Current Streamflows

Flint River at Albany (02352500)

http://waterwatch.usgs.gov

Flint at Bainbridge (02356000)
Streamflows

Apalachicola at Chattahoochee (02358000)

http://waterwatch.usgs.gov
Streamflows

Apalachicola at Chattahoochee (02358000)

http://waterwatch.usgs.gov
Groundwater Conditions

Previous brief

Current brief

Explanation - Percentile classes: (symbol color based on most recent measurement)

<table>
<thead>
<tr>
<th>Wells</th>
<th>Springs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real-Time</td>
<td>O</td>
</tr>
<tr>
<td>Continuous</td>
<td>□</td>
</tr>
<tr>
<td>Periodic Measurements</td>
<td>△</td>
</tr>
</tbody>
</table>

Low

- Much Below Normal: <10
- Below Normal: 10-24
- Normal: 25-75
- Above Normal: 76-90
- Much Above Normal: >90

High

Not Ranked

http://groundwaterwatch.usgs.gov
Groundwater Status – Miller County 08G001

Explanation - Percentile classes (symbol color based on most recent measurement)

<table>
<thead>
<tr>
<th>Explanation</th>
<th>Percentile Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>&lt;10</td>
</tr>
<tr>
<td></td>
<td>10-24</td>
</tr>
<tr>
<td></td>
<td>25-75</td>
</tr>
<tr>
<td></td>
<td>76-90</td>
</tr>
<tr>
<td></td>
<td>&gt;90</td>
</tr>
<tr>
<td></td>
<td>Not Ranked</td>
</tr>
</tbody>
</table>

(Upper Floridan Aquifer)
Groundwater Status – Early County 08K001

(Upper Floridan Aquifer)
Streamflow Forecasts
3-Month Mean Daily Streamflow Forecasts
Apalachicola Watershed
Southeast River Forecast Center

August 1st - October 31st 2015

Above Normal
Near Normal
Below Normal

- West Point
- Vinings
- Lovejoy
- Albany
- Carsonville
- Blountstown
- WF George
- Columbus
- Woodruff

NATIONAL WEATHER SERVICE
U.S. DEPARTMENT OF COMMERCE
Southeast River Forecast Center (SERFC)
USACE – ACF Reservoir Conditions August 18th 2015

Bailey Crane
West Point Action Zones and Actual 2015 Elevations

Elevation in FT NGVD

Top of Conservation

Zone 1

Zone 2

Zone 3

Zone 4

Actual data thru August 17, 2015

2015 Actual Elevation
Forecast Elevation
Historical Median Elevation
Elevation Range 1975 - 2014

Bottom of Conservation
7-DAY MOVING AVERAGE INFLOW VERSUS 1-DAY CHATTAAHOOCHEE FLOW

AVERAGE INFLOW

ENTIRE BASIN INFLOW

CHATTAAHOOCHEE FLOW
Alabama Drought Conditions
Current Alabama Drought Declaration

For Public Dissemination
Alabama Drought Declarations

In accordance with the Alabama Drought Planning and Response Act (Code of Ala. 1975, §§-10C-1, et seq.) and the Alabama Drought Management Plan, the ADECA Office of Water Resources (OWR), based on a review of current and anticipated conditions, has declared the following portions of Alabama to be under the specified drought declaration levels.

<table>
<thead>
<tr>
<th>Declaration</th>
<th>Region(s) Impacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency</td>
<td>None</td>
</tr>
<tr>
<td>Warning</td>
<td>None</td>
</tr>
<tr>
<td>Watch</td>
<td>None</td>
</tr>
<tr>
<td>None</td>
<td>Regions 1, 5, and 6 in the Alabama Drought Management Plan which includes the counties of: Autauga, Bullock, Butler, Clarke, Colbert, Dallas, DeKalb, Elmore, Franklin, Jackson, Lauderdale, Lawrence, Lee, Limestone, Lowndes, Macon, Madison, Marengo, Marshall, Monroe, Montgomery, Morgan, Russell, Washington, and Wilcox.</td>
</tr>
</tbody>
</table>

The higher temperatures and limited rainfall for this time of year continue to cause dry conditions. Reservoir levels are beginning to dip due to decreasing inflows. As a result of these conditions, Drought Region 4 was added to the Advisory level. Public water system managers and other non-public and private water users should carefully monitor water conditions. The OWR will regularly assess conditions and modify this drought declaration as needed.

- Next Alabama Monitoring and Impact Group (MIG) meeting – August 25, 2015 at 1 PM (CST)
- POC: Tom Littlepage
  Email: Tom.Littlepage@adeca.alabama.gov
  Phone: (334) 242-5697
• Entering the period of peak water demand for most row crops.
• Mostly normal rainfall the past 30-90 days for upper and middle ACF, below normal in the lower basin.
• Parts of the middle and lower ACF designated as Abnormally Dry and moderate drought by the US Drought Monitor.
• El Nino continues to strengthen, reaching “very strong” level.
• NOAA and European Center models forecast near-record El Nino.
• CPC fall and winter outlooks favor pattern of above normal rainfall for all the Southern U.S., strongly favors above normal in the winter.
• Strong El Nino, could bring some relief to California, unlikely to end the drought.
• Repeat of 1998 drought in Florida is not likely, but should be monitored closely.
Summary-Tony Gotvald

• Realtime streamflows are in the below normal range for most of the ACF basin.
• 28-day average streamflows into Lake Lanier are in the below normal range.
• 28-day average streamflows are in the below normal range for most of the Flint River basin.
• Groundwater levels are in the normal range in Southwest Georgia.
Summary- Todd Hamill

• 1 Month Streamflow forecast - Near to Below Normal.
• 3 Month Streamflow forecast – Dryness has set probabilities to near to below normal range.
• Pie Charts do not consider any future forecast such as ENSO, CPC or other. Based on soil conditions relative to normal in concert with historical precipitation.
Summary – Bailey Crane

• Things have dried up but reservoir levels are near normal for this time of year.
• All reservoirs are expected to remain near normal into September.
• System conservation storage has crossed into zone 2. Very few changes occur in zone 2.
• Its very unlikely that any USACE drought trigger will be reached this year.
Questions, Comments, Discussion
Additional information

- General drought information
  - [http://drought.gov](http://drought.gov)
  - [http://www.drought.unl.edu](http://www.drought.unl.edu)

- General climate and El Niño information
  - [http://agroclimate.org/climate/](http://agroclimate.org/climate/)

- Streamflow monitoring & forecasting
  - [http://www.srh.noaa.gov/serfc/](http://www.srh.noaa.gov/serfc/)

- Groundwater monitoring
Thank you!

Next briefing

**September 22, 2015**, 1:00 pm EDT
Moderator: Eric Reutebuch

Slides from this briefing will be posted at

[http://drought.gov/drought/content/regional-programs/regional-drought-webinars](http://drought.gov/drought/content/regional-programs/regional-drought-webinars)

Please send comments and suggestions to:

reuteem@auburn.edu