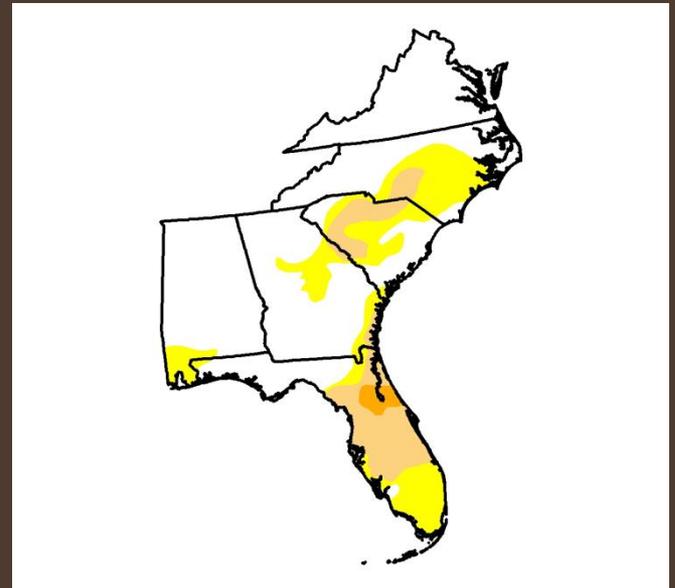


AGRICULTURAL IMPACTS OF DROUGHT ON THE SOUTHEAST US

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USDM Forum, April 17, 2013

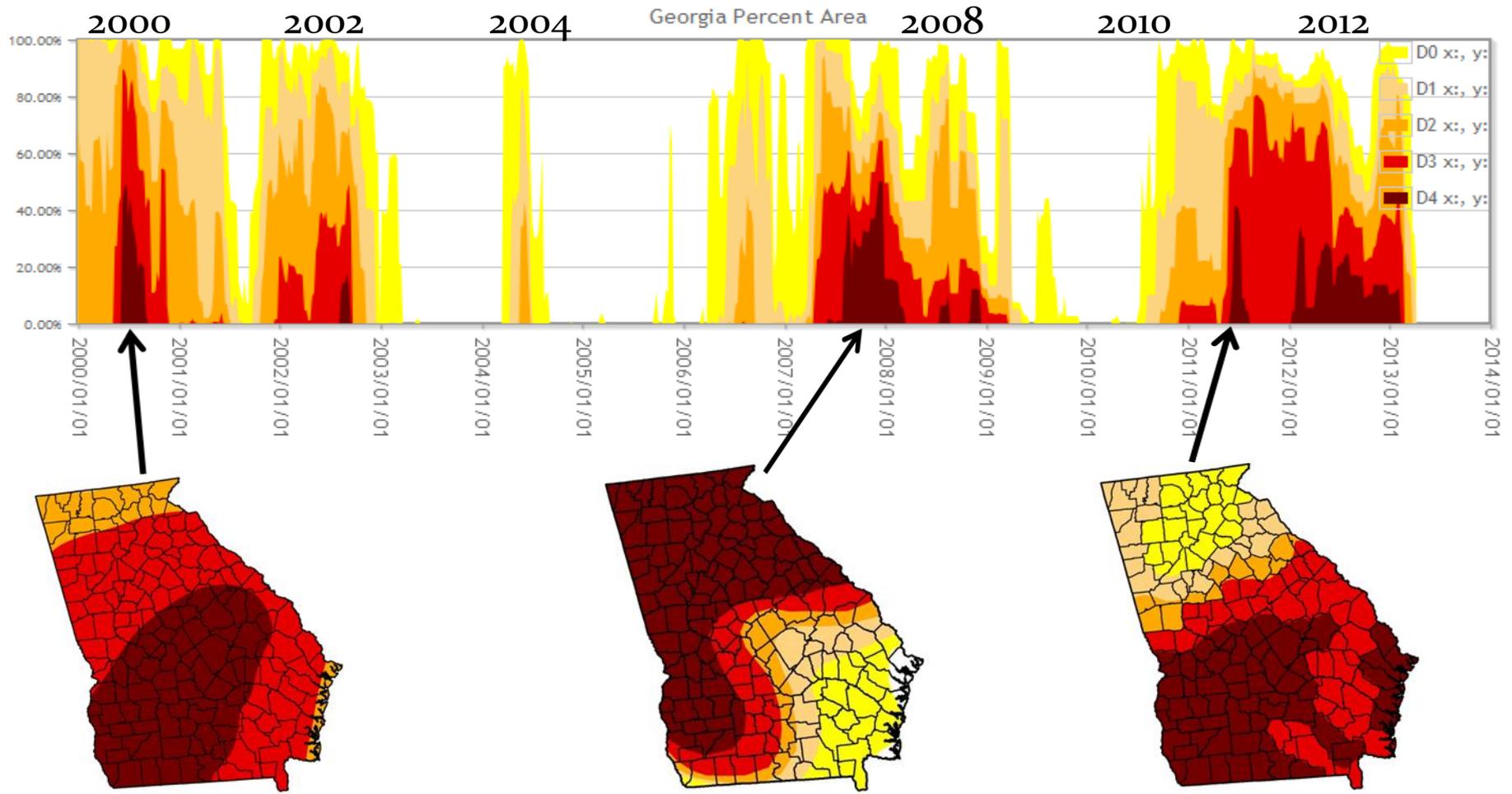
Topics

- Drought recap
- Agriculture in the Southeast
- Impacts of drought on agriculture

Onion planting in Vidalia GA

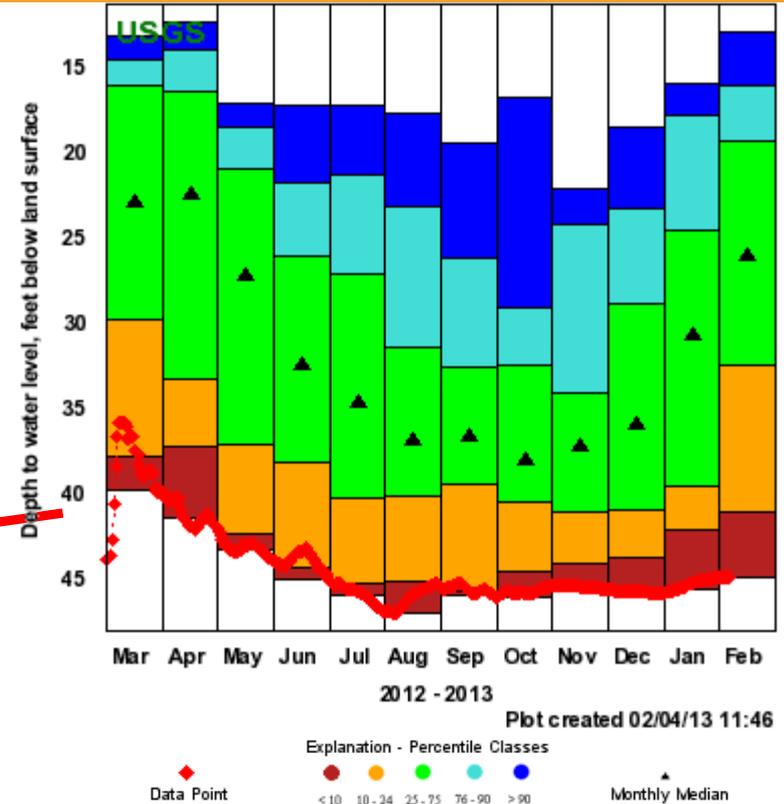
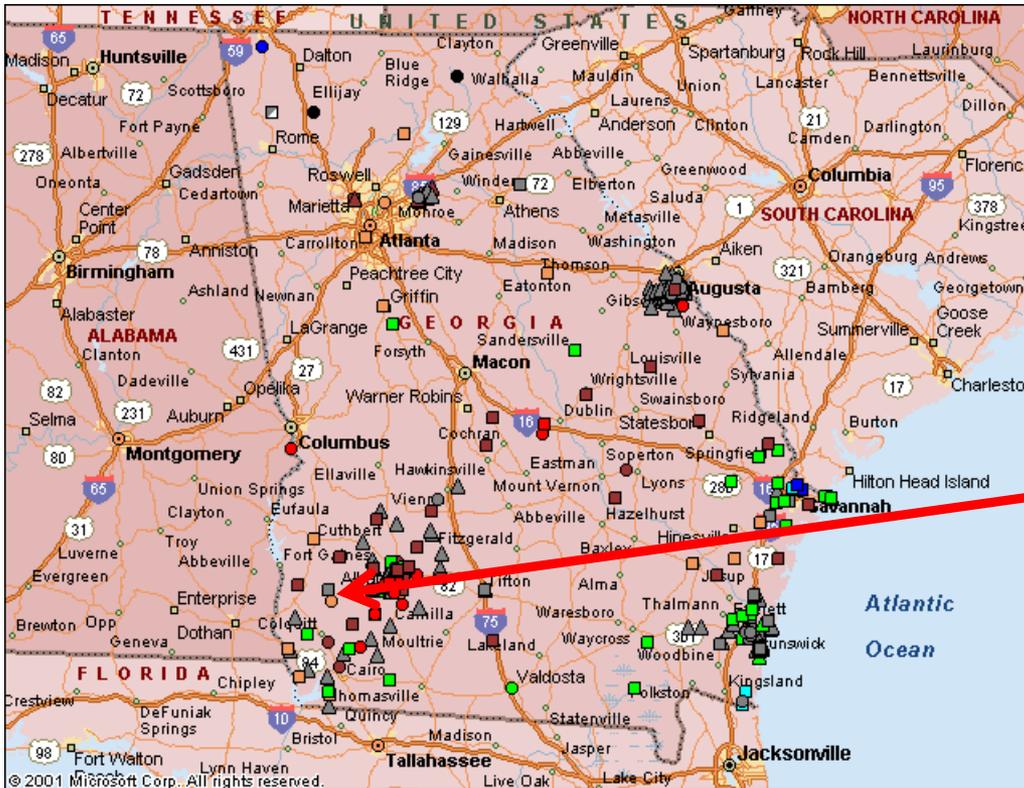


Timeline of Drought in the SE



Groundwater status as of Feb. 5

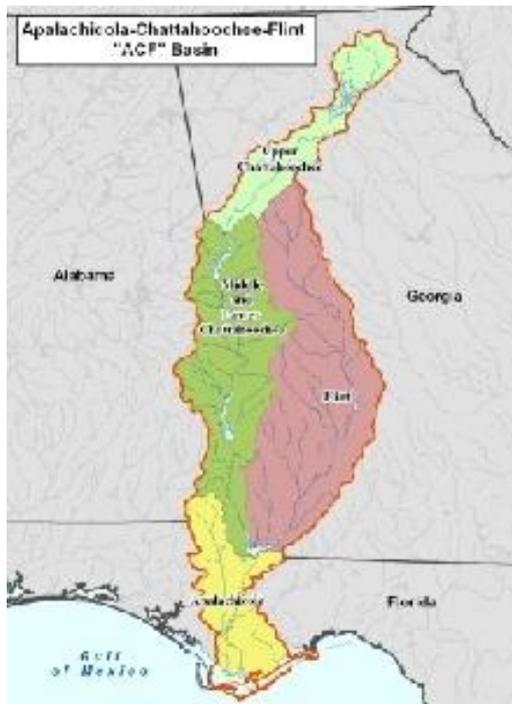
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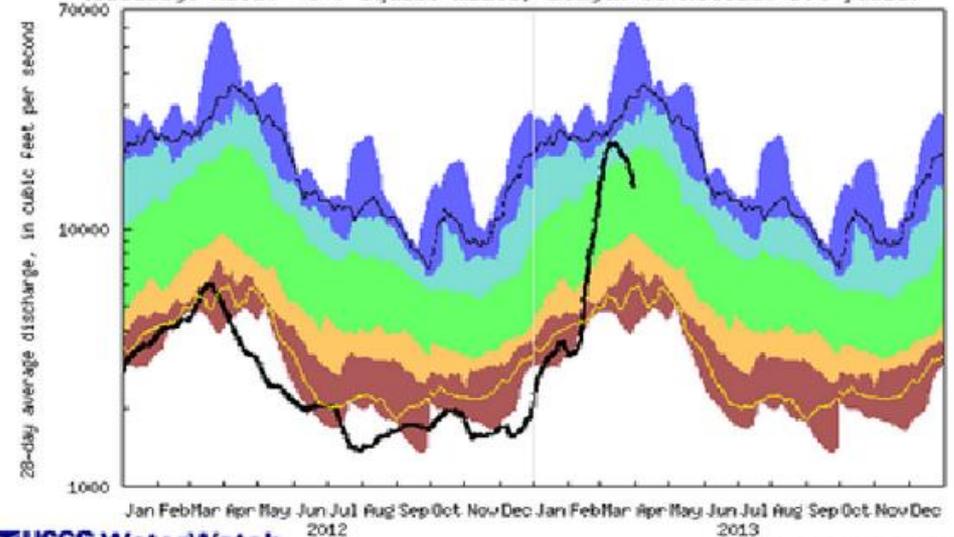
Explanation - Percentile classes (symbol color based on most recent measurement)							Wells		Springs		
● Low	● <10	● 10-24	● 25-75	● 76-90	● >90	● High	● Not Ranked	○ Real-Time	■	□ Continuous	■
	■ Much Below Normal	■ Below Normal	■ Normal	■ Above Normal	■ Much Above Normal			△ Periodic Measurements	■		■

Miller County, GA
(Upper Floridan Aquifer)

Flint River flow at Bainbridge



Duration hydrograph of 28-day average streamflow for USGS 02356000
(Drainage Area: 7570 square miles, Length of Record: 104 years)

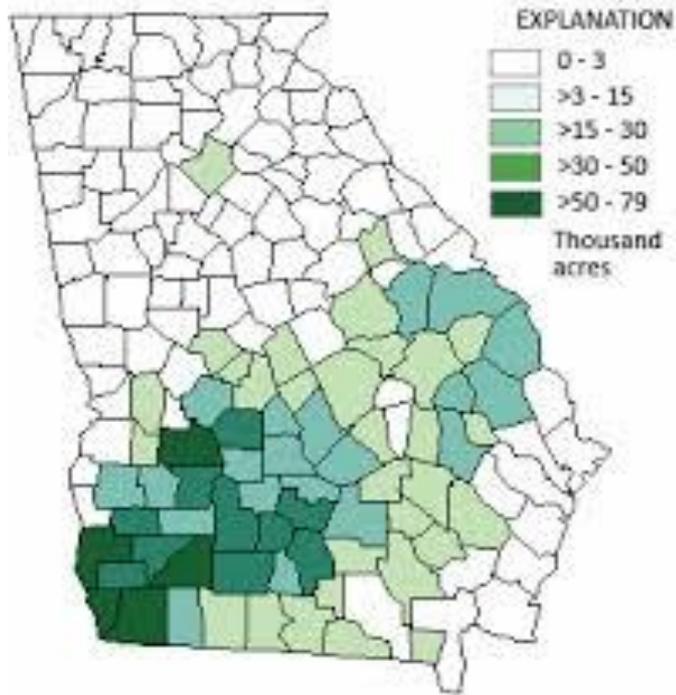


USGS WaterWatch

Explanation - Percentile classes					Flow
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	
Much below normal	Below normal	Normal	Above normal	Much above normal	

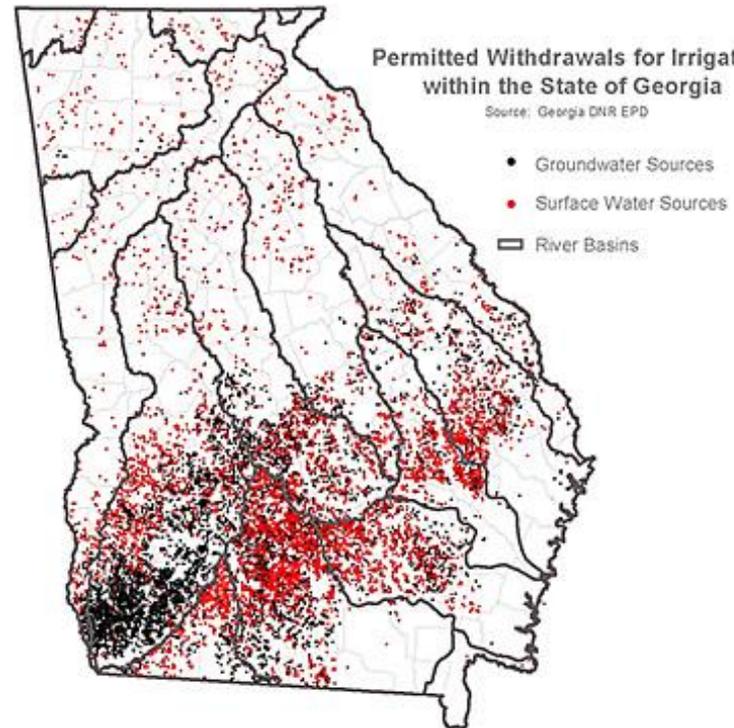
Irrigation

Irrigated acres, 2005

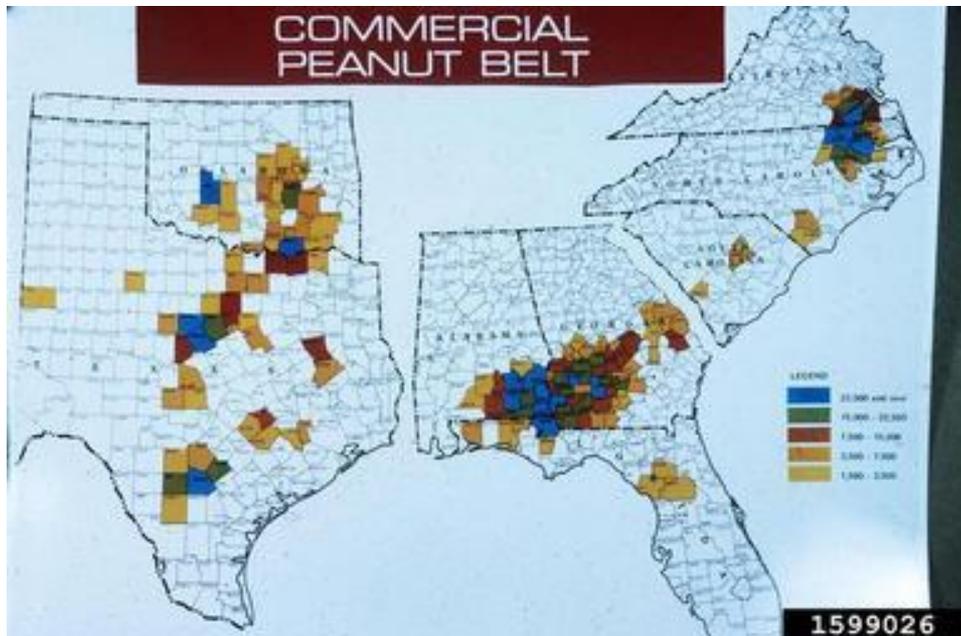


Permitted Withdrawals for Irrigation within the State of Georgia

Source: Georgia DNR EPD



Peanuts



Peanut yield of 4550 pounds per acre in 2012

Yield in 2011 was 3625 pounds per acre

“A perfect year for peanuts”

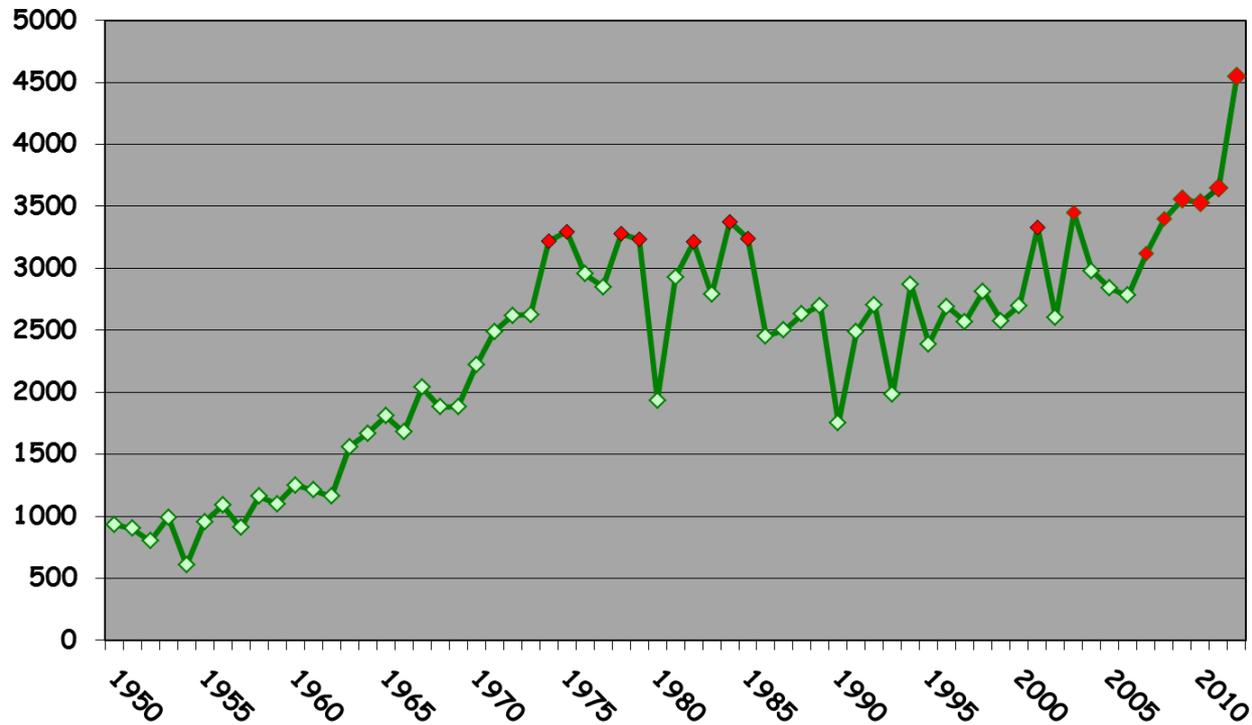
Factors in record yield:

- Maximum (89 F) and minimum (68 F) temperatures about 3 degrees below long term average—optimal is max of 86 F
- Timely rain in July and August helped fill the pods

Peanuts

Can't count on weather being cooperative

Irrigation – peanut fields need 1.5 – 2.0 inches of water per week during pod development and pod fill (weeks 10-17)



Georgia Peanut Yields

Livestock

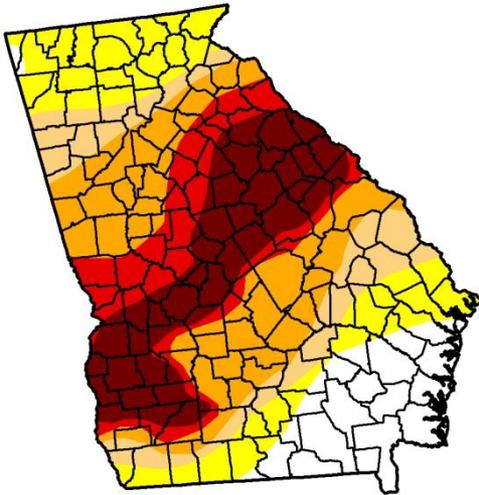
A warmer than usual spring in 2012 coupled with drought led to declines in farm pond levels and the growth of toxic algae which killed a number of cows in Georgia during early summer.



Corn



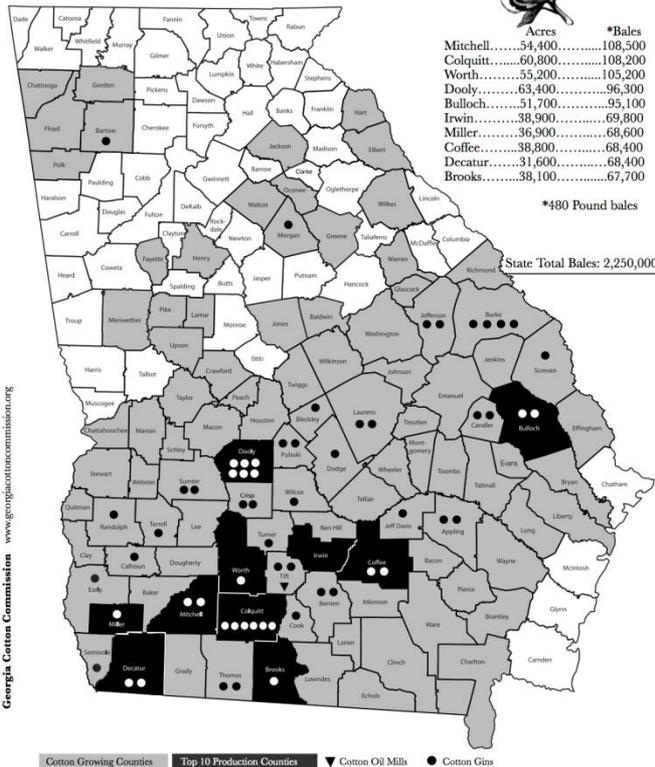
Dry conditions in the critical fertilization period lead to inadequate filling of ears. Most of Georgia's corn is used in local feed industries but about 80 percent of needs are imported from the Midwest.



One farmer estimated that he spent \$88K in May and June 2012 running his diesel irrigation pumps to keep plants moist in SW Georgia.

Cotton

Georgia's 2010 Cotton Acreage: 1,330,000



Cotton harvest in 2007 was 25 lb per acre above the 5-year average of 759 lb per acre but 40 lb per acre below the 10-year trend yield of 824 lb per acre.

The yield loss was estimated at \$24.5 million in lint income and \$3.2 million in cottonseed income.

In addition there were increased production costs from more irrigation and more weed control.

Reductions also occurred in loss of lint quality.

Estimated losses from 2007 drought

- Field crop losses estimated at \$1.3 billion for the Southeast
Peanut crop losses estimated at \$92.5 million and corn at \$63.1 million

Tropical Storm Barry prevented worse losses by adding soil moisture which allowed the planting of several thousand acres of peanuts late in the season

- Florida orange crop down 13% but losses offset due to higher prices
- Hay production was down 50 percent or more in Alabama, leading to beef cow herd reductions of 5-10 percent

Urban Agriculture and Landscaping



Charmar Flower and Gifts in Athens lost 30% of their business in 2007



- Estimated industry-wide job losses in urban agriculture (landscaping) of 35,000 due to layoffs in the 2007-8 drought in GA
- Most cuts came from part-time and seasonal workers as businesses tried to keep their full-time workers employed
- Estimated loss due to the 2007 drought and watering restrictions was \$225K per business
- Many businesses quit or declared bankruptcy

Urban Agriculture and Landscaping

- Briggs and Stratton shut down temporarily in 2012 due to lack of demand for lawn equipment from drought and economy, laying off 340 hourly workers and 200 part-time employees



Forestry

Multi-year events have the most impact on forests.

Impacts include:

- Stress on trees which increases vulnerability to insect pests, diseases and root rot
- Oak are least affected and pine the most affected
- Reduced growth and successful planting
- Increased wildfire chances (almost 600k acres burned in 2007)



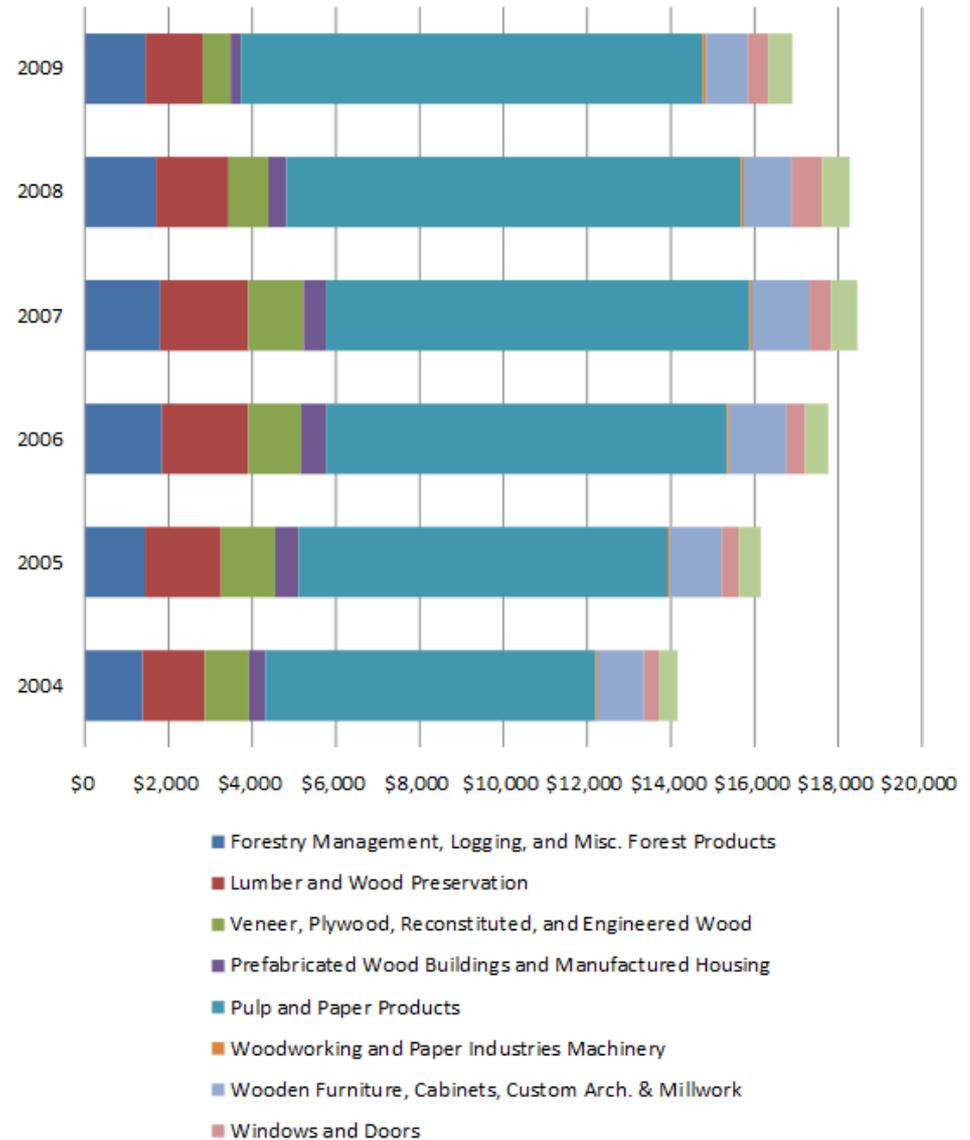
Eighty percent of tree growth is due to water availability

Damage from southern pine beetle

Forestry

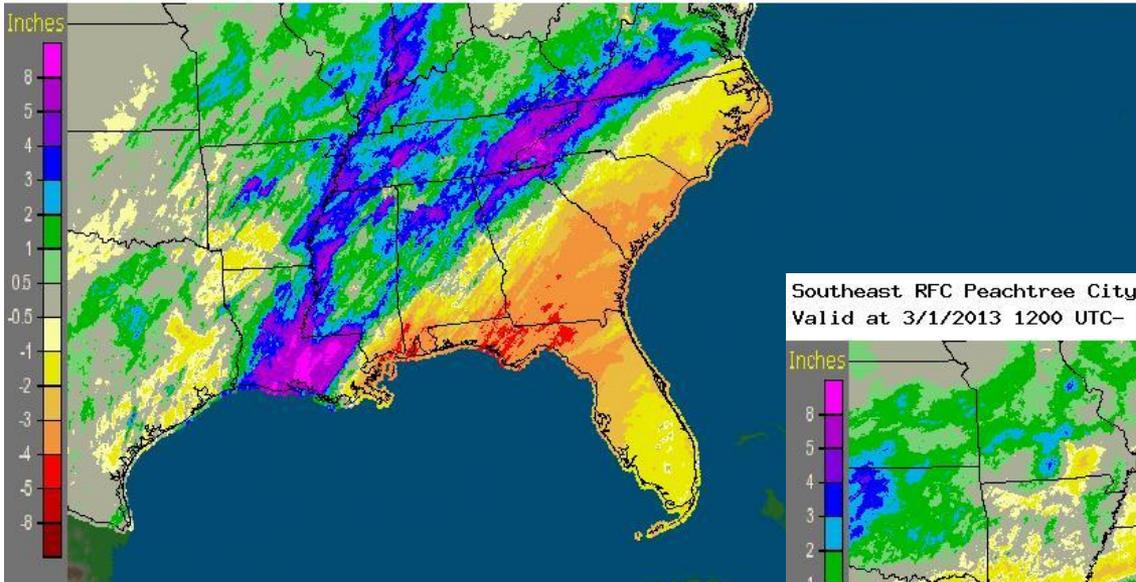
Economic activity in Georgia due to forestry decreased due to a combination of drought impacts and economic recession

Figure 2-1 Forestry Industry Economic Activity: Output by Sector (Dollars in Millions)



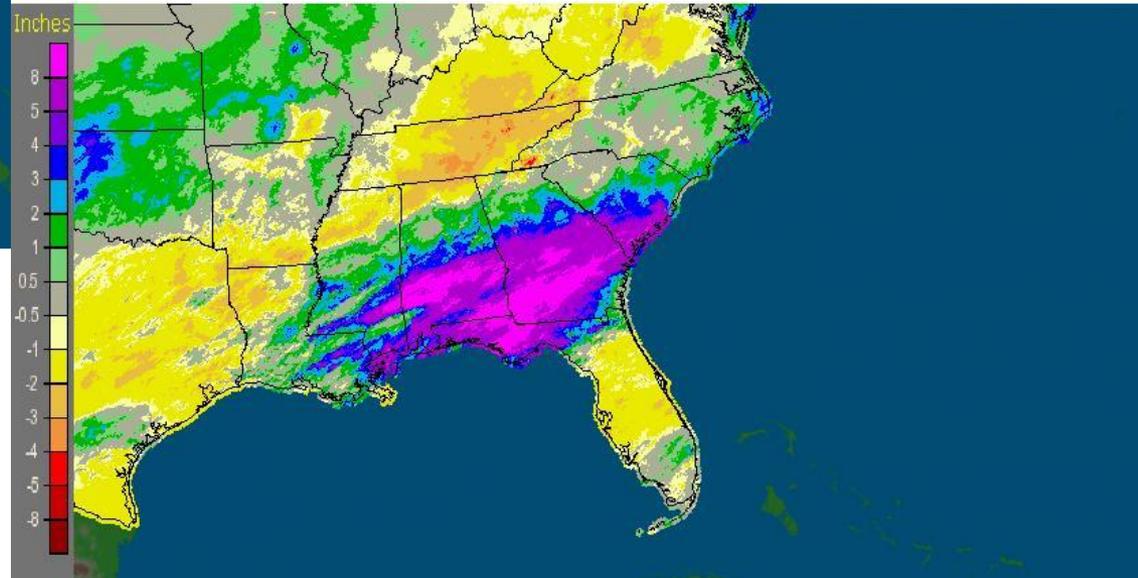
Monthly Rainfall Departures

Southeast RFC Peachtree City, GA: January, 2013 Monthly Departure from Normal Precipitation
Valid at 2/1/2013 1200 UTC- Created 2/3/13 21:39 UTC



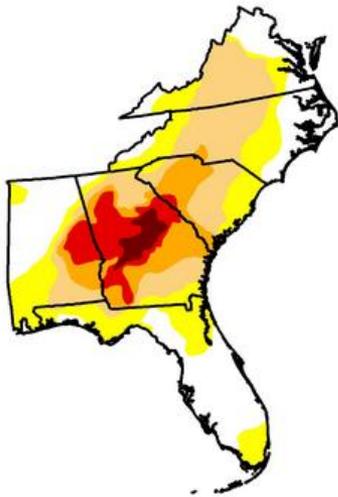
January 2013

Southeast RFC Peachtree City, GA: February, 2013 Monthly Departure from Normal Precipitation
Valid at 3/1/2013 1200 UTC- Created 3/3/13 21:38 UTC

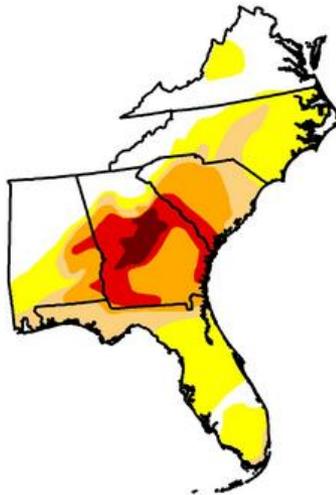


February 2013

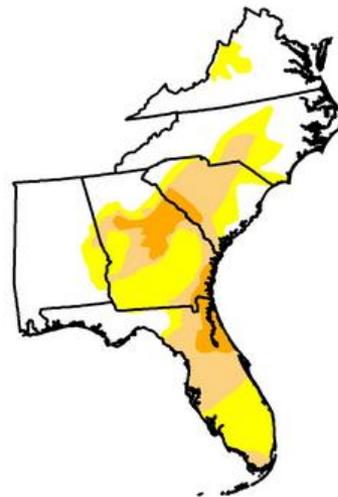
Drought Timeline for 2013



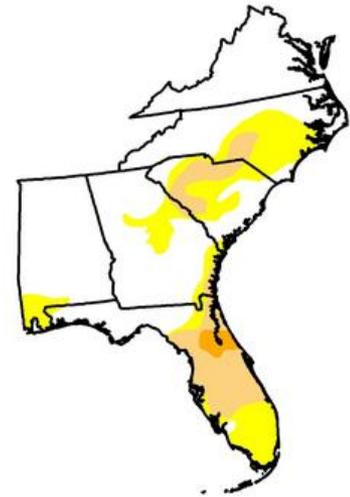
January 1, 2013



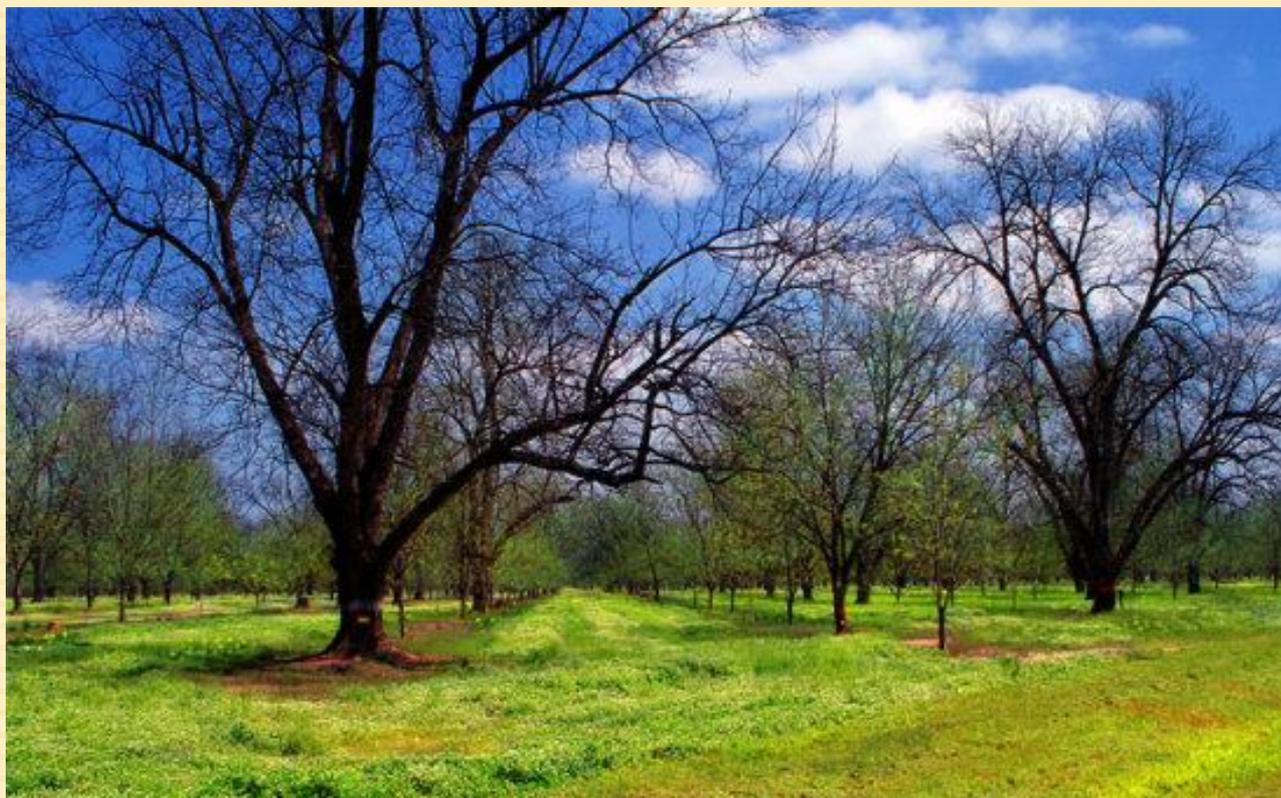
February 5, 2013



March 5, 2013



April 9, 2013



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