

# Drought Indicators Report

Georgia Environmental Protection Division

August 2020

# Background

Pursuant to the Rules for Drought Management, Section 391-3-3-.04 Drought Indicators and Triggers, the Director of EPD monitors climatic indicators and water supply conditions to assess drought occurrence and severity, and its impact upon the ability of public water systems to provide adequate supplies of water. These indicators and conditions July include, but not be limited, to the following:

- U.S. Drought Monitor;
- Precipitation;
- Streamflow;
- Groundwater;
- Reservoir levels;
- Short term climate predictions;
- Soil moisture; and
- Water supply conditions.

# Background

- The Rules require EPD to report on current climatic indicators at least semi-annually or monthly when any part of the state has experienced at least two consecutive months of severe drought.
- This reports compare current conditions to historical levels (and/or reservoir rule curves) for each of the following indicators:
  - Precipitation during the prior 3, 6, and 12 months;
  - Streamflow at the select United States Geological Survey gages;
  - Groundwater levels at select United States Geological Survey monitoring wells; and
  - Reservoir levels at Allatoona Lake, Lake Hartwell, Clarks Hill Lake, and Lake Lanier.
- The following sections of this presentation provide the data and information sources analyzed by EPD in developing this drought indicators report for conditions as of August 6, 2020.

# Drought Indicator Analysis Summary (slide 1 of 2)

- **U.S. Drought Monitor** – During the past two weeks, Abnormally Dry (D0, the least intense level) rapidly developed in large areas of the state. Moderate Drought (D1) exists in few isolated small areas (parts of Bibb, Bulloch, Screven, Effingham and Clay counties as well as some small surrounding areas).
- **Precipitation** – Three-month precipitation is below normal in most parts of the state. Six-month and twelve-month precipitations are above or near normal in most parts of the state and are slightly below normal in parts of southern GA.
- **Soil Moisture** – Soil moisture conditions show different levels of dryness in parts of the state. Severe dryness (5<sup>th</sup> - 10<sup>th</sup> percentiles) exists in entire Bibb County and a small part of Jones County. Less severe dryness (10<sup>th</sup> - 30<sup>th</sup> percentiles) exists in the vicinity of the severe dry area and in some isolated areas in northwest, southeast and southern GA.

# Drought Indicator Analysis Summary (slide 2 of 2)

- **Streamflow** – Stream flows at half of selected USGS gages (19 out of 34) are above or near normal. The other fifteen gage flows are between the 20<sup>th</sup> percentile and median (two in southwest GA, seven in middle GA, one in northeast GA and five in southeast GA).
- **Groundwater Level** – Groundwater levels in more than half of selected wells (10 out of 17) are above or near normal. Among the other seven wells, six are between the 20<sup>th</sup> percentile and median (one in northeast GA in Crystalline-rock Aquifer, four in southwest GA and one in southern GA in Floridan Aquifer), and one is between the 10<sup>th</sup> and 20<sup>th</sup> percentiles (in southwest GA in Floridan Aquifer).
- **Reservoir Levels** – At the end of the July, most federal reservoirs in Georgia (ACF, ACT, and Savannah River Basins) are at levels above or near their respective top of conservation (normal) pools. Carters, W.F. George and Thurmond are in their respective Zone 1 or Level 1. ACF composite storage is in Composite Zone 1.
- **Short-term Climate Prediction** – National Climatic Prediction Center projects above normal temperature and above normal precipitation statewide in August 2020 – October 2020.
- **Water Supplies** – No issues with water availability to water supply providers were reported.

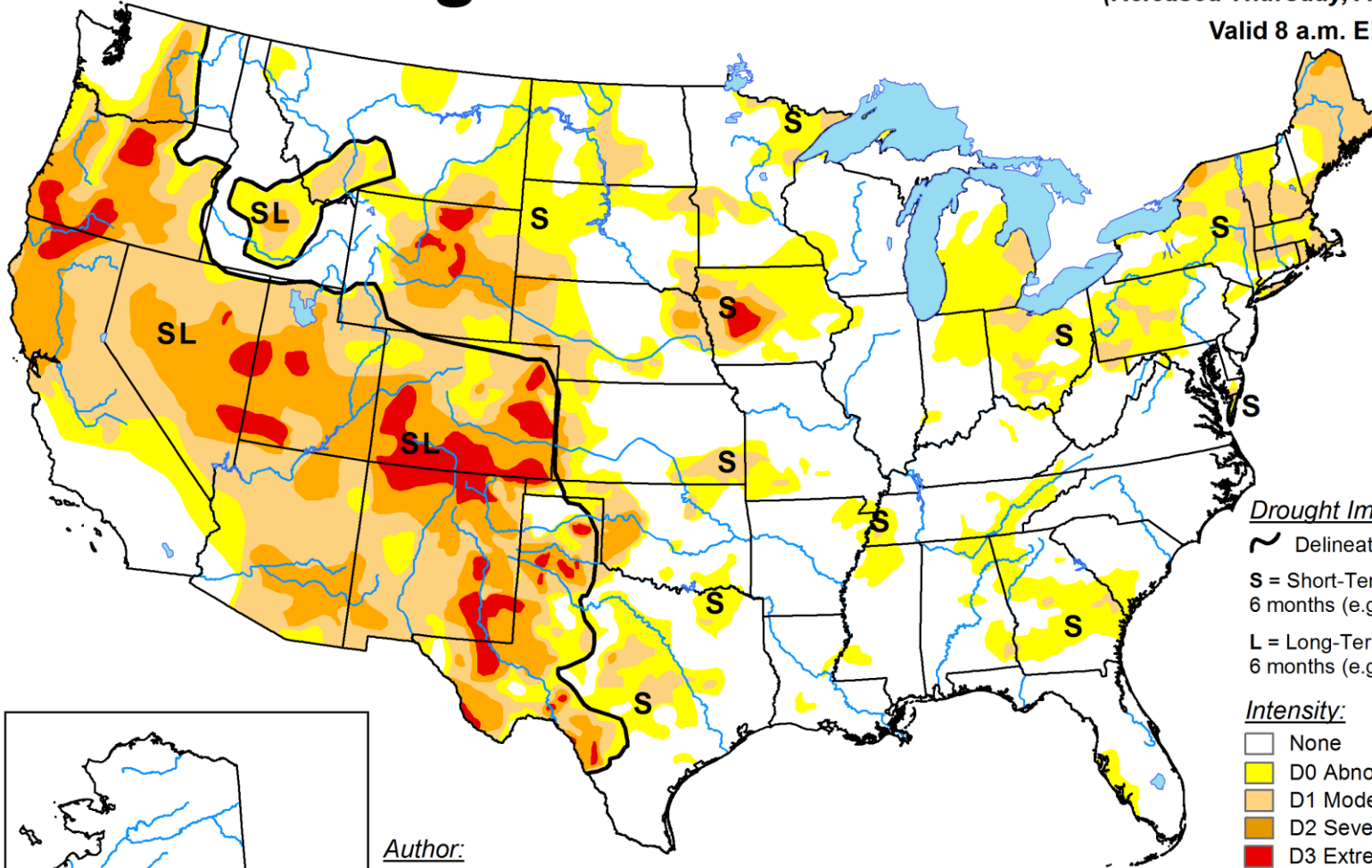
# US Drought Monitor

Data Source:

<http://droughtmonitor.unl.edu/>

# U.S. Drought Monitor

August 4, 2020  
(Released Thursday, Aug. 6, 2020)  
Valid 8 a.m. EDT



## Drought Impact Types:

- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

## Intensity:

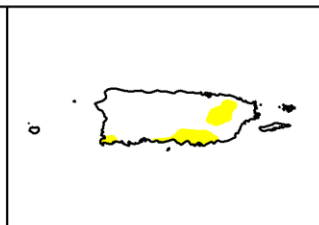
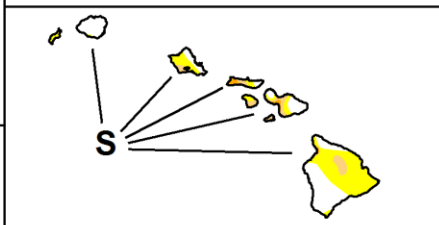
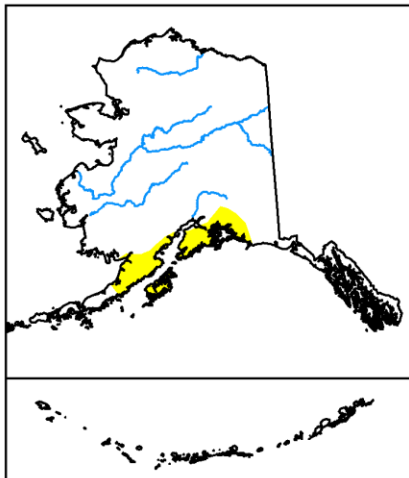
- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

Author:  
Brian Fuchs  
National Drought Mitigation Center

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)



# U.S. Drought Monitor

## Georgia

**August 4, 2020**



(Released Thursday, Aug. 6, 2020)

Valid 8 a.m. EDT

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	44.95	55.05	2.79	0.00	0.00	0.00
<b>Last Week</b> 07-28-2020	47.47	52.53	1.98	0.00	0.00	0.00
<b>3 Months Ago</b> 05-05-2020	100.00	0.00	0.00	0.00	0.00	0.00
<b>Start of Calendar Year</b> 12-31-2019	96.00	4.00	0.00	0.00	0.00	0.00
<b>Start of Water Year</b> 10-01-2019	0.00	100.00	61.58	28.35	4.49	0.00
<b>One Year Ago</b> 08-06-2019	75.77	24.23	5.50	0.00	0.00	0.00

### Intensity:

 None	 D2 Severe Drought
 D0 Abnormally Dry	 D3 Extreme Drought
 D1 Moderate Drought	 D4 Exceptional Drought

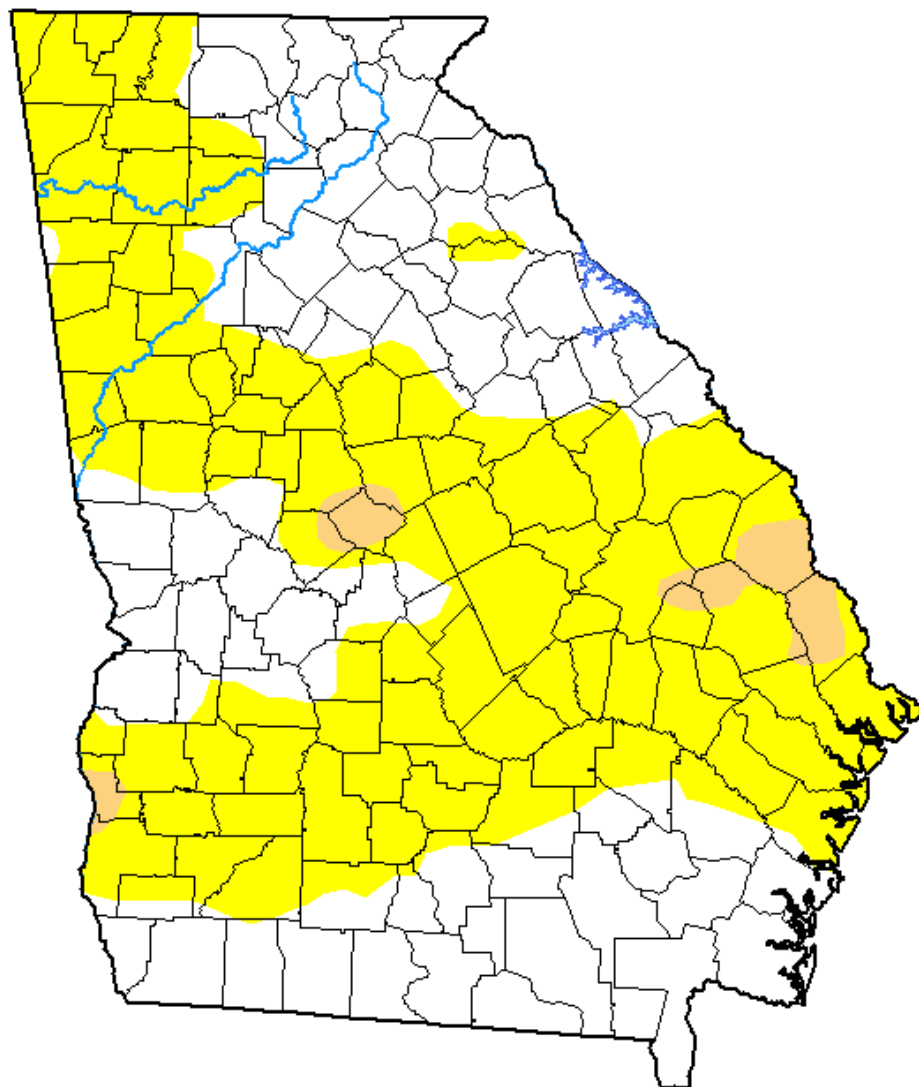
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

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Brian Fuchs  
National Drought Mitigation Center



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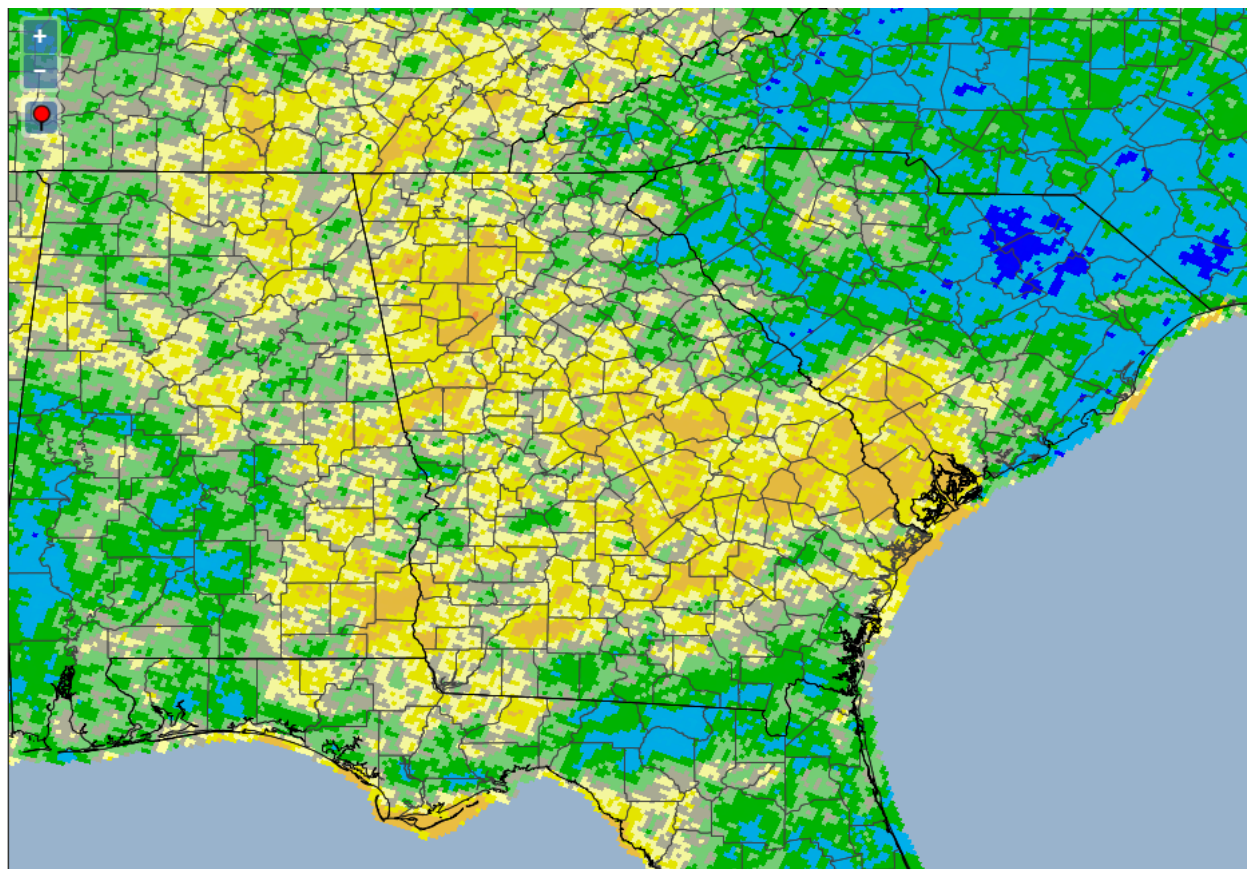


# 3, 6, and 12 Month Percent of Normal Precipitation

Data Source:

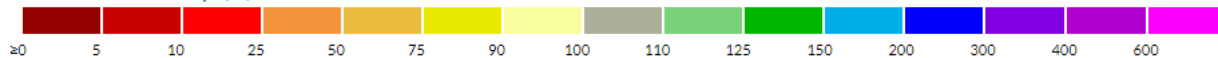
<http://climate.ncsu.edu/water/map>

# 3 Month Percent of Normal Precipitation

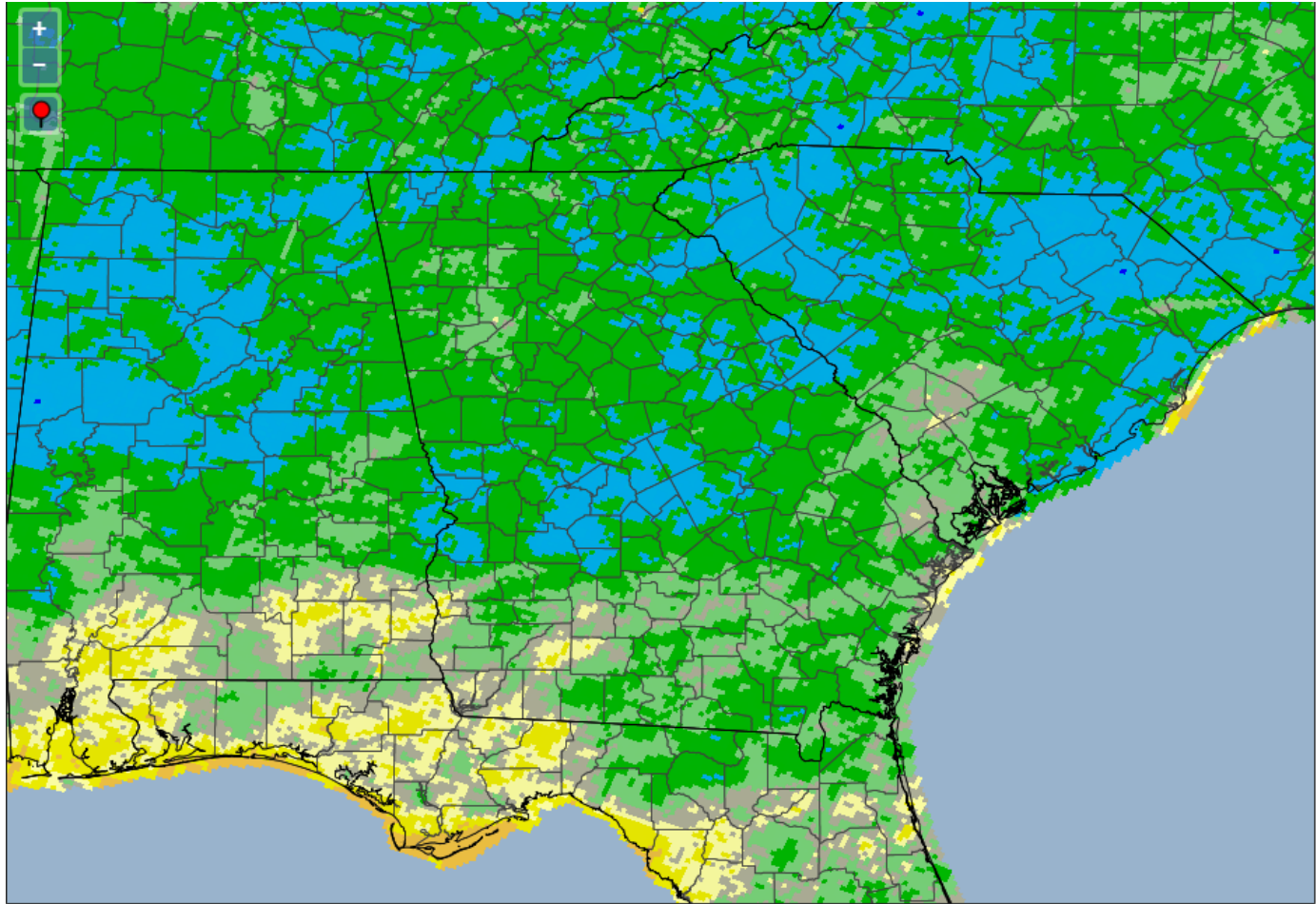


Aug 4, 2020

Percent of Normal Precip. (%)



# 6 Month Percent of Normal Precipitation

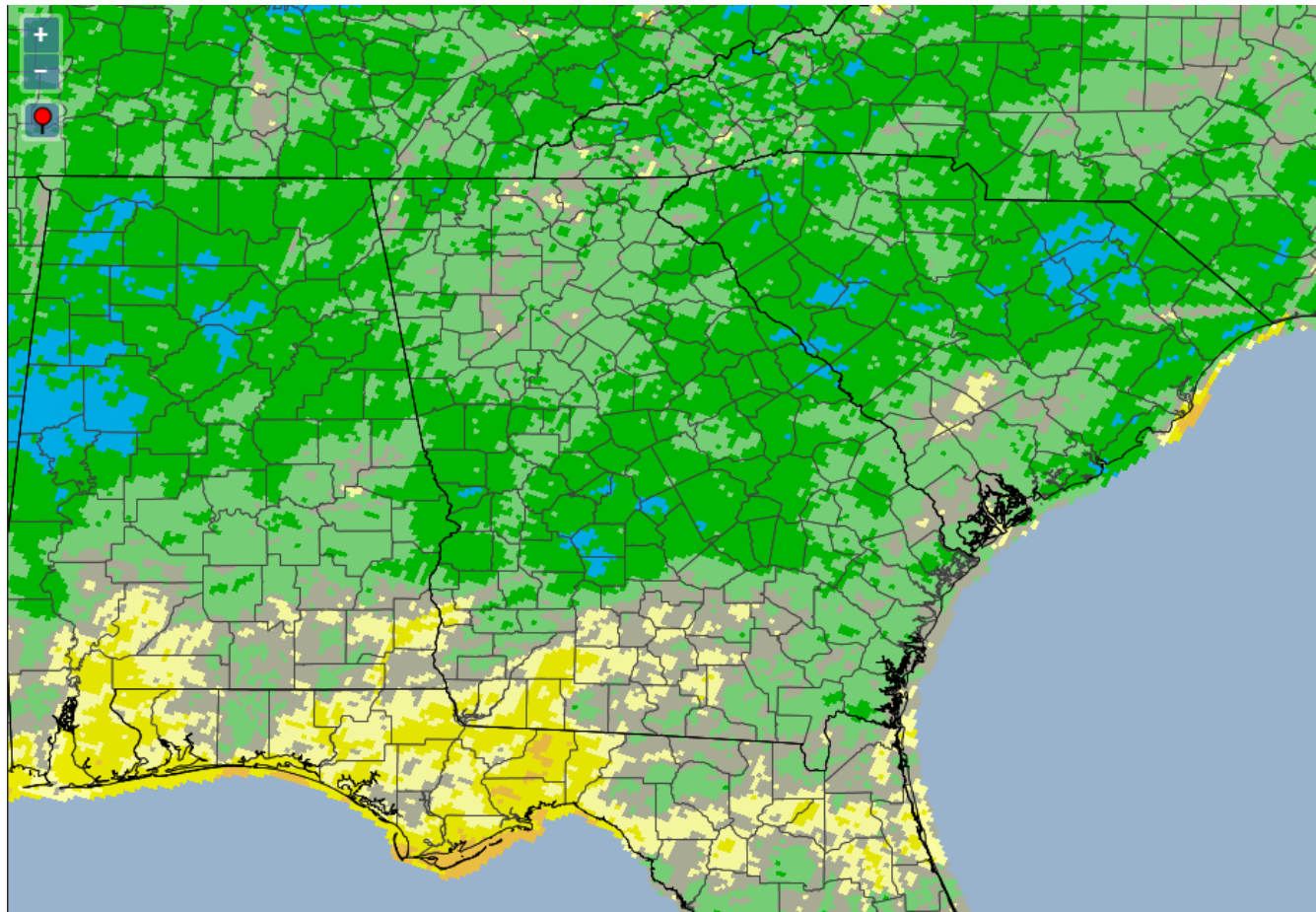


Aug 4, 2020

Percent of Normal Precip. (%)



# 12 Month Percent of Normal Precipitation



Aug 4, 2020

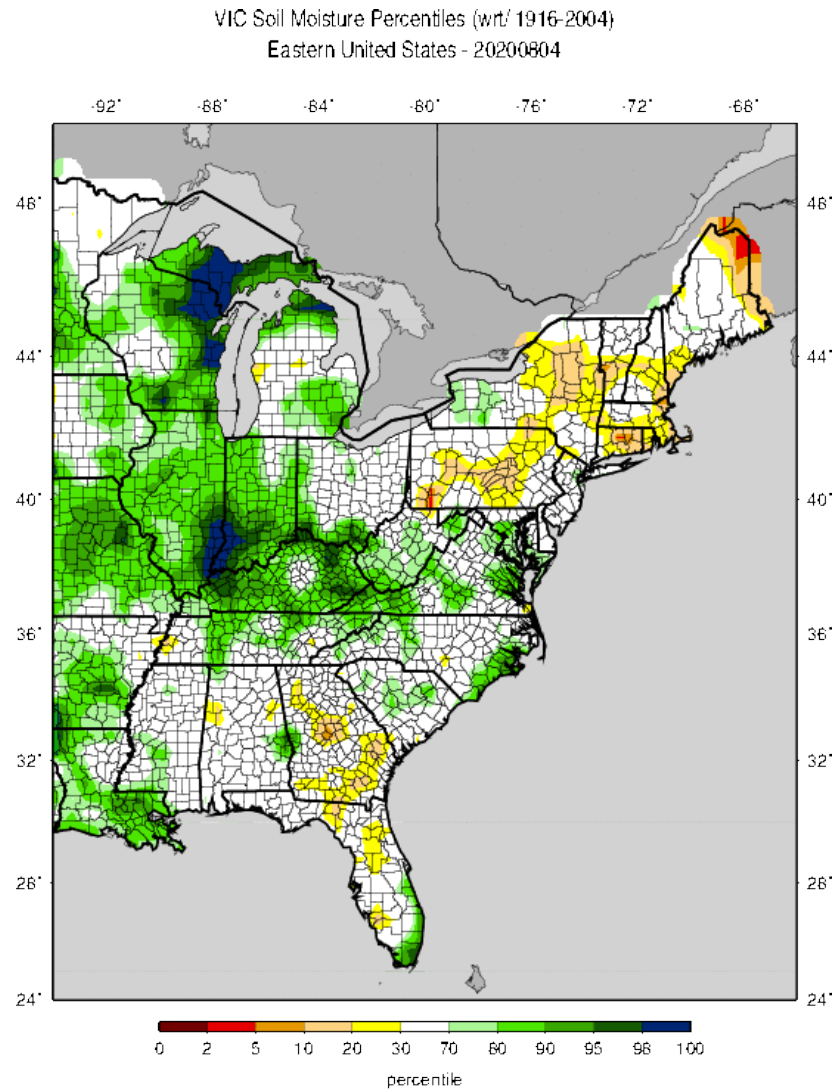
Percent of Normal Precip. (%)



# Soil Moisture Conditions

Data Source:

[http://www.hydro.ucla.edu/SurfaceWaterGroup/forecast/monitor/curr/conus.mexico/east.vic.sm\\_qnt.gif](http://www.hydro.ucla.edu/SurfaceWaterGroup/forecast/monitor/curr/conus.mexico/east.vic.sm_qnt.gif)



Current (Daily updated) percentiles for soil moisture (SWE) with respect to the climatological period (1916-2004).

# Streamflow Conditions

Data Source: USGS

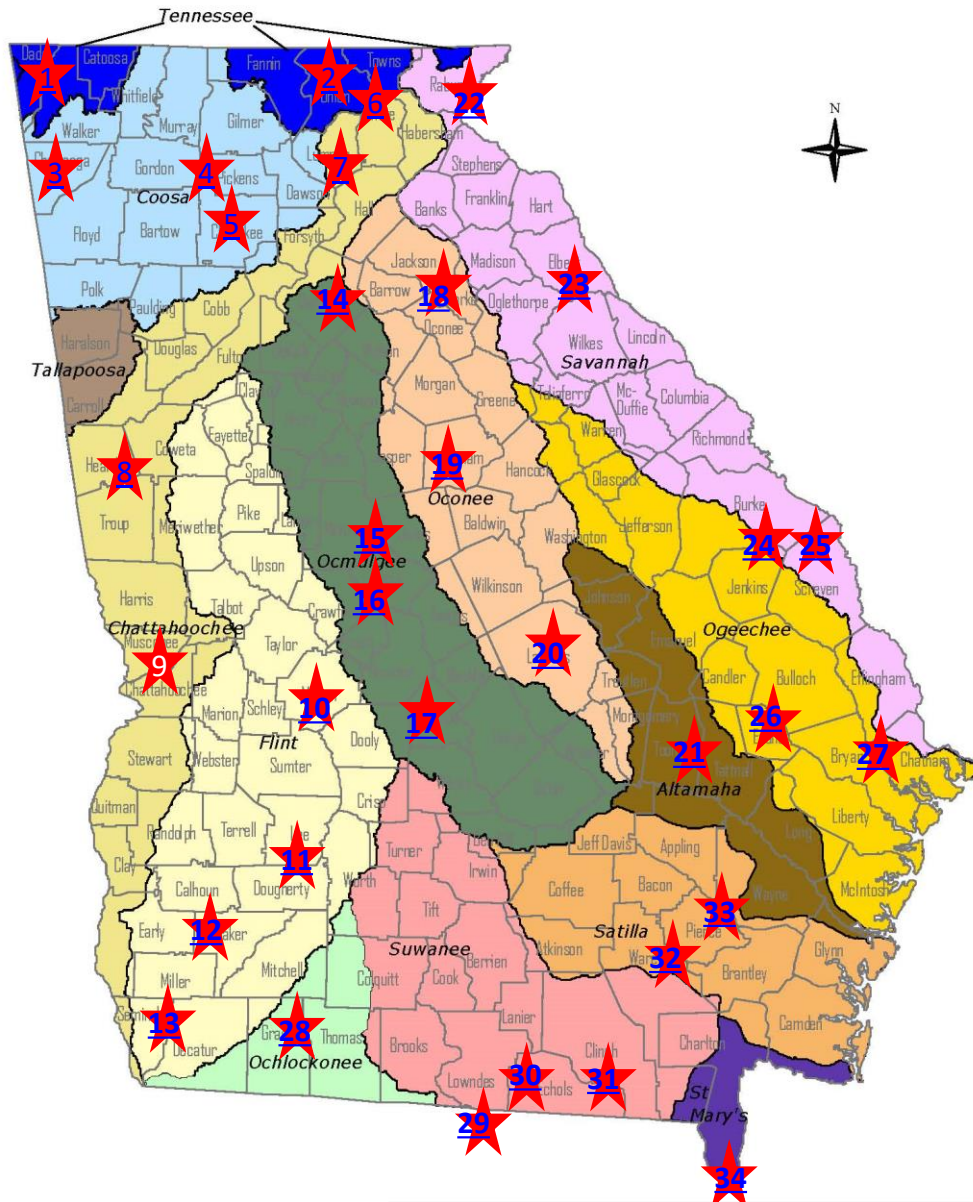


# Streamflow Monitoring

- As shown on the following slide, EPD Monitors 34 USGS stream gages in 13 of the State's major river basins to assess drought conditions.
- These gages were selected because each has:
  - Long-term and relatively complete records for recent decades; and
  - Relatively low consumptive water use implications and streamflows are not heavily influenced by dams.
- Note: Hydrologic conditions of major rivers with streamflows that are heavily influenced by dams can be assessed by reviewing status of major storage reservoirs



# Georgia's 14 River Basins



## USGS Stream Gages Monitored by EPD to Assess Drought Conditions

<u>GAGE#</u>	<u>BASIN</u>	<u>GAGE NAME</u>
1	TENNESSEE	LOOKOUT CREEK NEAR NEW ENGLAND
2	TENNESSEE	NOTTELY RIVER NEAR BLAIRSVILLE
3	COOSA	CHATTOOGA RIVER AT SUMMERVILLE
4	COOSA	TALKING ROCK CREEK NEAR HINTON
5	COOSA	ETOWAH RIVER AT CANTON
6	CHATTAHOOCHEE	CHATTAHOOCHEE RIVER AT CORNELIA
7	CHATTAHOOCHEE	CHESTATEE RIVER NEAR DAHLONEGA
8	CHATTAHOOCHEE	NEW RIVER AT GA 100 NEAR CORINTH
9	CHATTAHOOCHEE	UPATOI CREEK AT COLUMBUS
10	FLINT	FLINT RIVER AT GA26 NEAR MONTEZUMA
11	FLINT	FLINT RIVER AT ALBANY
12	FLINT	ICHAWAYNOCHAWAY CREEK AT MILFORD
13	FLINT	SPRING CREEK NEAR IRON CITY
14	OCMULGEE	ALCOVY RIVER ABOVE COVINGTON
15	OCMULGEE	OCMULGEE RIVER AT MACON
16	OCMULGEE	TUBESOFKEE CREEK NEAR MACON
17	OCMULGEE	TUCSAWHATCHEE CREEK NEAR HAWKINSVILLE
18	OCONEE	MIDDLE OCONEE RIVER NEAR ATHENS
19	OCONEE	LITTLE RIVER NEAR EATONTON
20	OCONEE	OCONEE RIVER AT DUBLIN
21	ALTAMAHA	OHOOPEE RIVER NEAR REIDSVILLE
22	SAVANNAH	CHATTOOGA RIVER NEAR CLAYTON
23	SAVANNAH	BROAD RIVER NEAR BELL
24	SAVANNAH	BEAVERDAM CREEK NEAR SARDIS
25	SAVANNAH	BRIER CREEK AT MILLHAVEN
26	OGEECHEE	CANOOCHEE RIVER NEAR CLAXTON
27	OGEECHEE	OGEECHEE RIVER NEAR EDEN
28	OCHLOCKONEE	OCHLOCKONEE RIVER NEAR THOMASVILLE
29	SUWANEE	WITHLACOOCHEE RIVER NEAR PINETTA FL
30	SUWANEE	ALAPAHA RIVER AT STATENVILLE
31	SUWANEE	SUWANNEE RIVER AT US 441, AT FARGO
32	SATILLA	SATILLA RIVER NEAR WAYCROSS
33	SATILLA	LITTLE SATILLA RIVER NEAR OFFERMAN
34	ST MARY	ST MARYS RIVER NEAR MACCLENNY FL

# Streamflow Graphs

- For each of the 34 gages, EPD has prepared a graph that shows monthly average streamflow from January 2020 through July 2020;
- To help put these streamflow conditions into perspective, for comparison purposes, each graph also shows:
  - Monthly average streamflows for the years 2007 and 2011 when streamflows were at or near recorded low levels across much of the state; and
  - A statistical composite of historical conditions showing the “driest” 50, 20, 10, and 5 percent of all recorded monthly average stream flows at the same gage.

# How to Read the Streamflow Graphs

## Example #1: [Etowah River at Canton](#)

The streamflow graph for Gage #5, [USGS Etowah River gage at Canton](#) shows :

- Average stream flow in July 2020 was 861 cfs. The statistical composite of all historical data for this gage shows that average streamflow in July has historically been lower than July 2020 about 60% of the time; 40% of the time in July it has been higher.
- Average stream flow in July 2011 was 337 cfs. The statistical composite of all historical data for this gage shows that average streamflow in July has historically been lower than July 2011 about 2~5% of the time; 95~98% of the time in July it has been higher.
- Average stream flow in July 2007 was 370 cfs. The statistical composite of all historical data for this gage shows that average streamflow in July has historically been lower than July 2007 about 10% of the time; 90% of the time in July it has been higher.

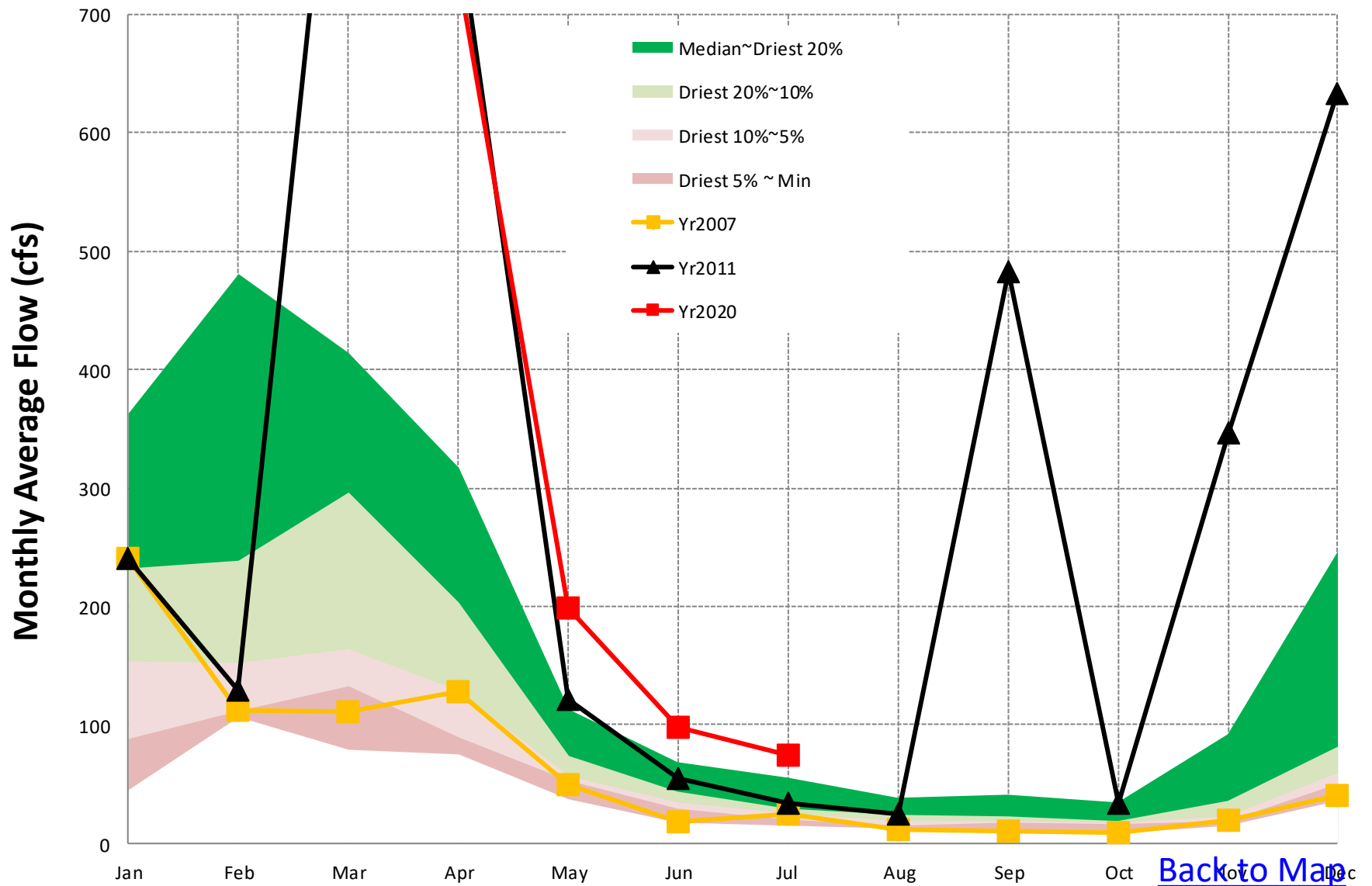
# How to Read the Streamflow Graphs

## Example #2: [Flint River at Albany](#)

The streamflow graph for Gage #11, [USGS Flint River gage at Albany](#) shows:

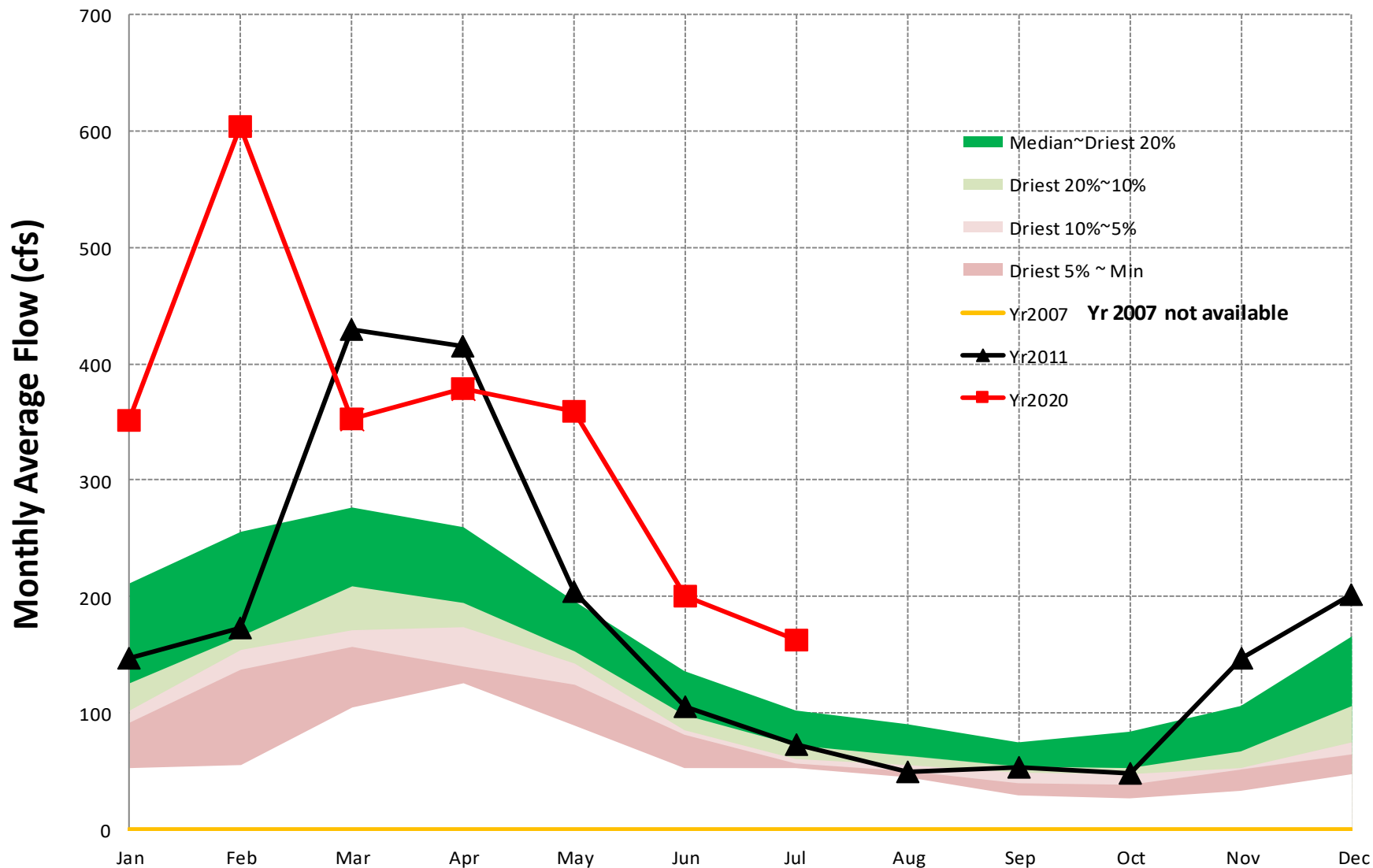
- Average stream flow in July 2020 was 3405 cfs. The statistical composite of all historical data for this gage shows that average streamflow in July has historically been lower than July 2020 about 47% of the time; about 53% of the time in July it has been higher.
- Average stream flow in July 2011 was 1283 cfs. The statistical composite of all historical data for this gage shows that average streamflow in July has historically been lower than July 2011 about 5~10% of the time; about 90~95% of the time in July it has been higher.
- Average stream flow in July 2007 was 1325 cfs. The statistical composite of all historical data for this gage shows that average streamflow in July has historically been lower than July 2007 about 5~10% of the time; about 90~95% of the time in July it has been higher.

# Gage #1. USGS #03568933, Tennessee Basin, LOOKOUT CREEK NEAR NEW ENGLAND, GA



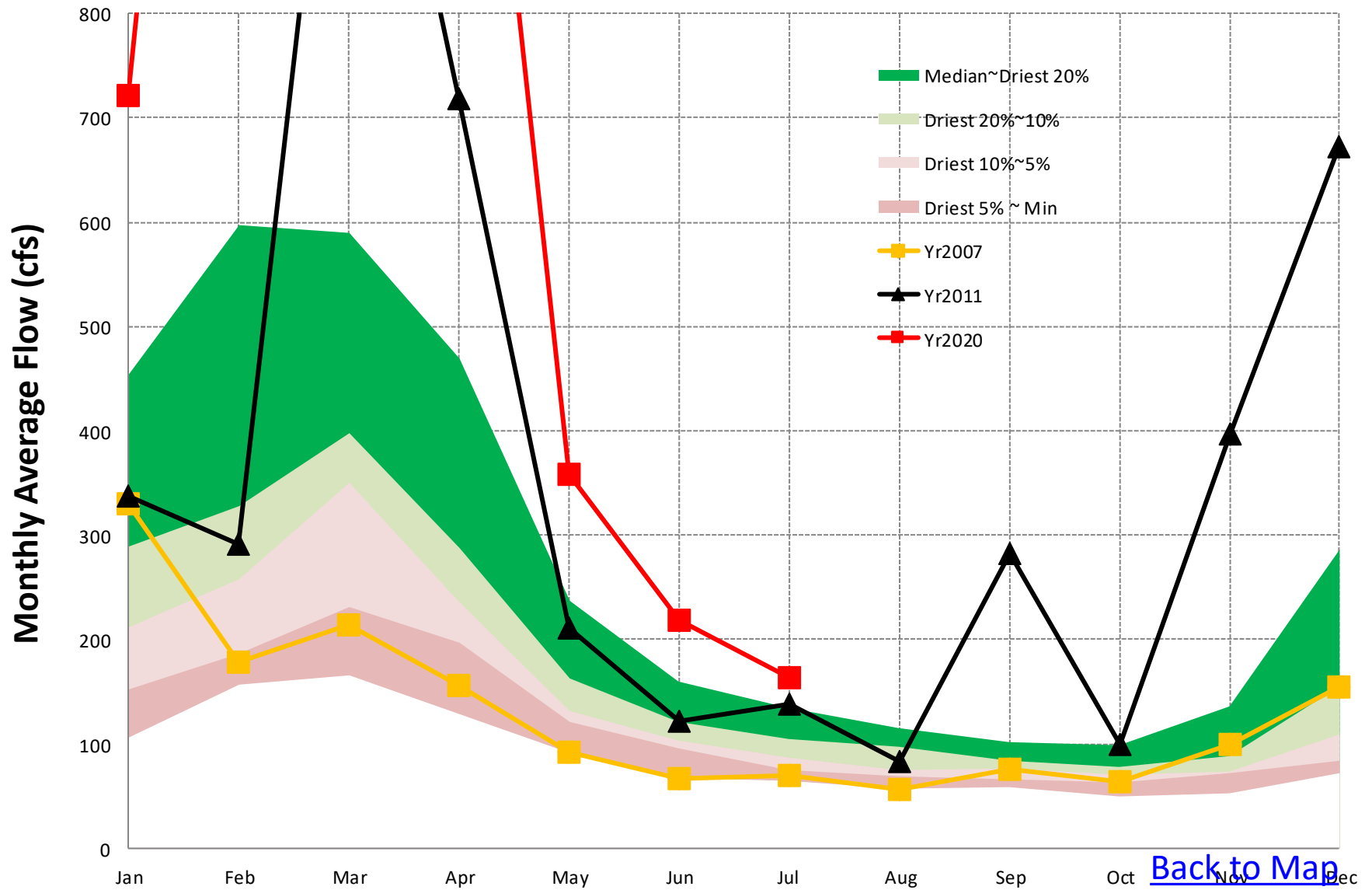
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## Gage #2, USGS #03550500, Tennessee Basin, NOTTELY RIVER NEAR BLAIRSVILLE, GA

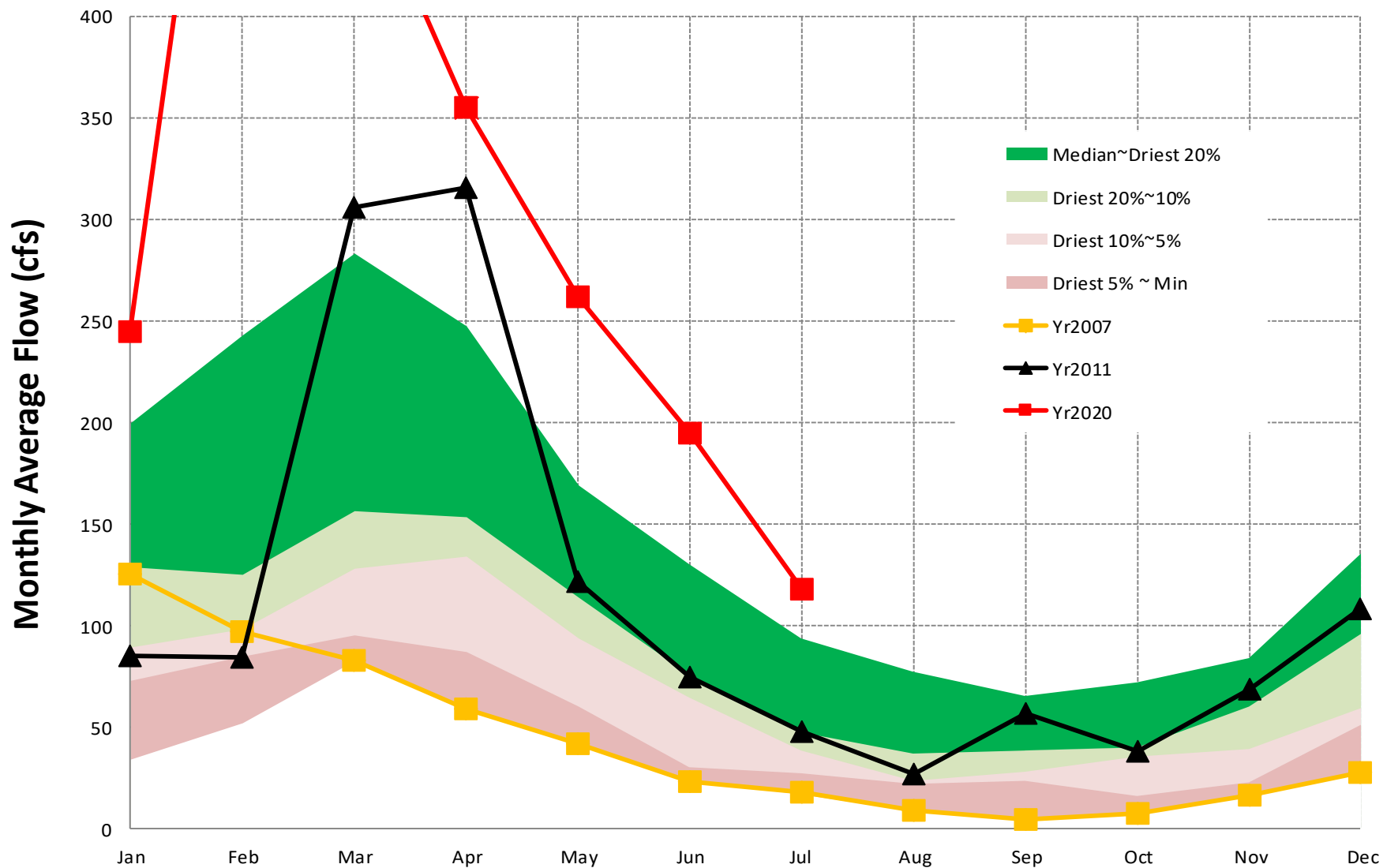


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# Gage #3. USGS #02398000, Coosa Basin, Chattooga River at Summerville, GA



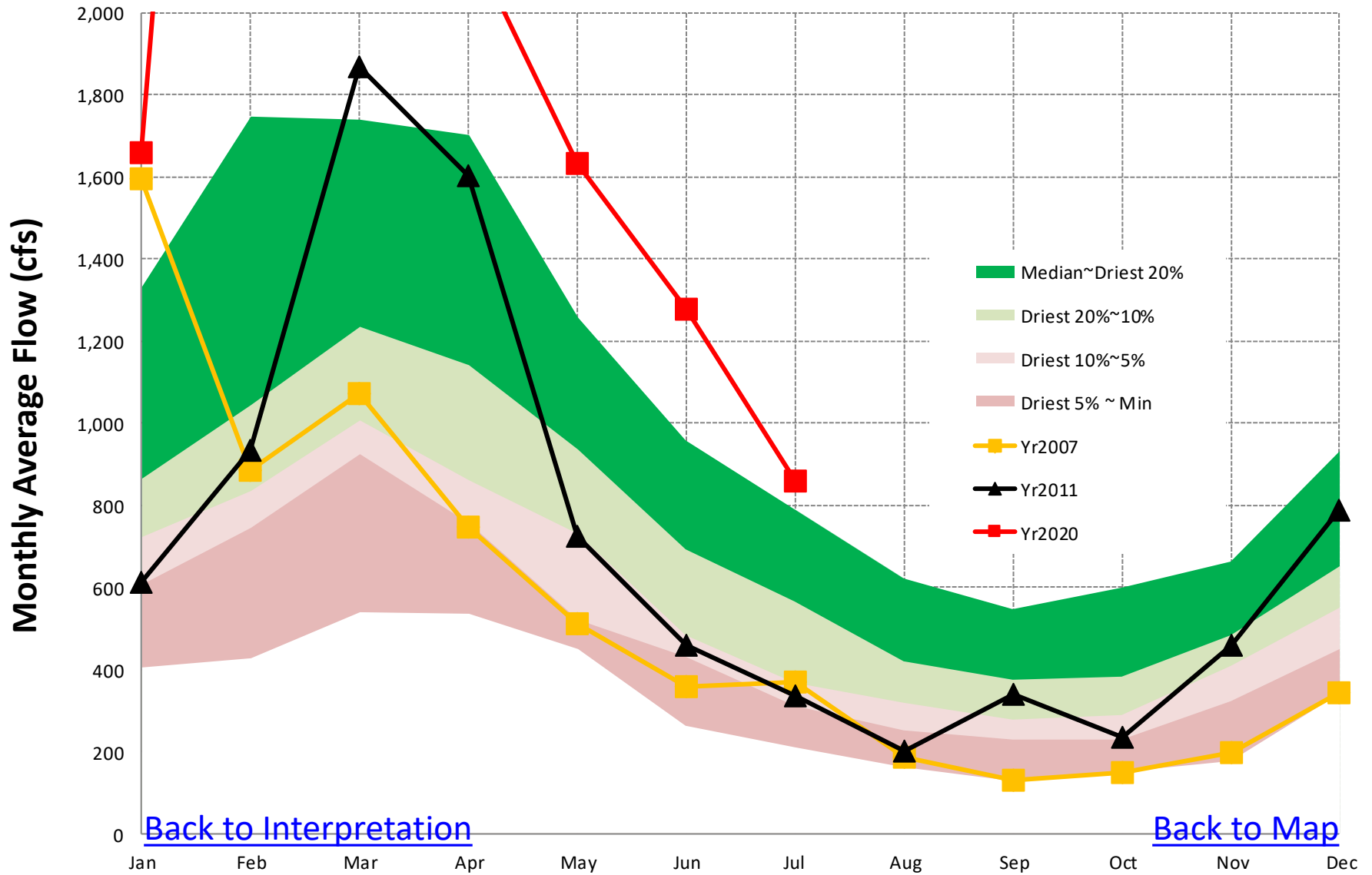
**Gage #4, USGS #02382200, Coosa Basin,  
TALKING ROCK CREEK NEAR HINTON, GA**



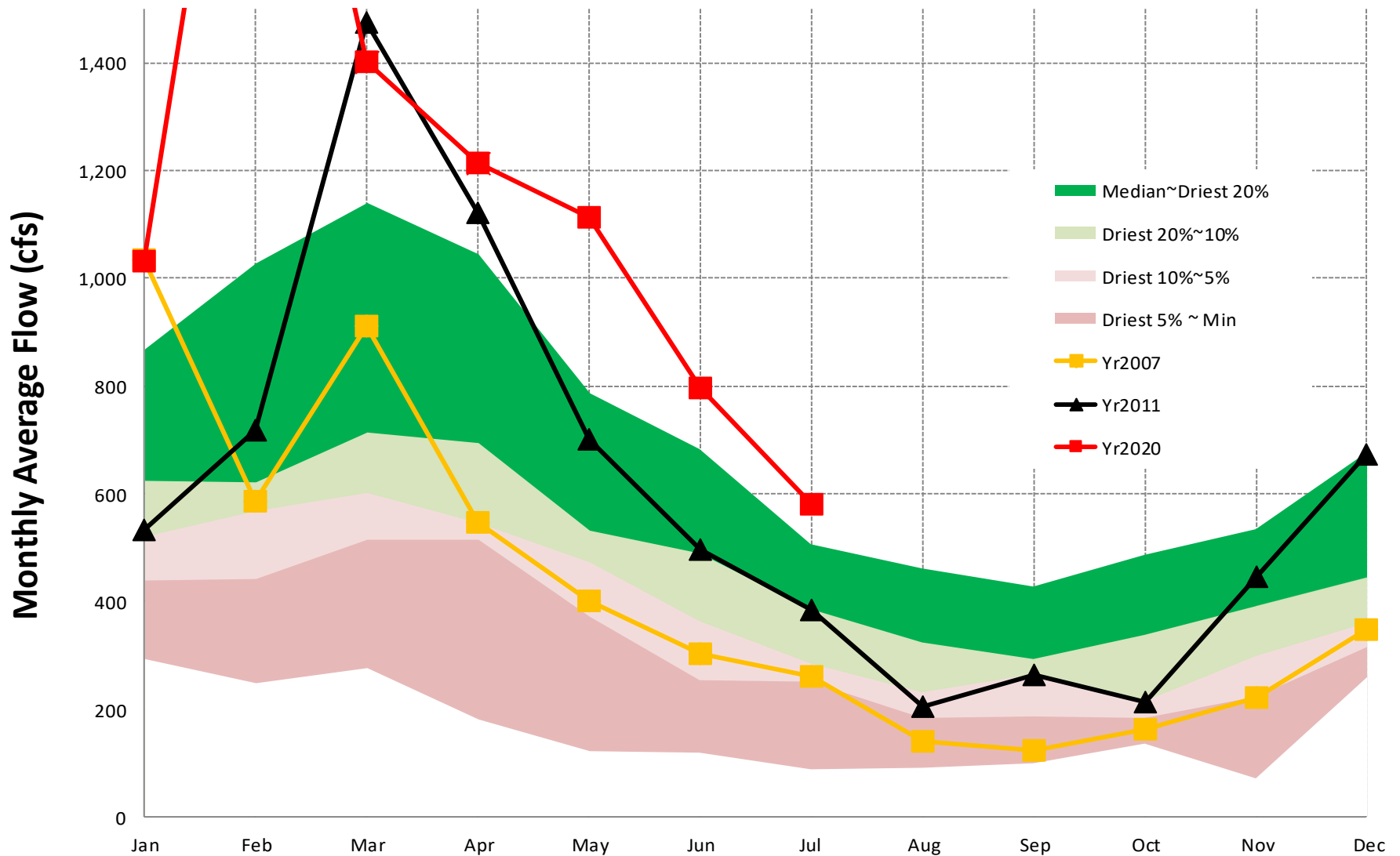
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# Gage #5, USGS #02392000, Coosa Basin, Etowah River at Canton, GA

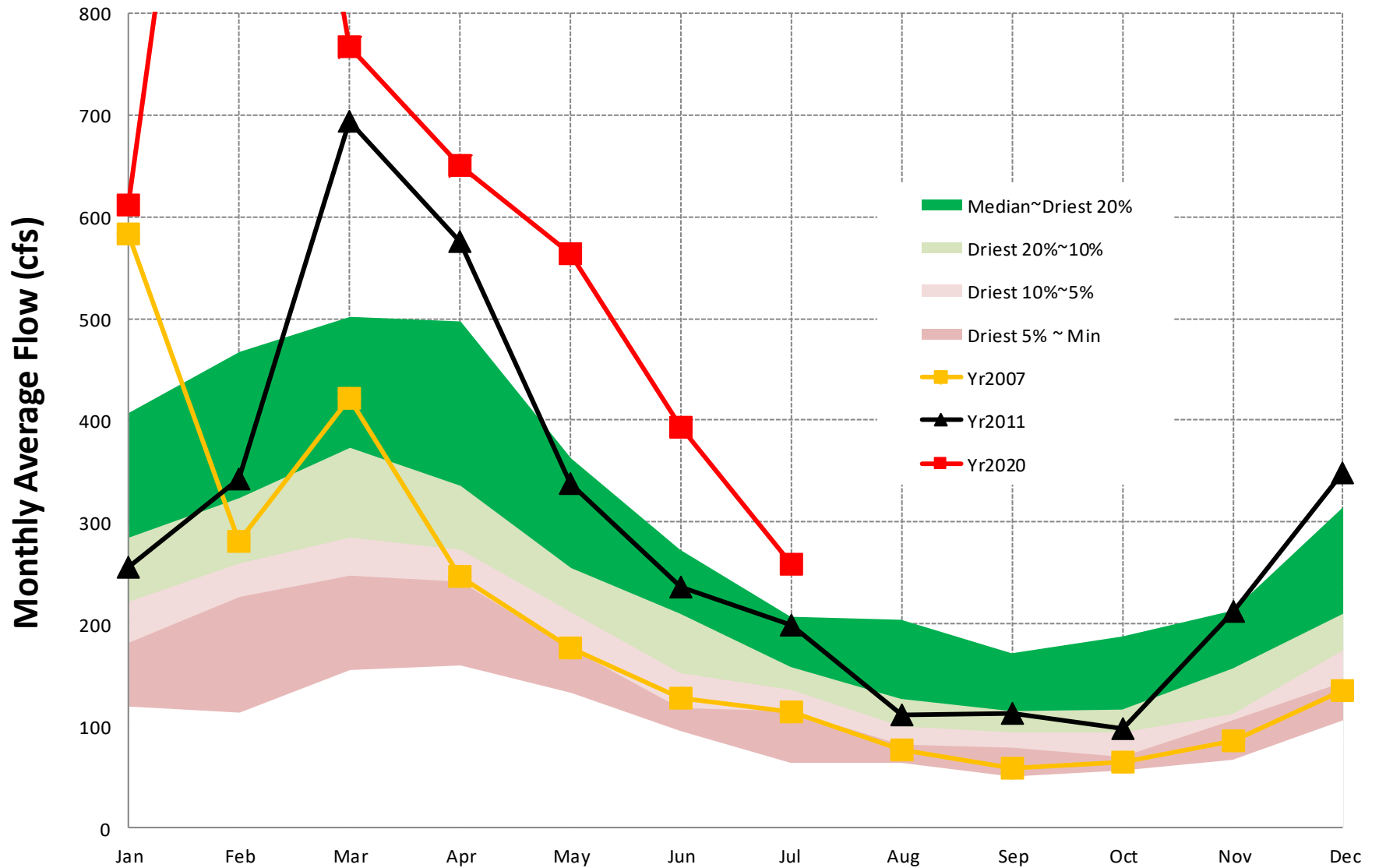


# Gage #6, USGS #02331600, Chatthoochee Basin, CHATTAHOOCHEE RIVER AT CORNELIA, GA



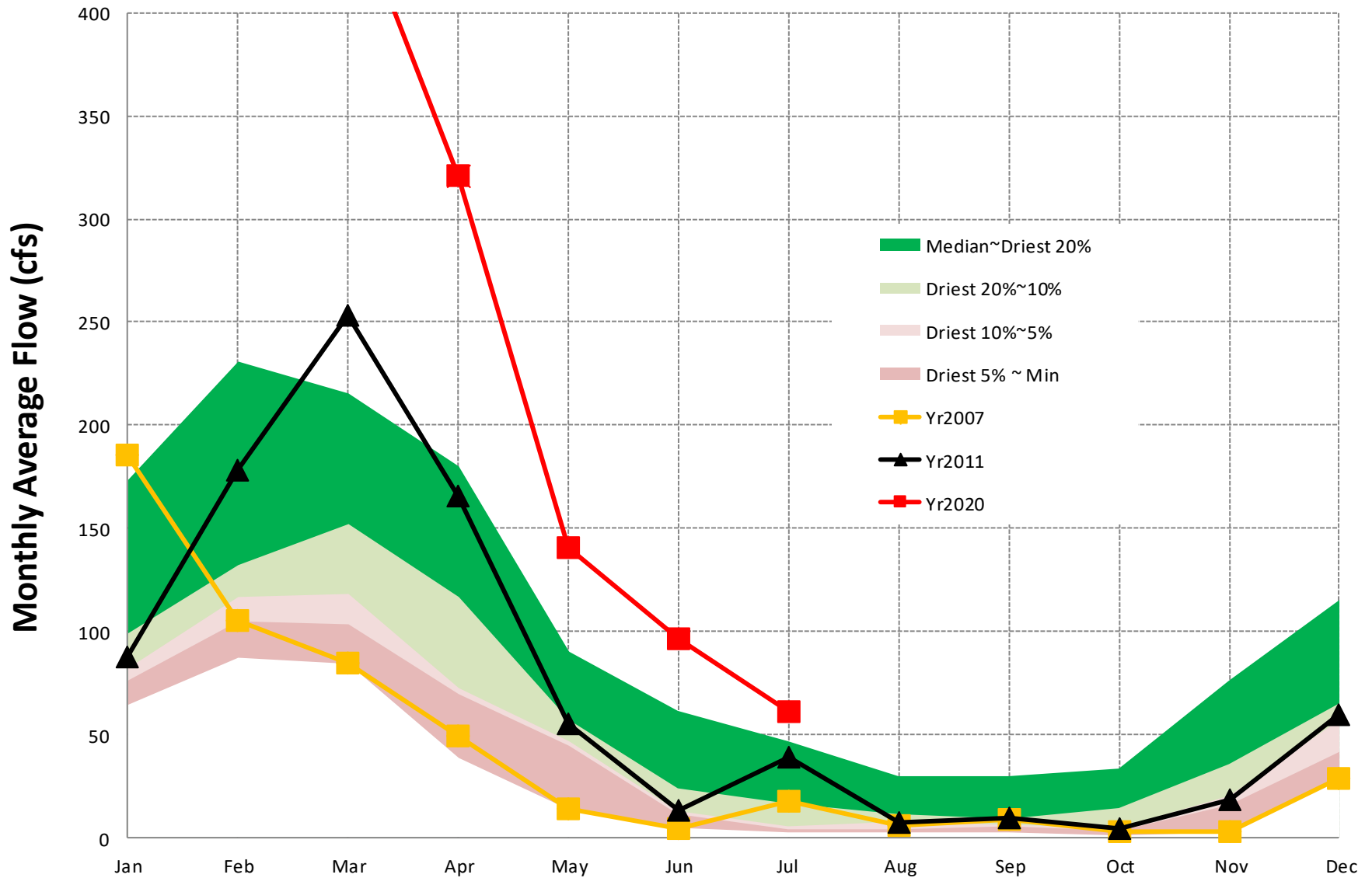
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# Gage #7, USGS #02333500, Chatahoochee Basin, CHESTATEE RIVER NEAR DAHLONEGA, GA



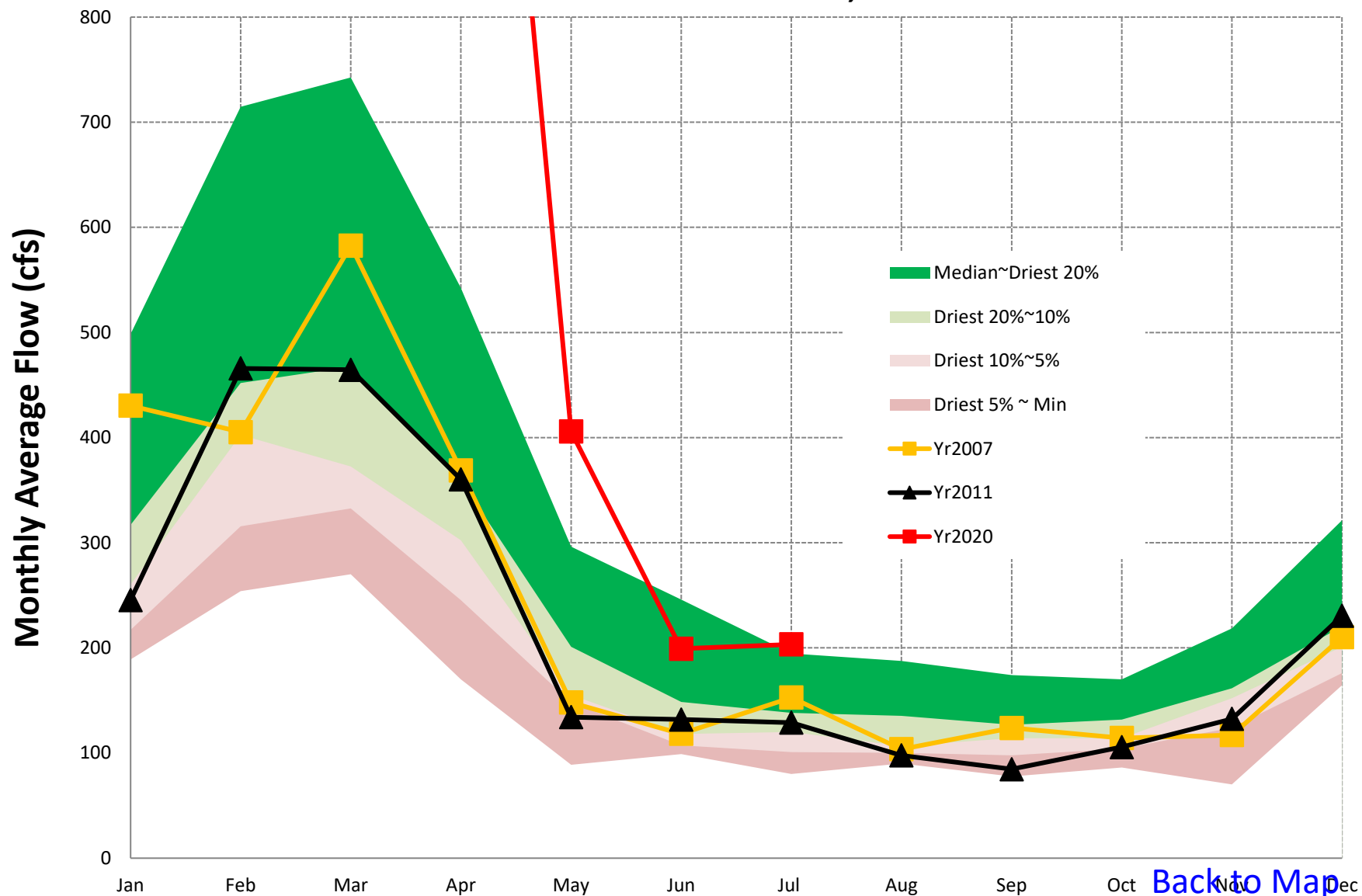
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**Gage #8, USGS #02338660, Chattahoochee Basin,  
NEW RIVER AT GA 100, NEAR CORINTH**

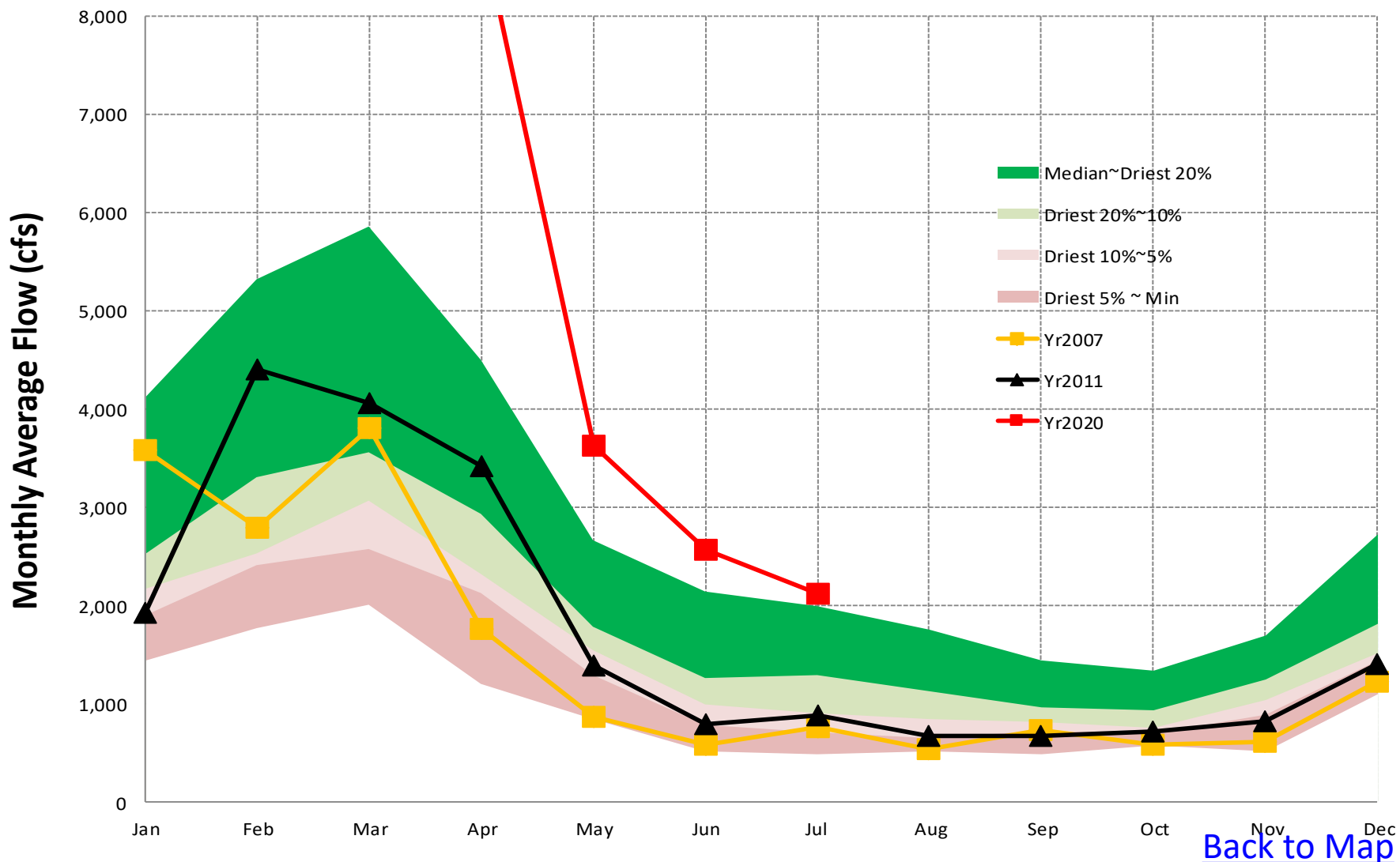


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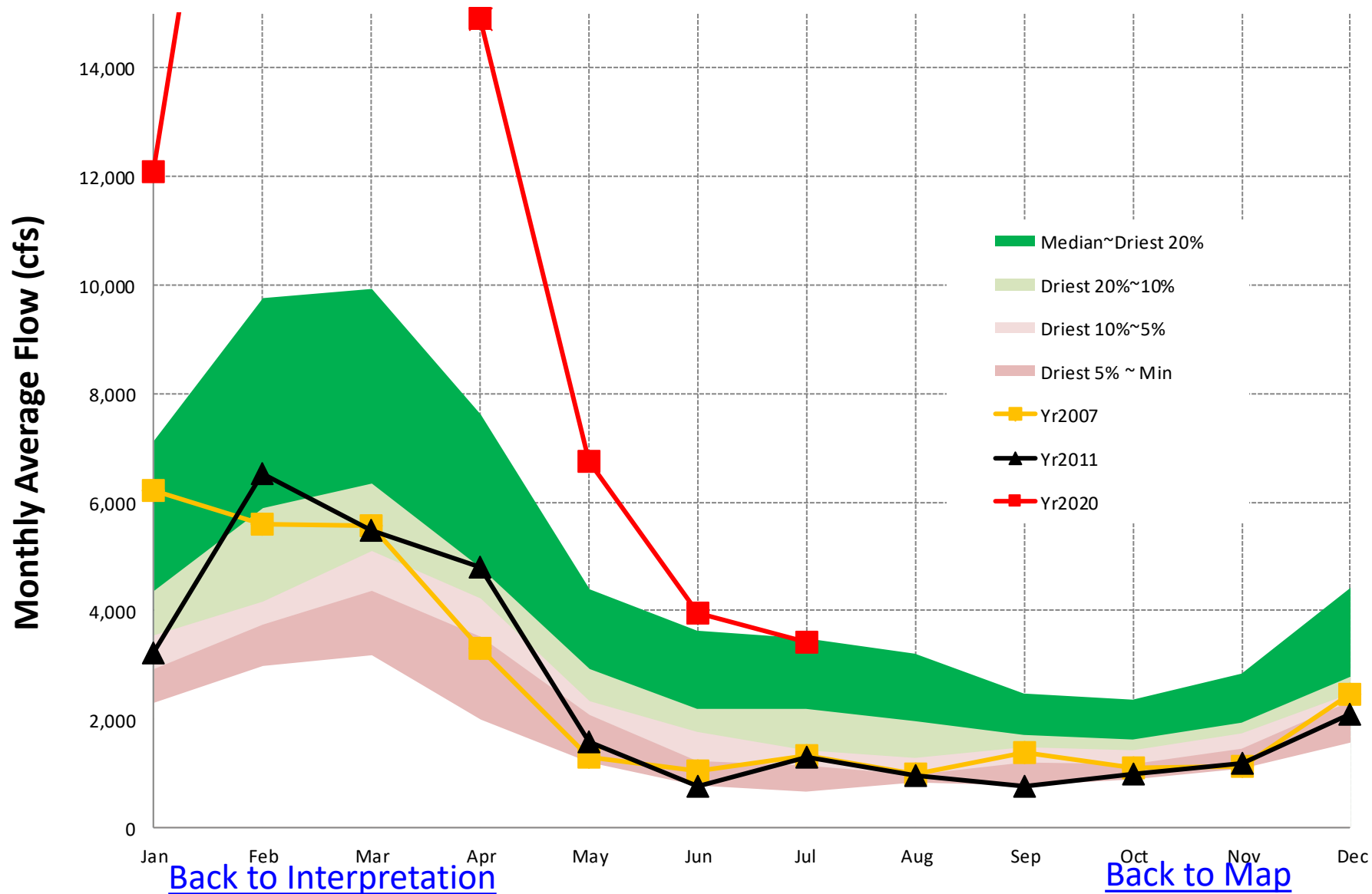
# Gage #9, USGS #02341800, Chattahoochee Basin, UPATOI CREEK NEAR COLUMBUS, GA



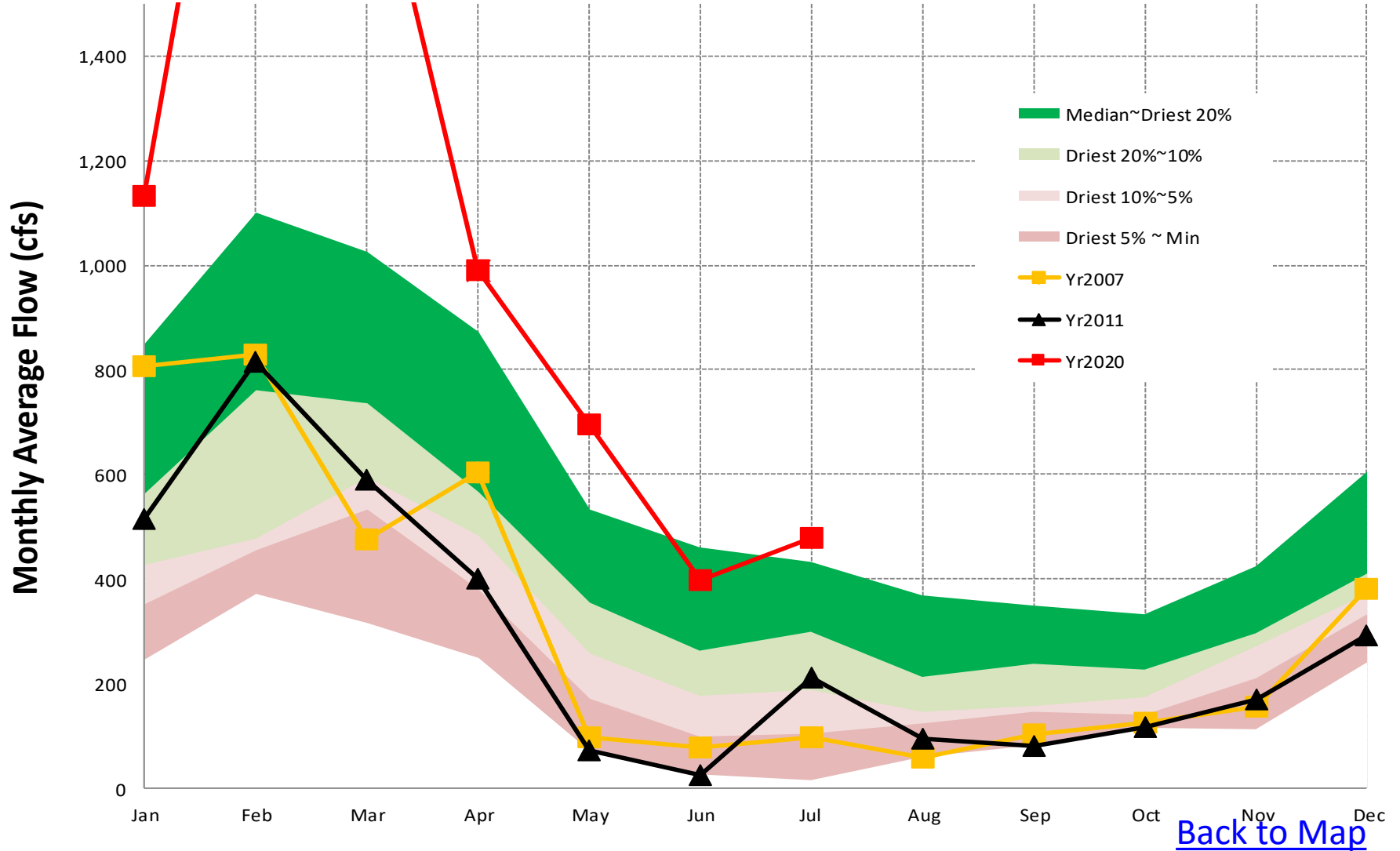
# Gage #10. USGS #02349605, Flint Basin, FLINT RIVER AT GA26 NEAR MONTEZUMA, GA



# Gage #11, USGS #02352500, Flint Basin, FLINT RIVER AT ALBANY, GA

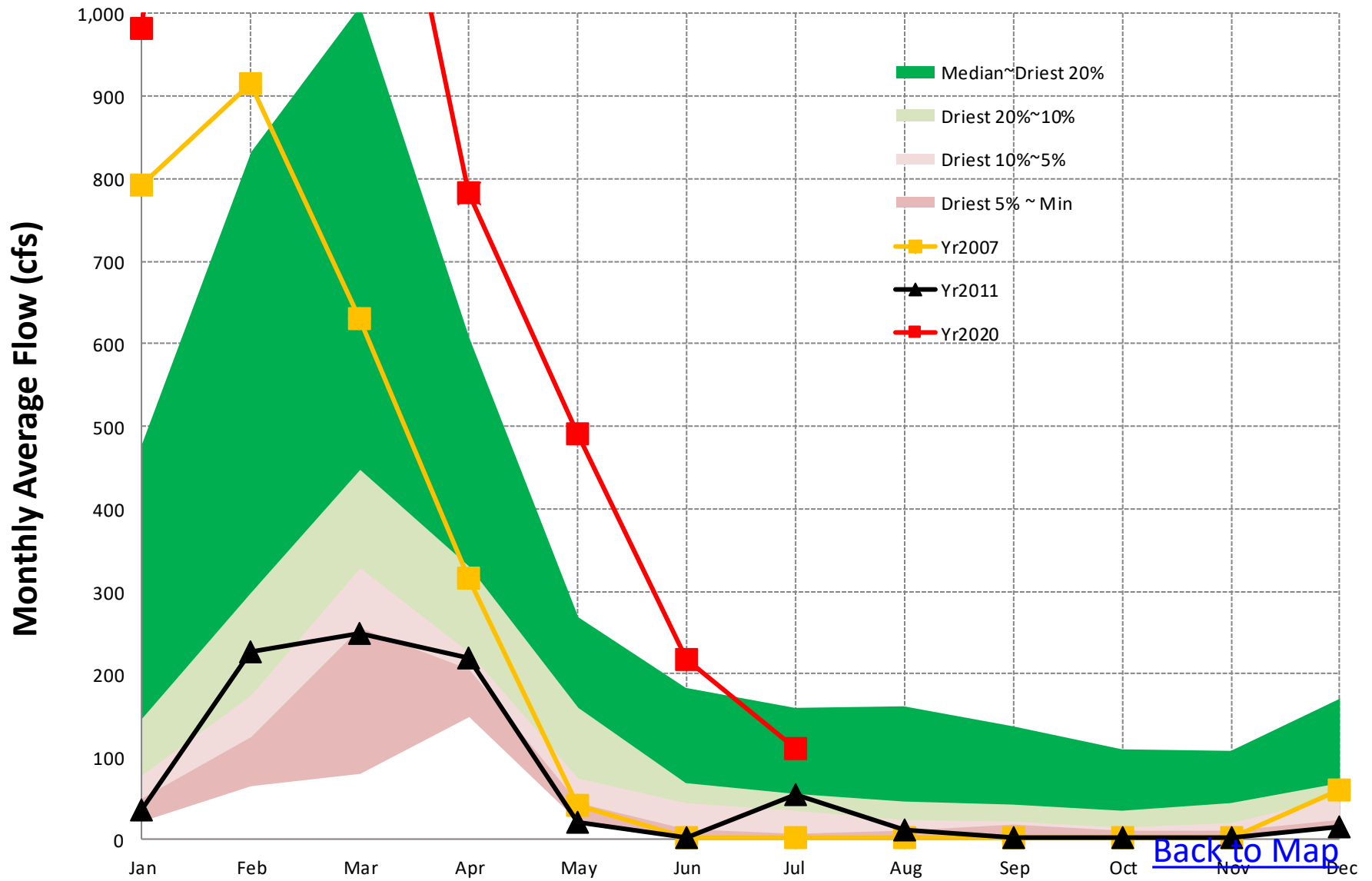


# Gage #12. USGS #02353500, Flint Basin, Ichawaynochaway Creek at Milford, GA



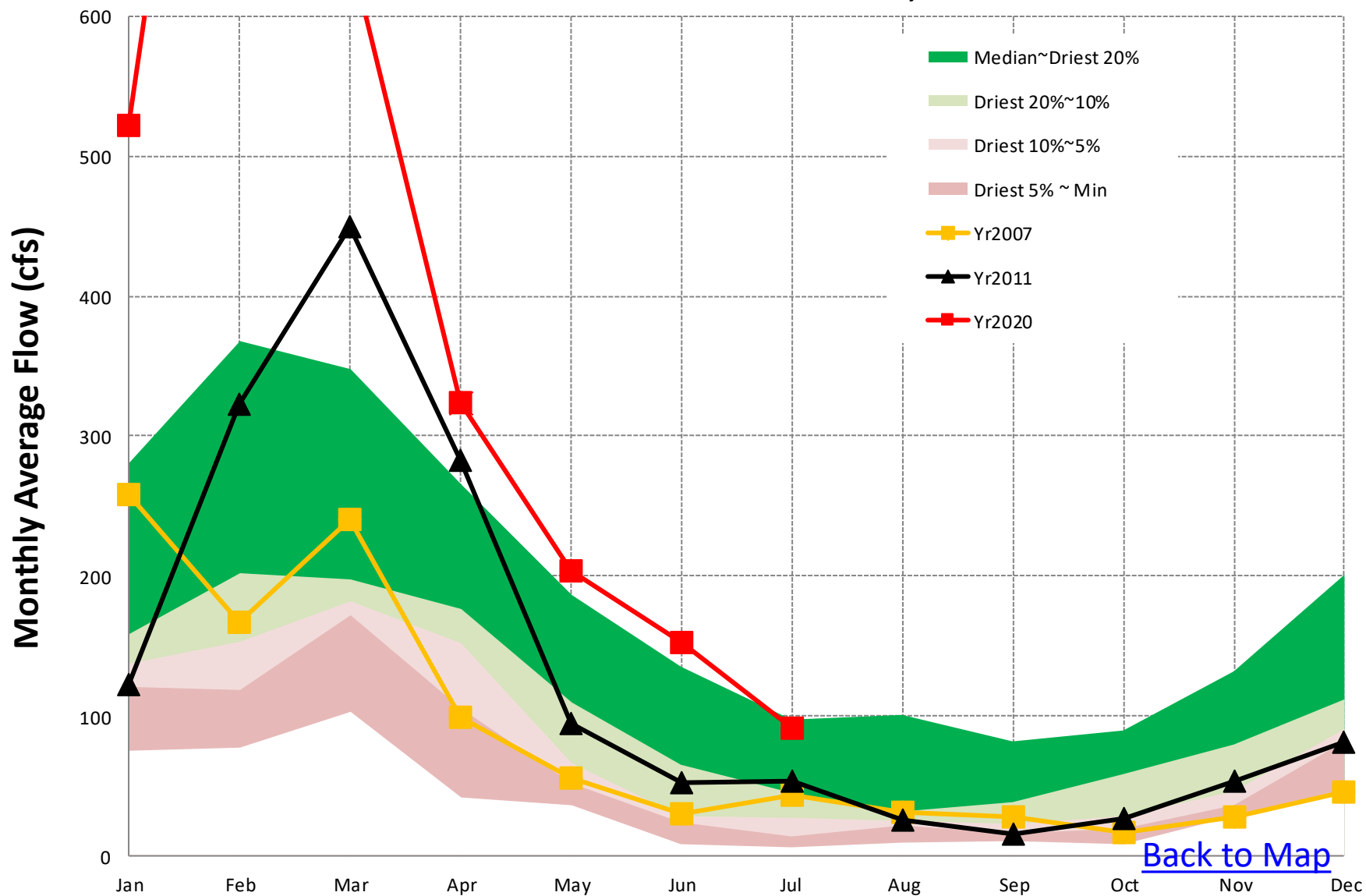


# Gage #13. USGS #02357000, Flint River, Spring Creek near Iron City, GA



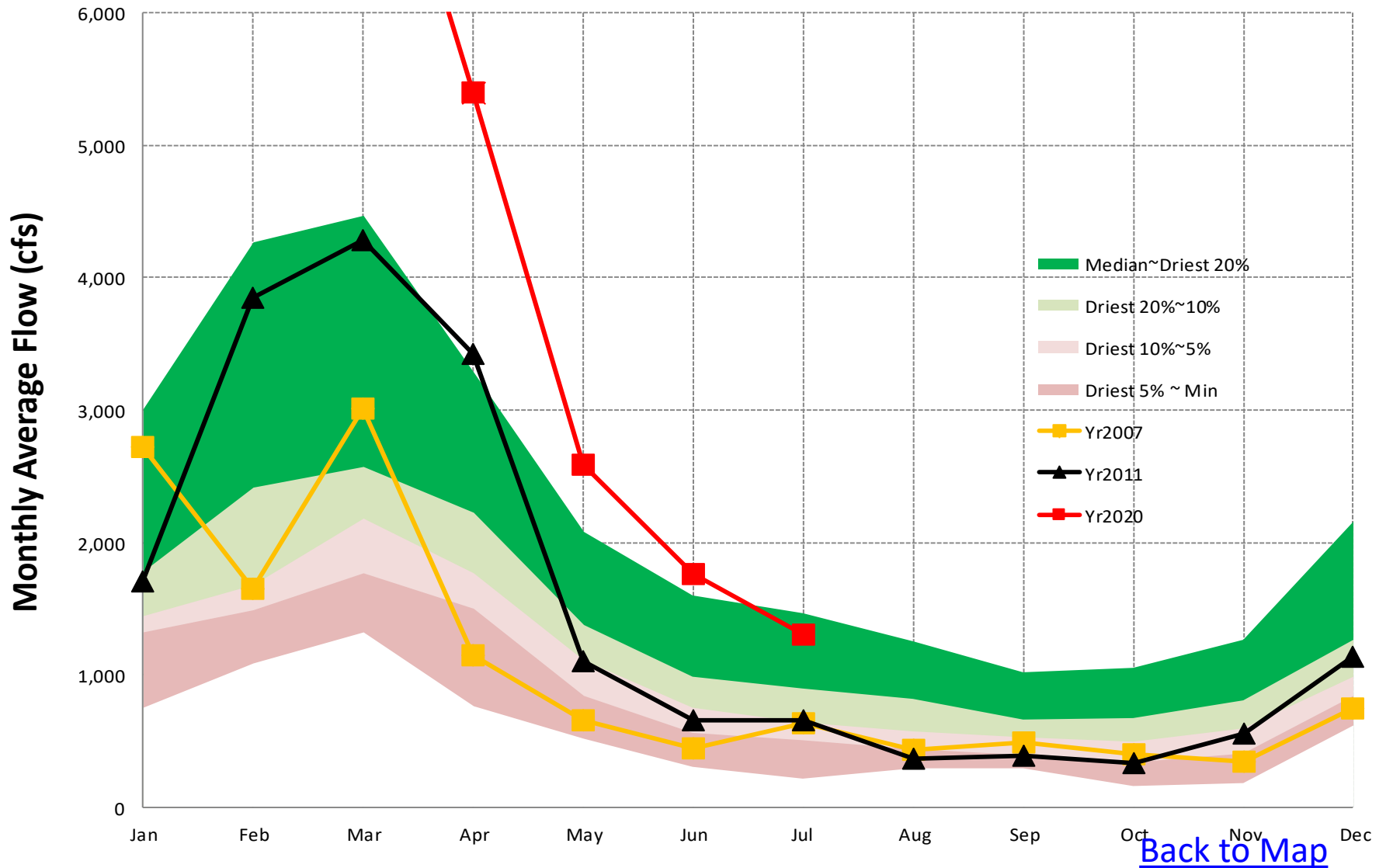
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# Gage #14. USGS #02208450, Ocumulgee Basin, ALCOVY RIVER above COVINGTON, GA



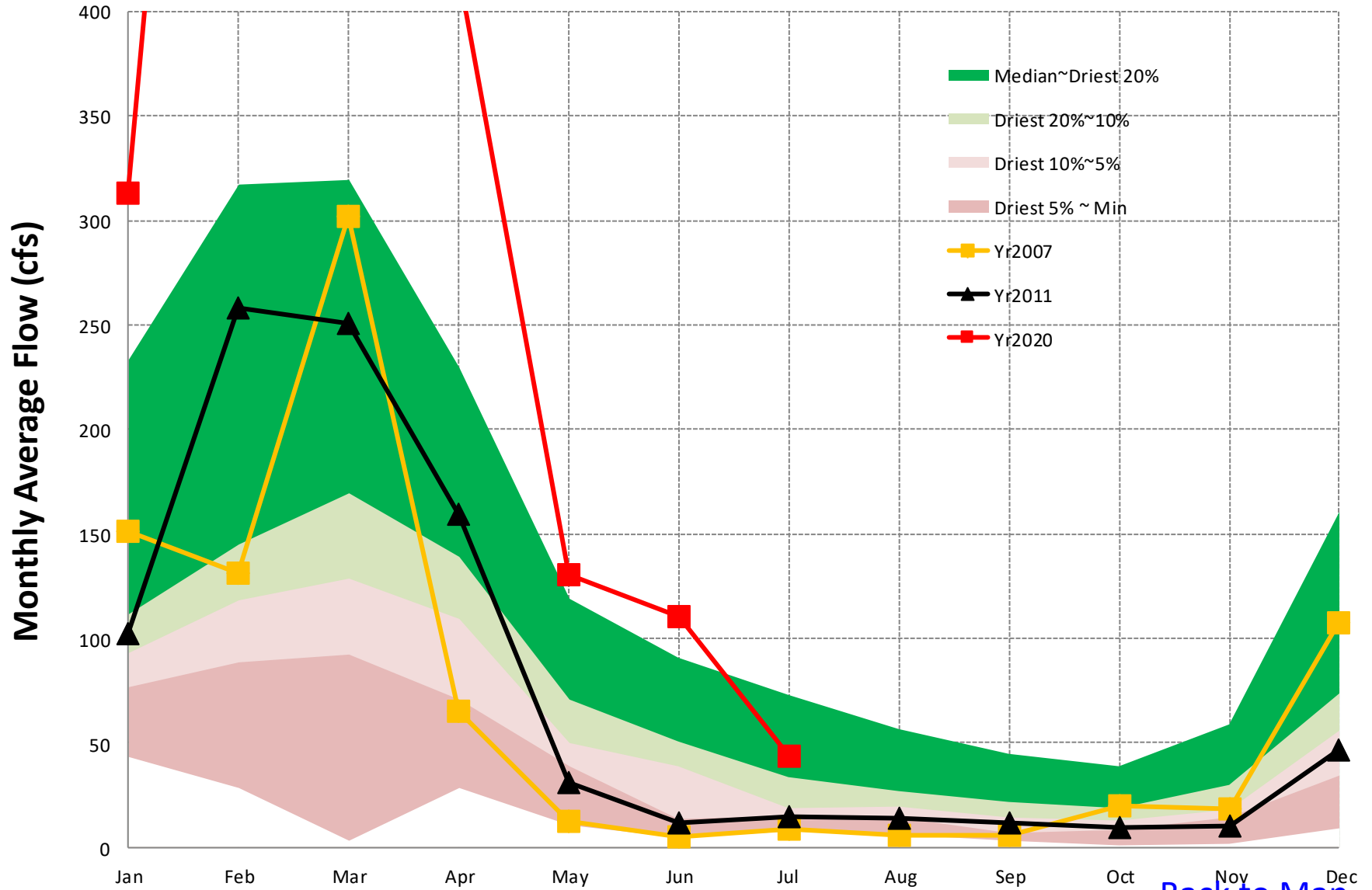
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# Gage #15. USGS #02213000, Ocmulgee Basin, Ocmulgee River at Macon, GA



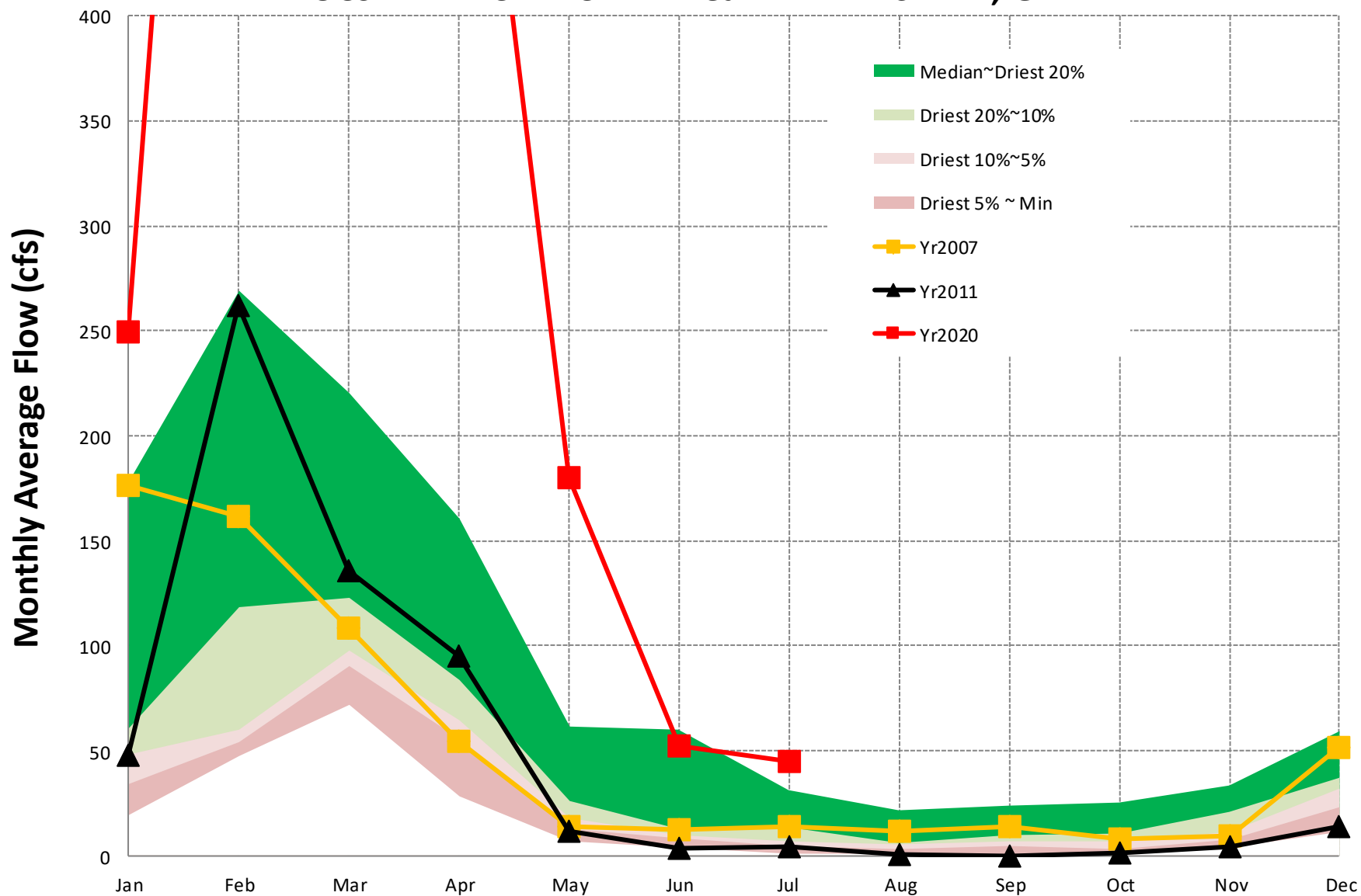
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# Gage #16. USGS #02213500, Ocmulgee Basin, TOBESOFKEE CREEK near MACON, GA



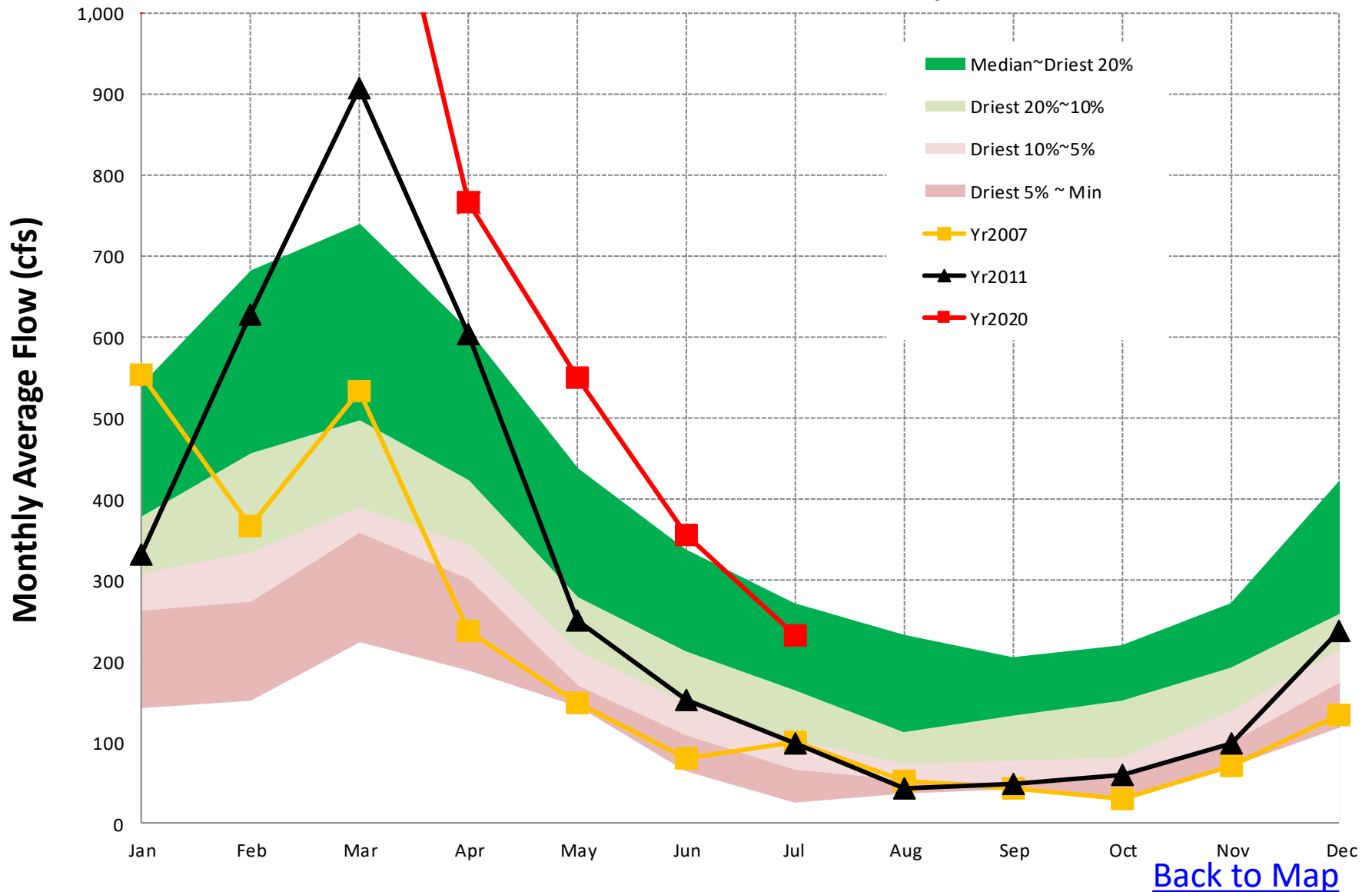
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# Gage #17. USGS #02215100, Ocmulgee Basin, TUCSAWHATCHEE CREEK near HAWKINSVILLE, GA

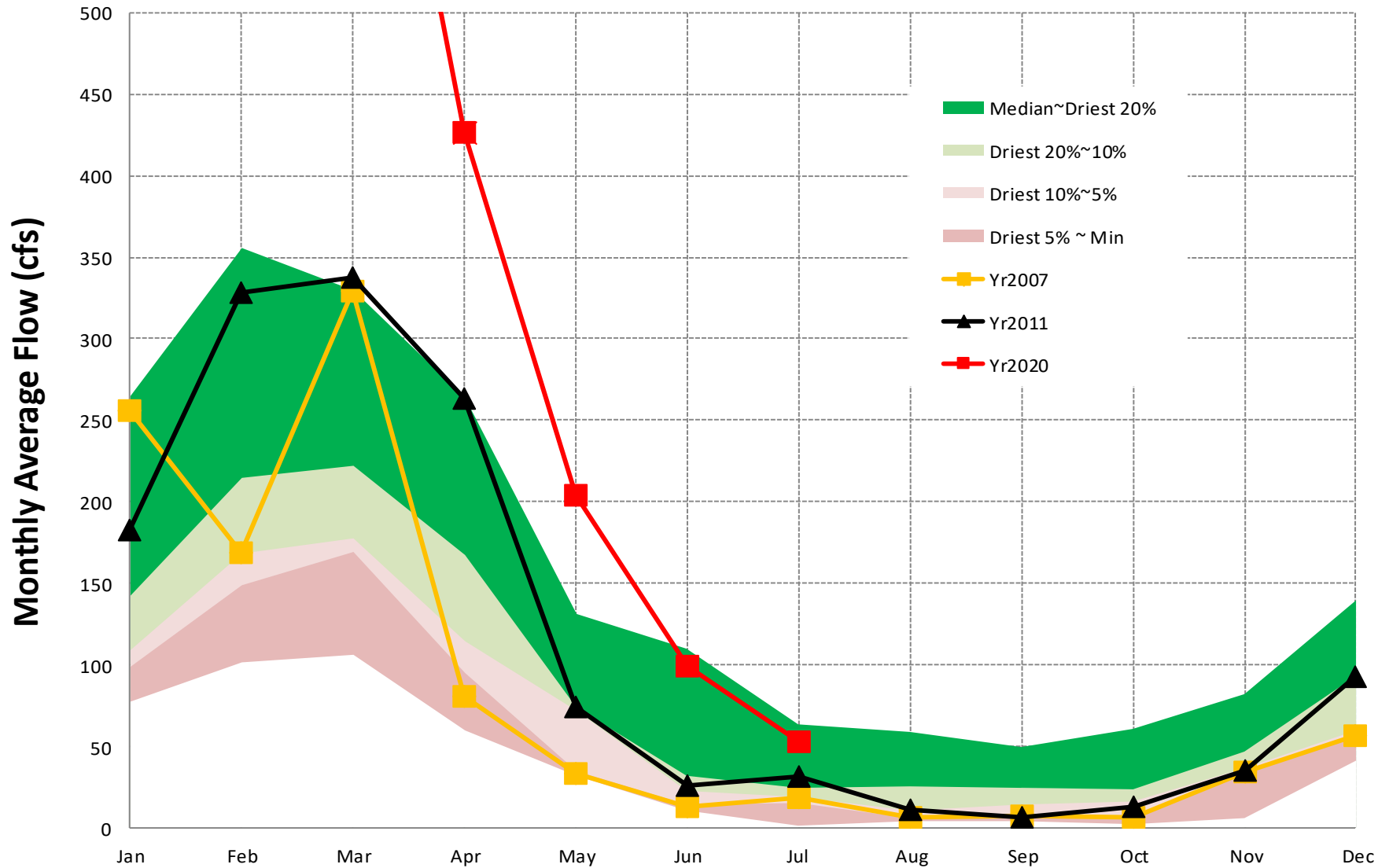


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# Gage #18. USGS #02217500, Oconee Basin, MIDDLE OCONEE RIVER near ATHENS, GA

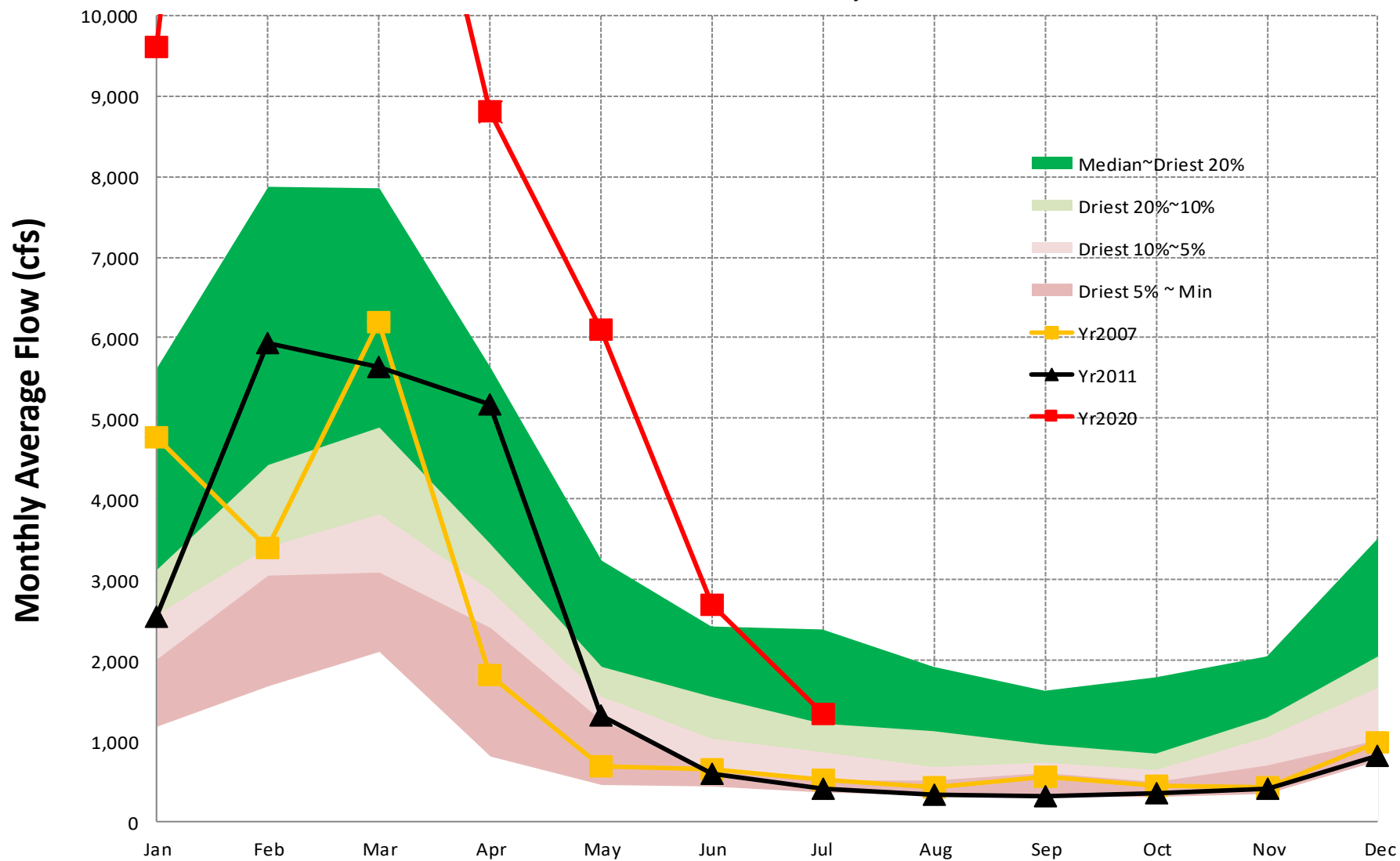


# Gage #19. USGS #02220900, Oconee Basin, LITTLE RIVER near EATONTON, GA



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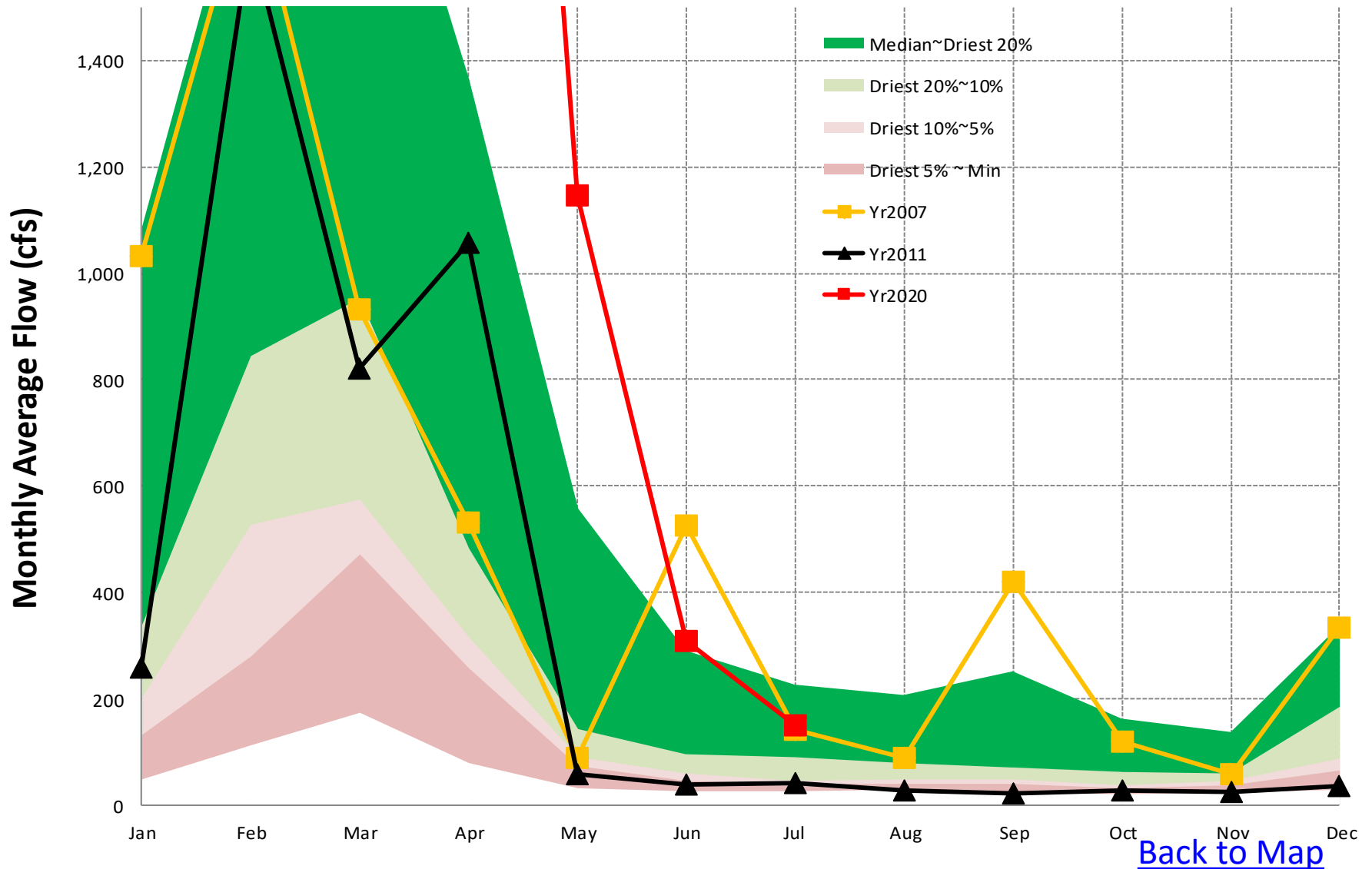
## Gage #20. USGS #02223500, Oconee Basin, Oconee River at Dublin, GA



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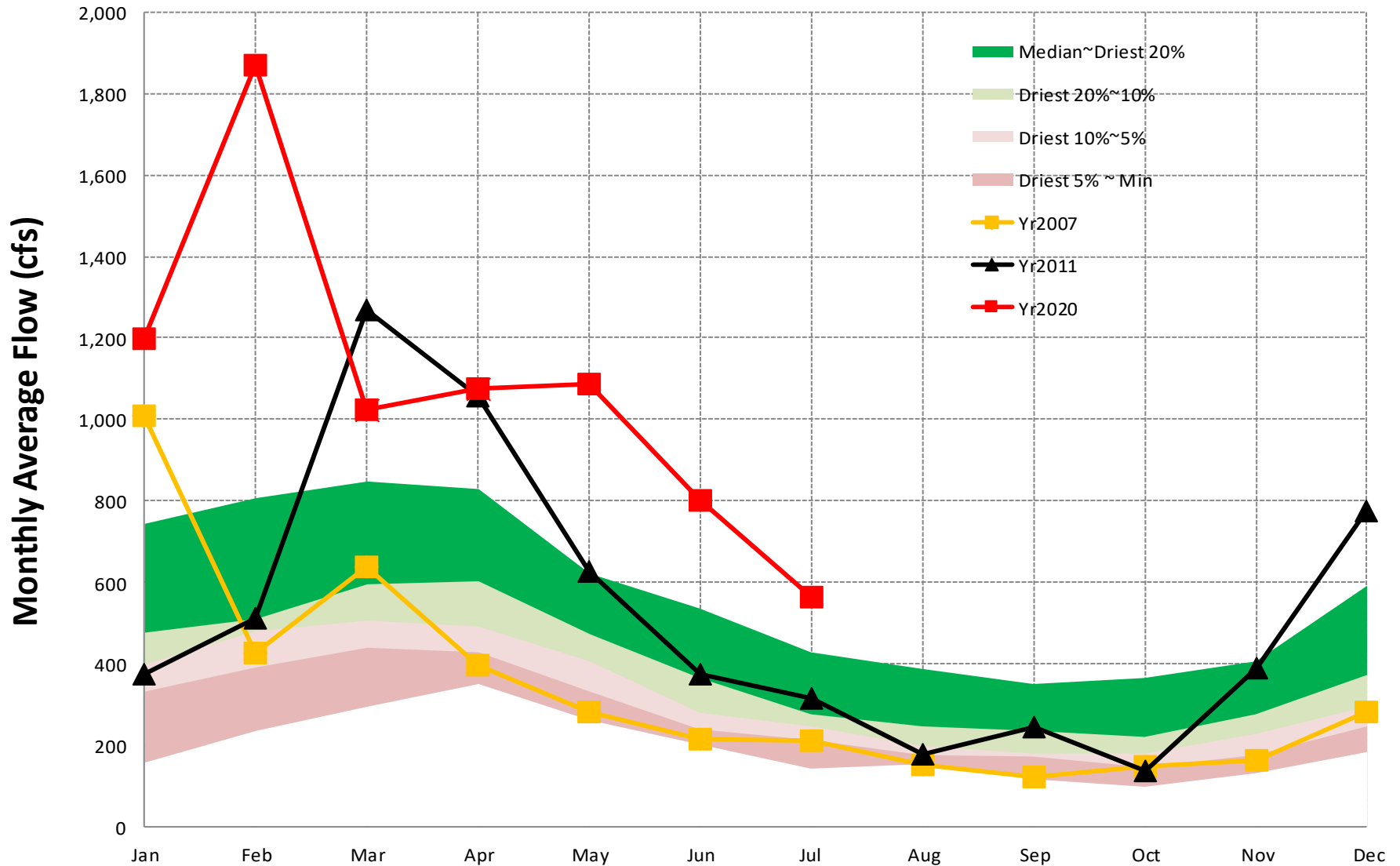


## Gage #21. USGS #02225500, Altamaha Basin, OHOOPEE RIVER near REIDSVILLE, GA



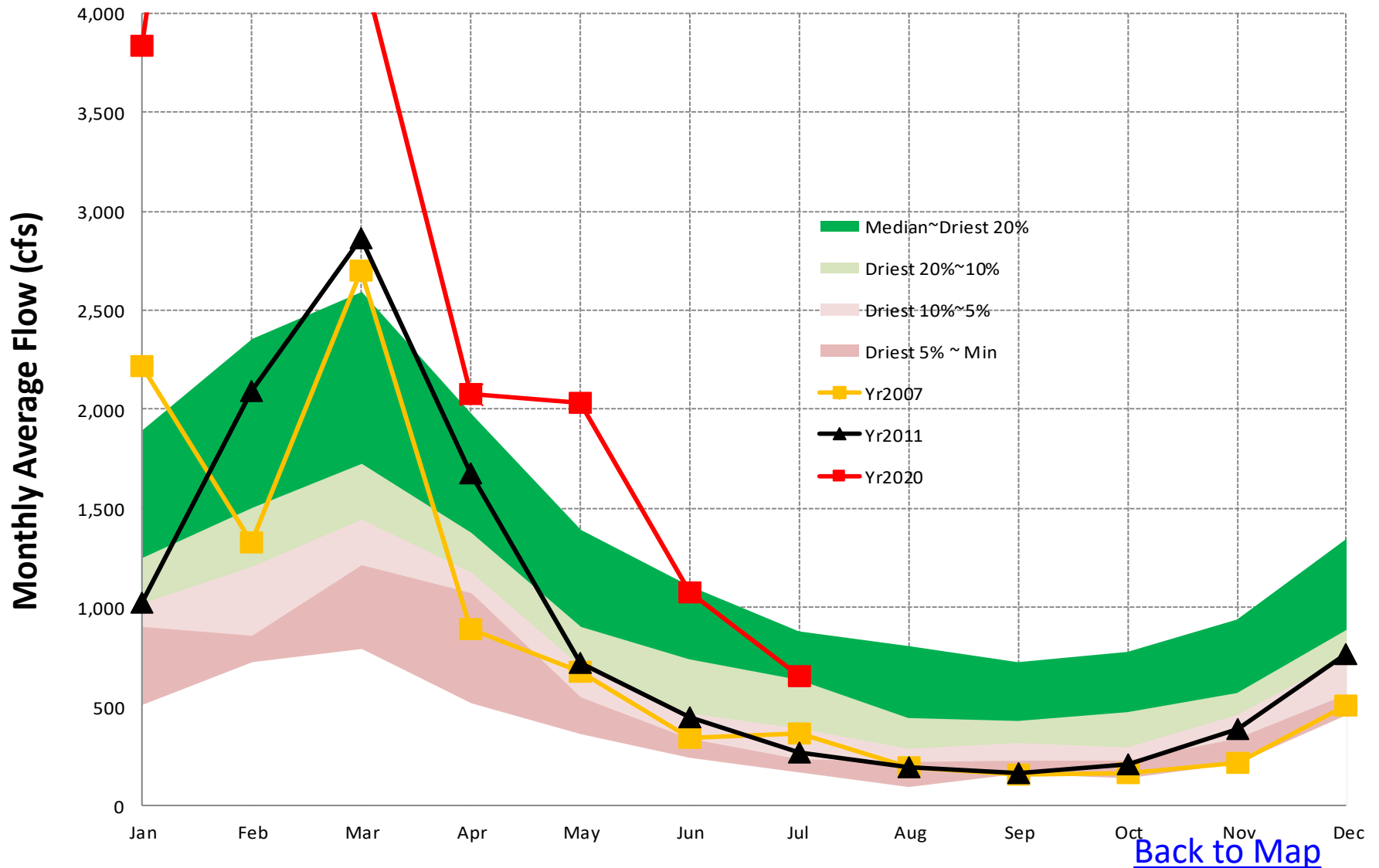
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## Gage #22. USGS #02177000, Savannah Basin, CHATTOOGA RIVER near CLAYTON, GA

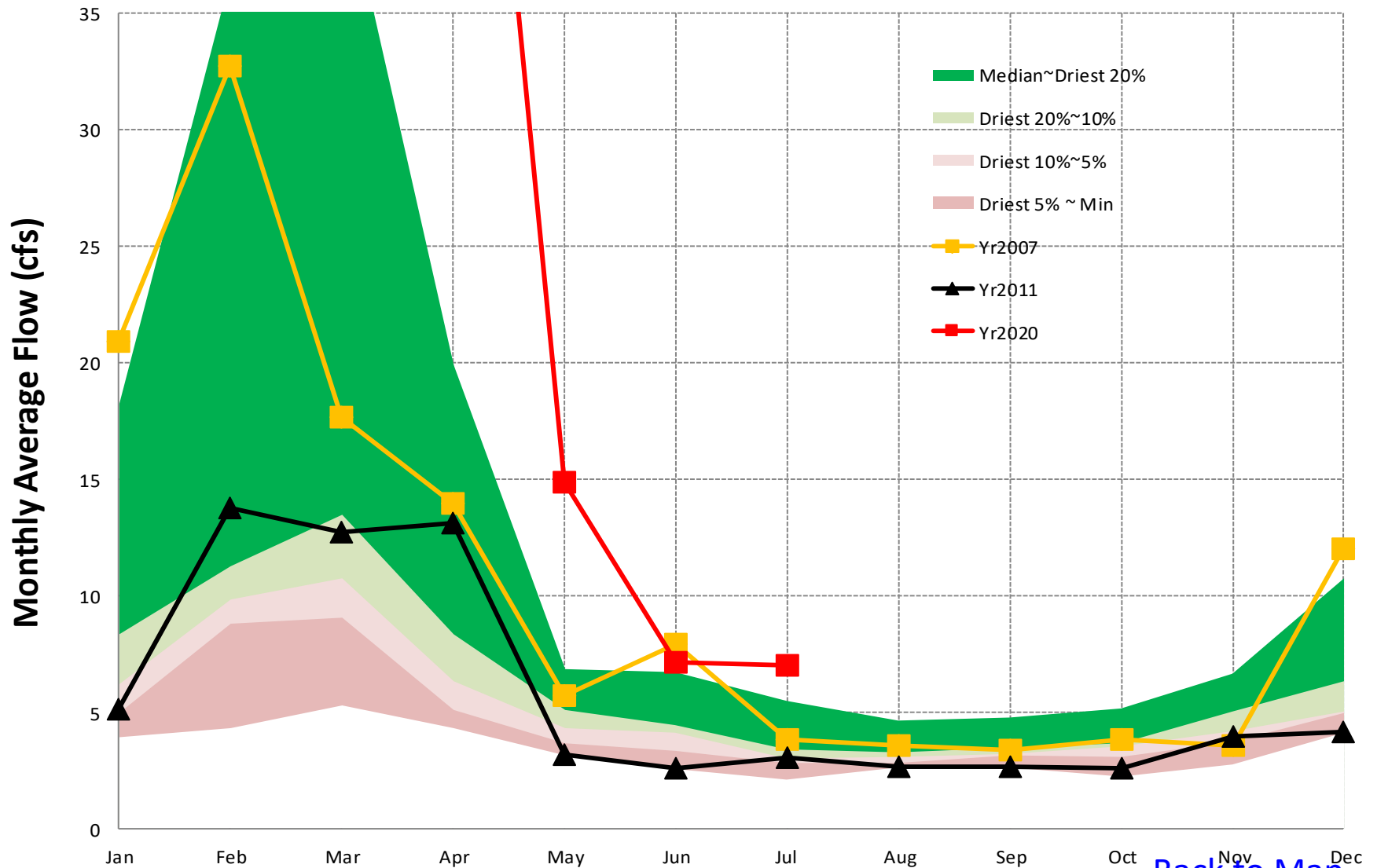


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## Gage #23. USGS #02192000, Savannah Basin Broad River near Bell, GA

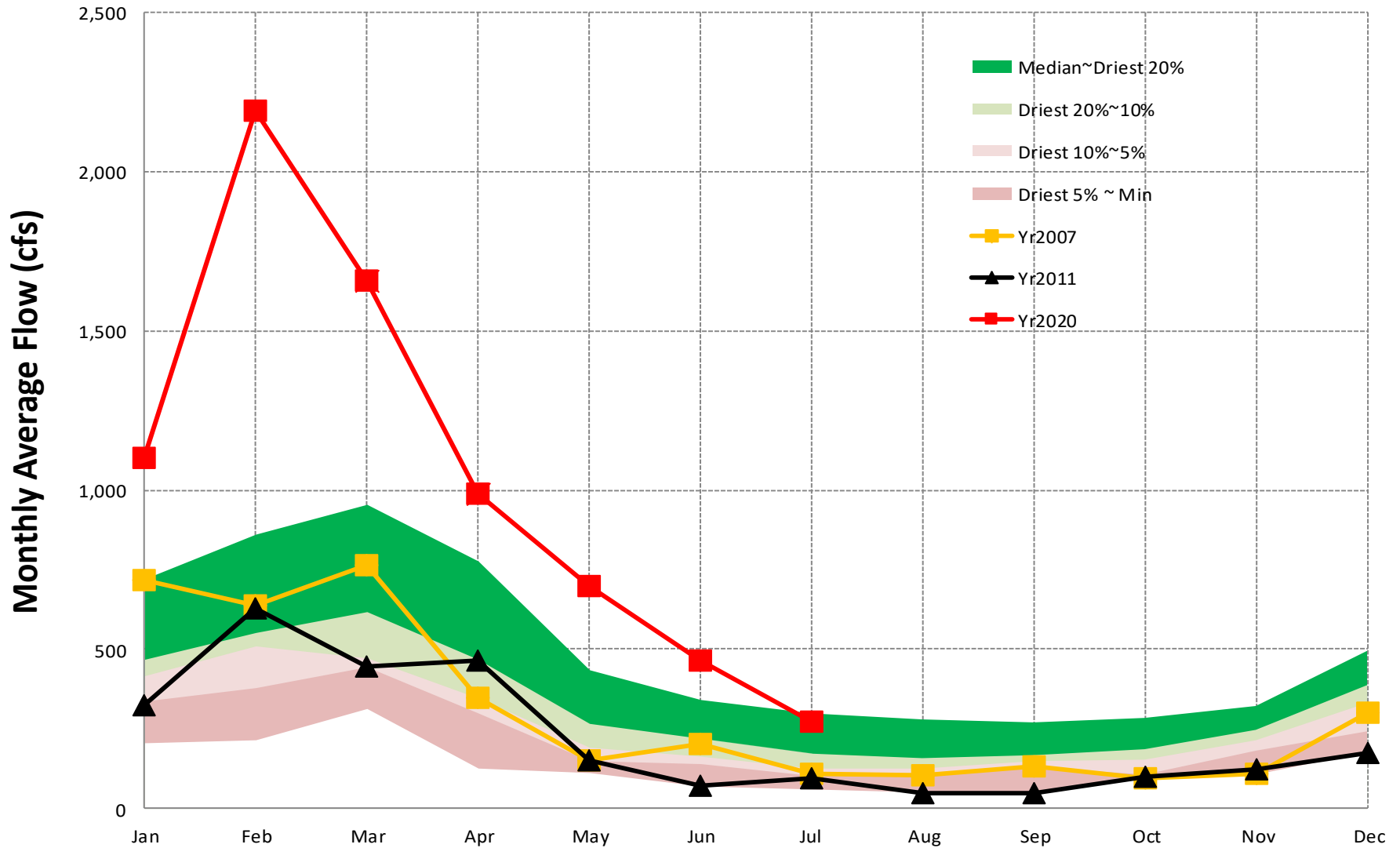


# Gage #24. USGS #02198100, Savannah Basin, BEAVERDAM CREEK near SARDIS, GA



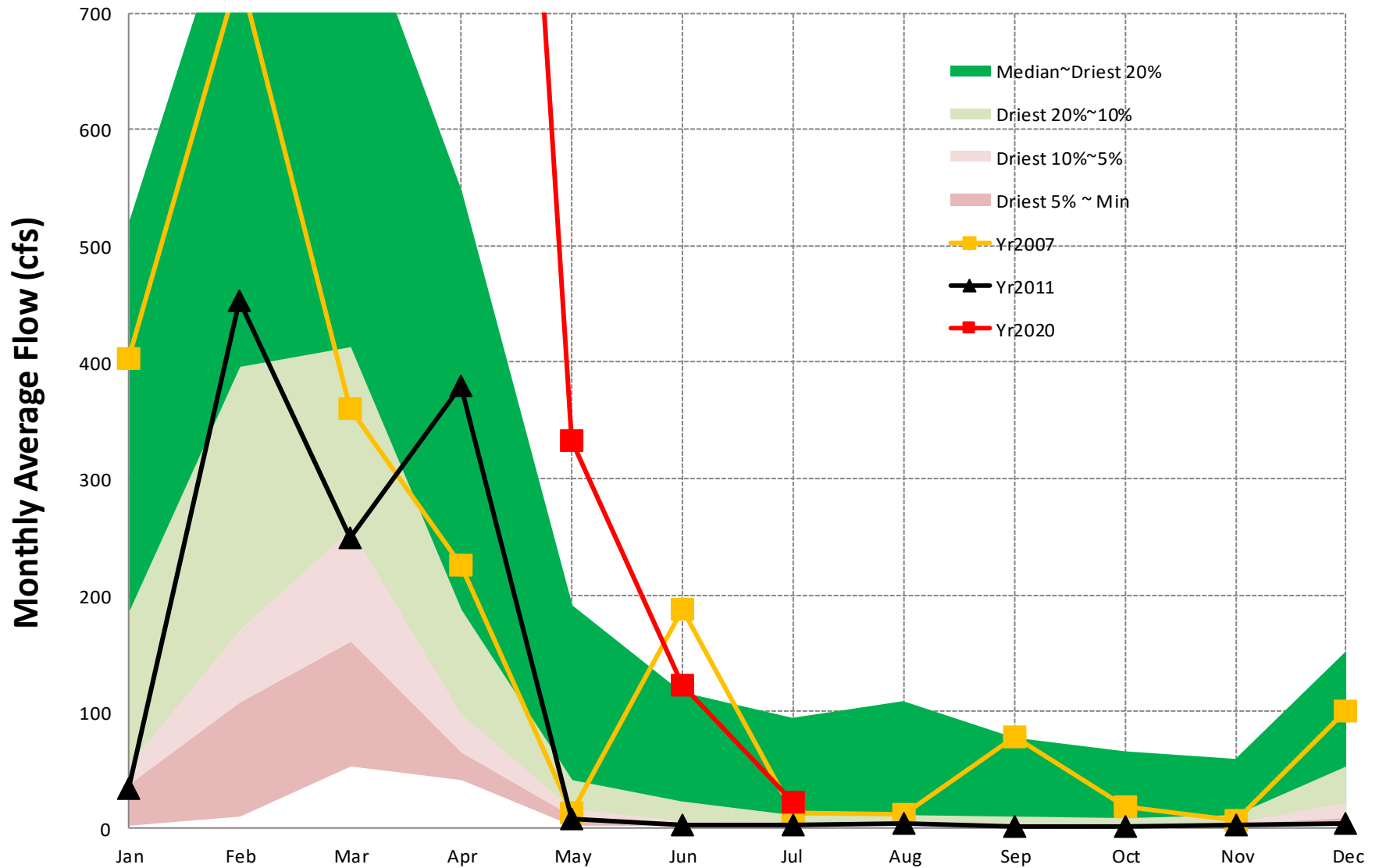
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# Gage #25. USGS #02198000, Savannah Basin, BRIER CREEK at MILLHAVEN, GA



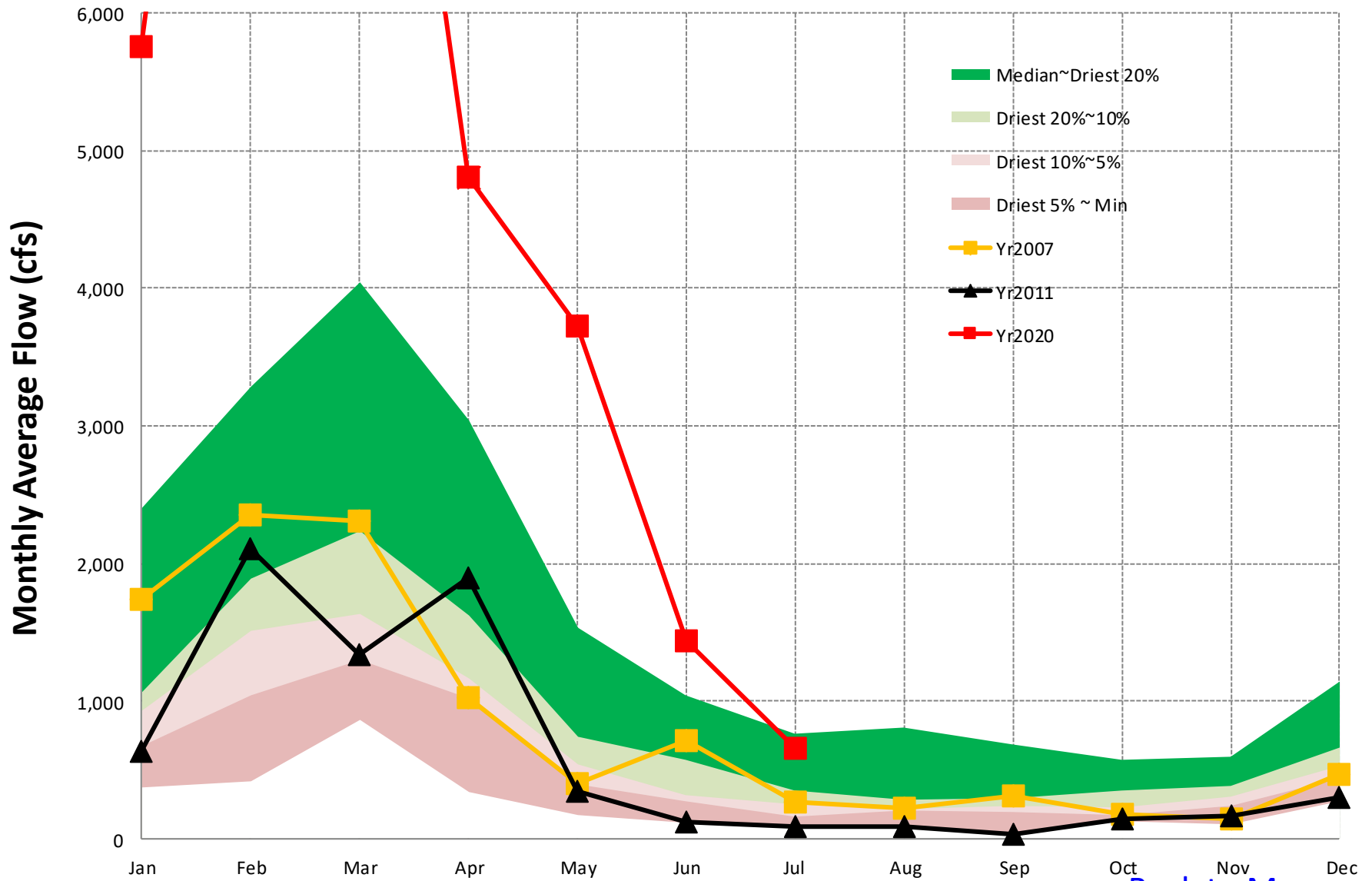
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# Gage #26. USGS #02203000, Ogeechee Basin, CANOOCHEE RIVER near CLAXTON, GA



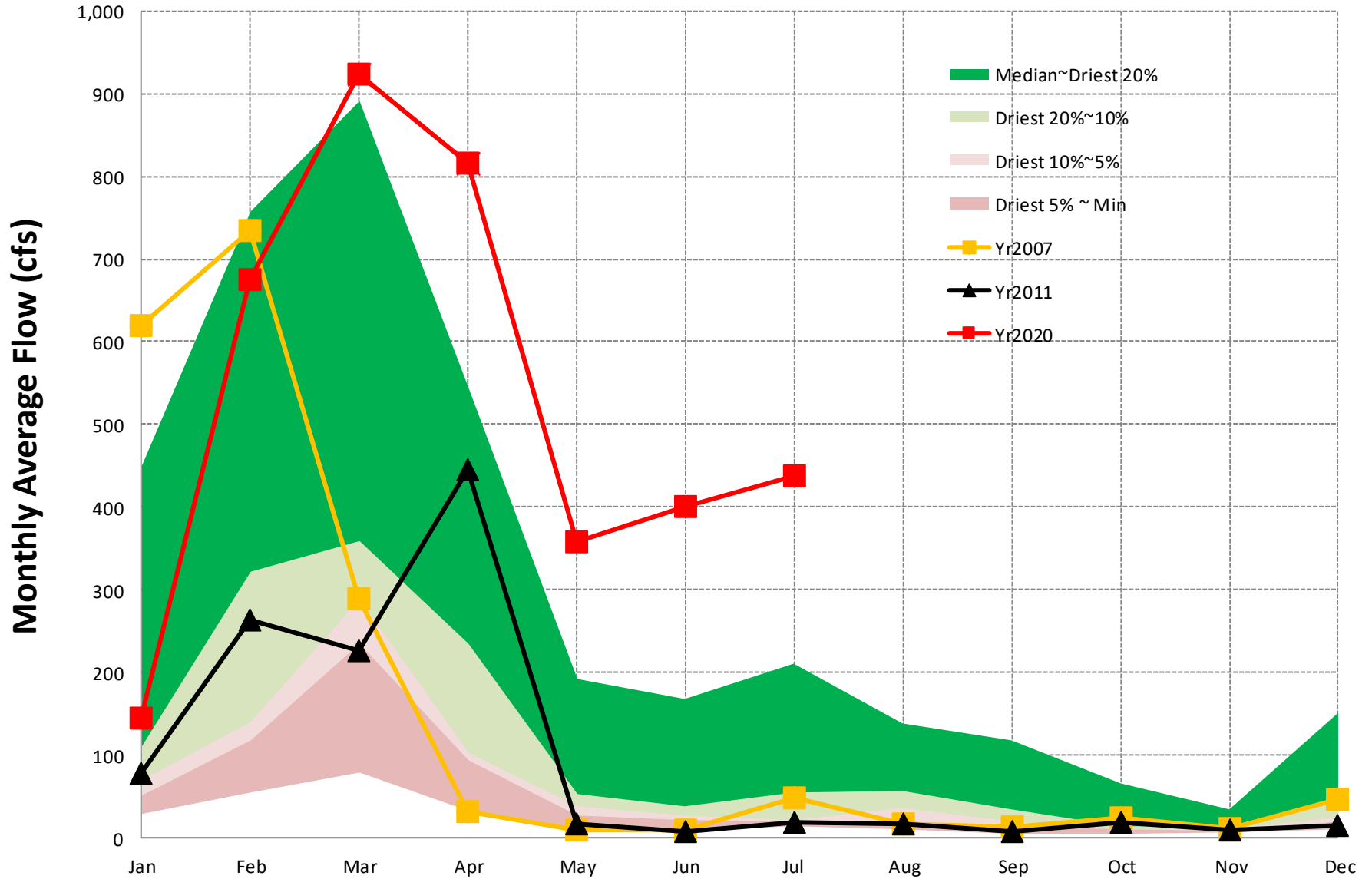
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## Gage #27. USGS #02202500, Ogeechee Basin, Ogeechee River near Eden, GA



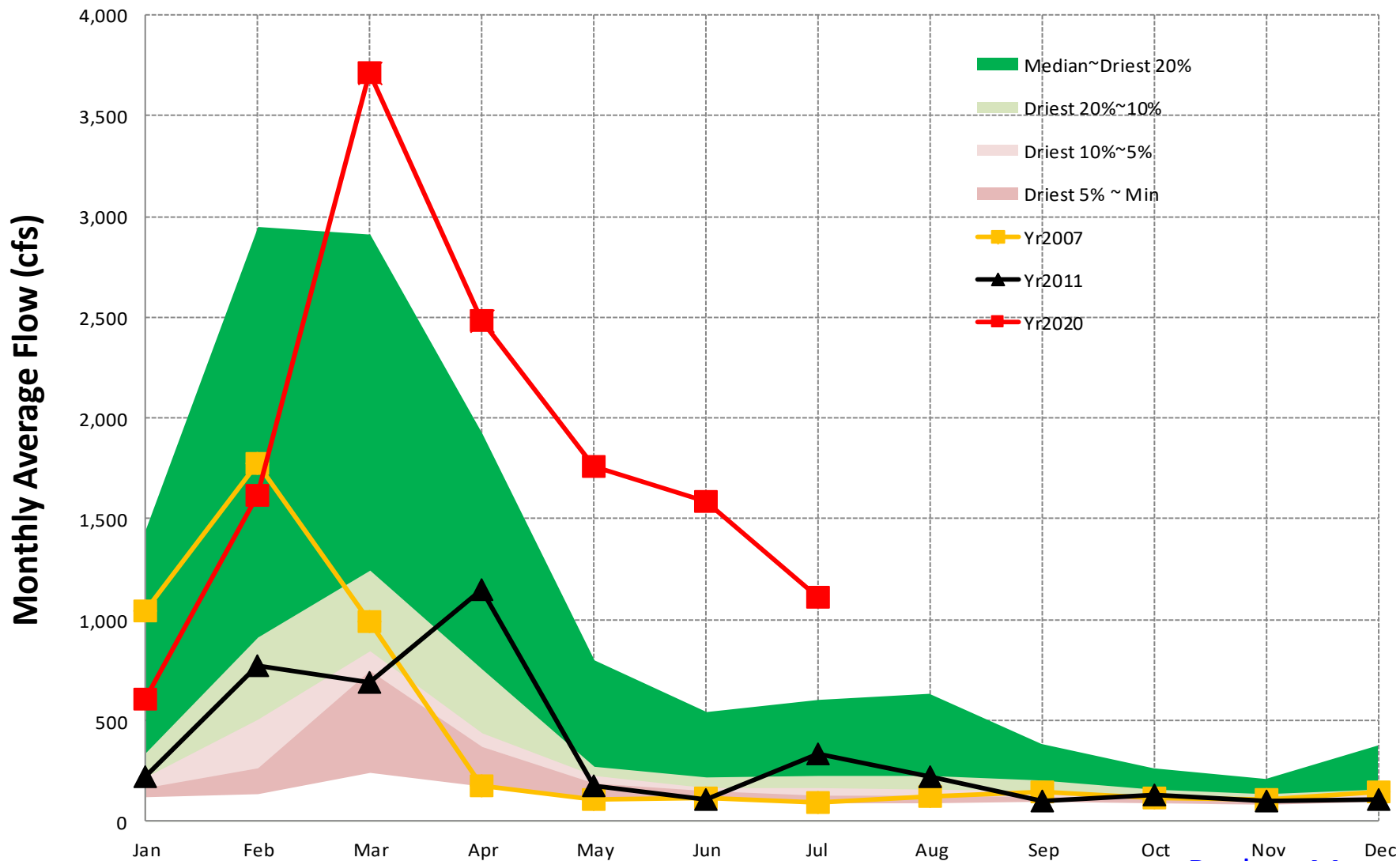
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## Gage #28. USGS #02327500, Ochlockonee Basin, OCHLOCKONEE RIVER near THOMASVILLE, GA



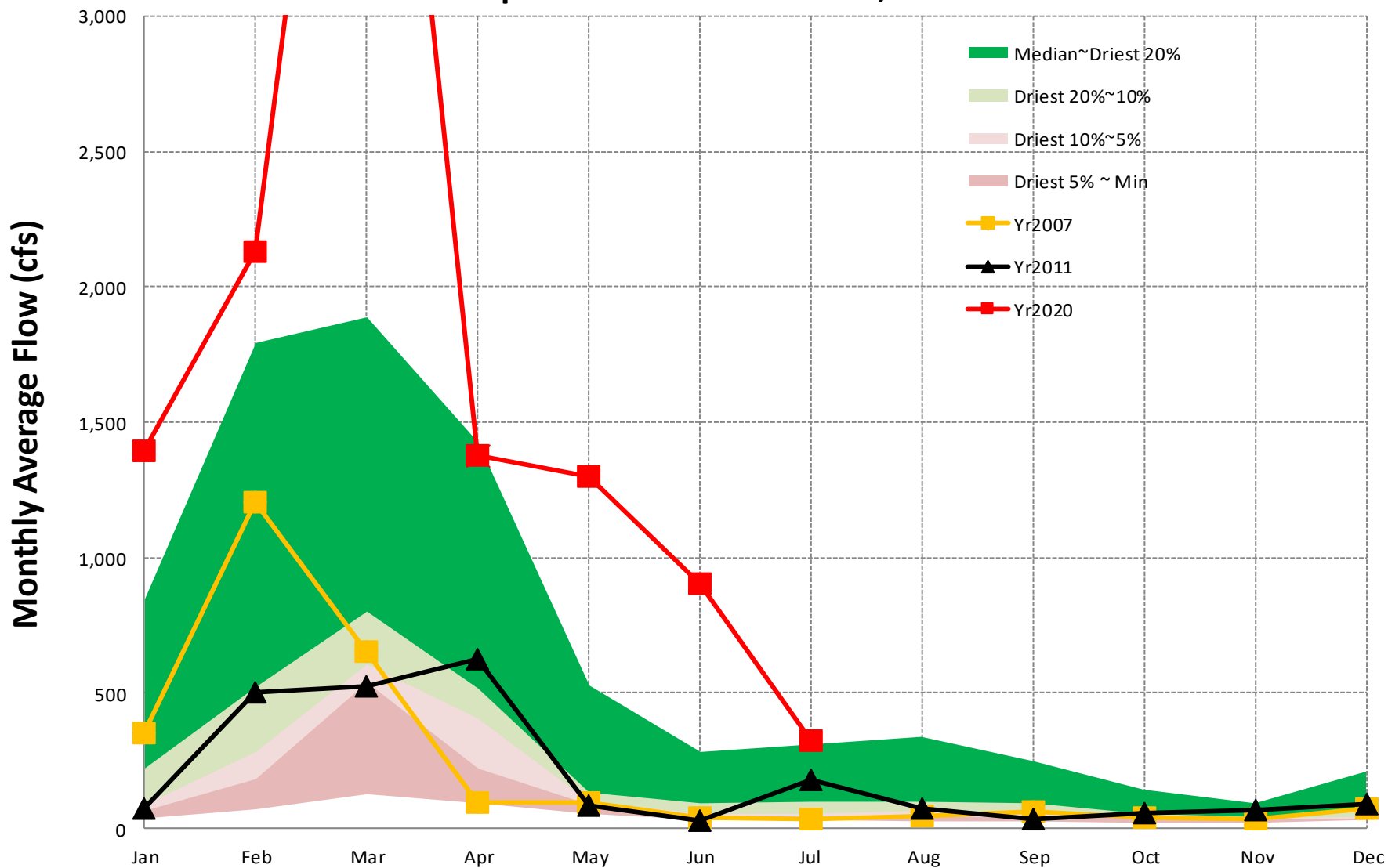


## Gage #29. USGS #02319000, Suwannee Basin, WITHLACOOCHEE RIVER near PINETTA, FL



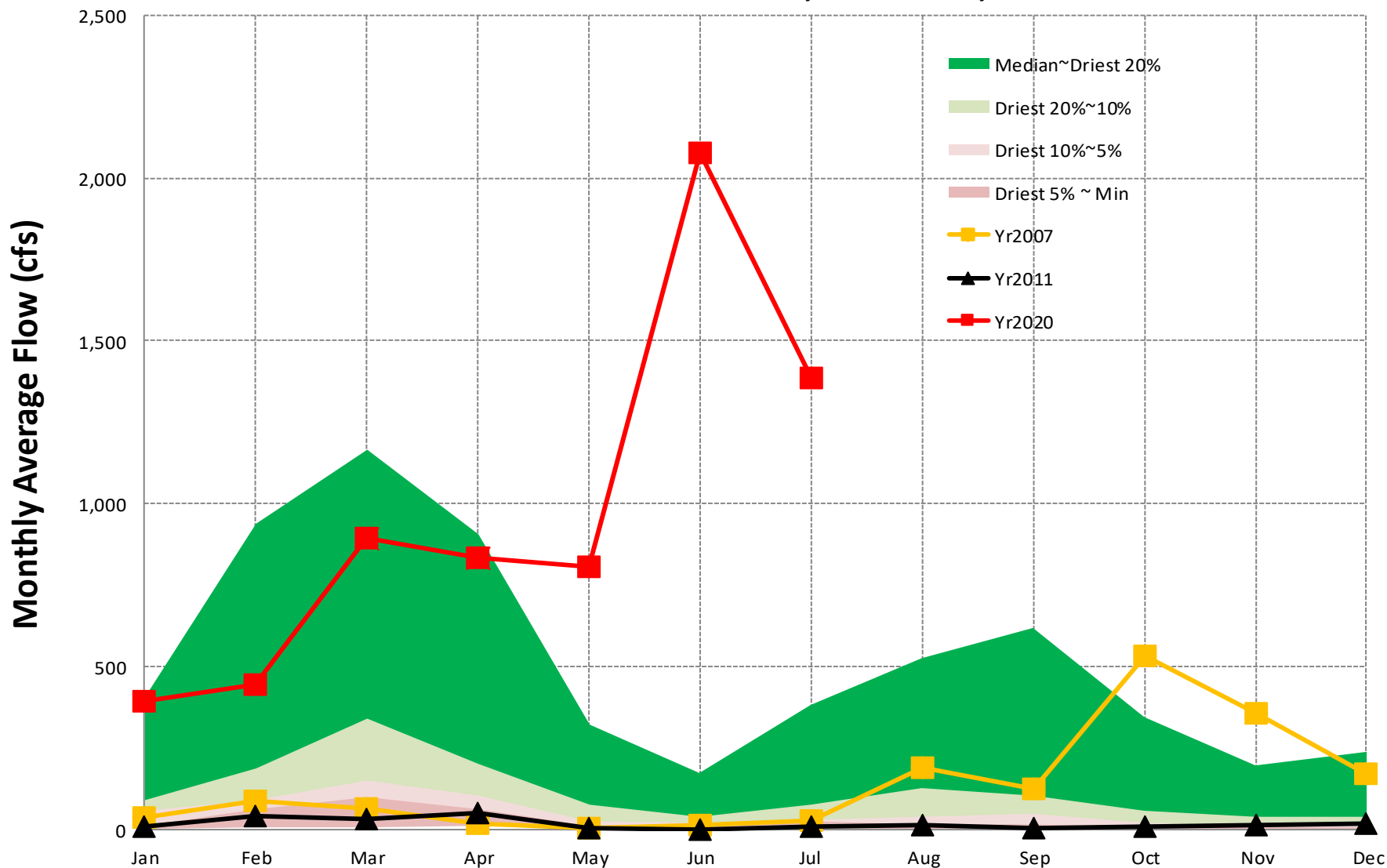
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## Gage #30. USGS #02317500, Suwanee Basin, Alapaha River at Statenville, GA



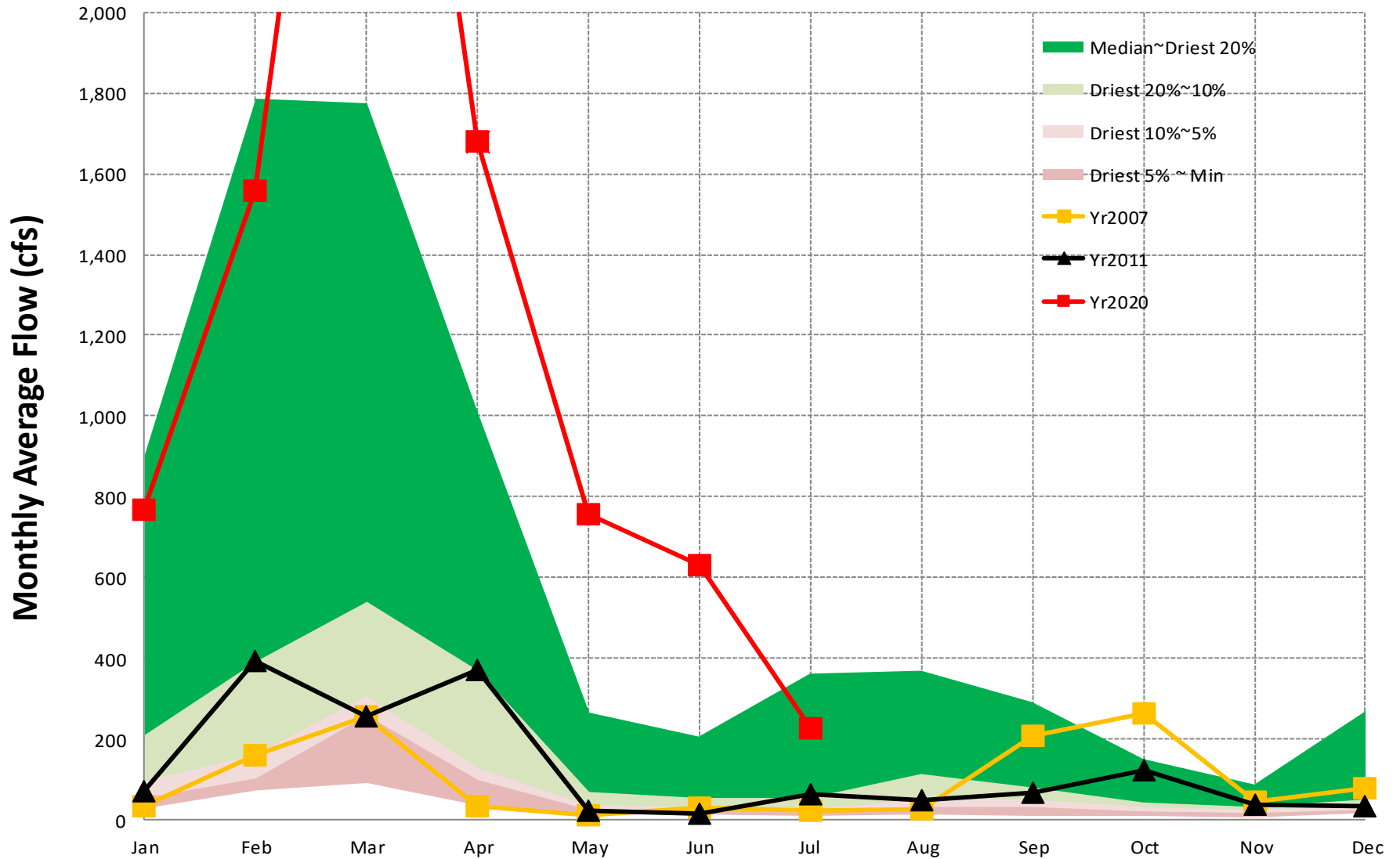
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# Gage #31. USGS #02314500, Suwannee Basin, SUWANNEE RIVER AT US 441, AT FARGO, GA



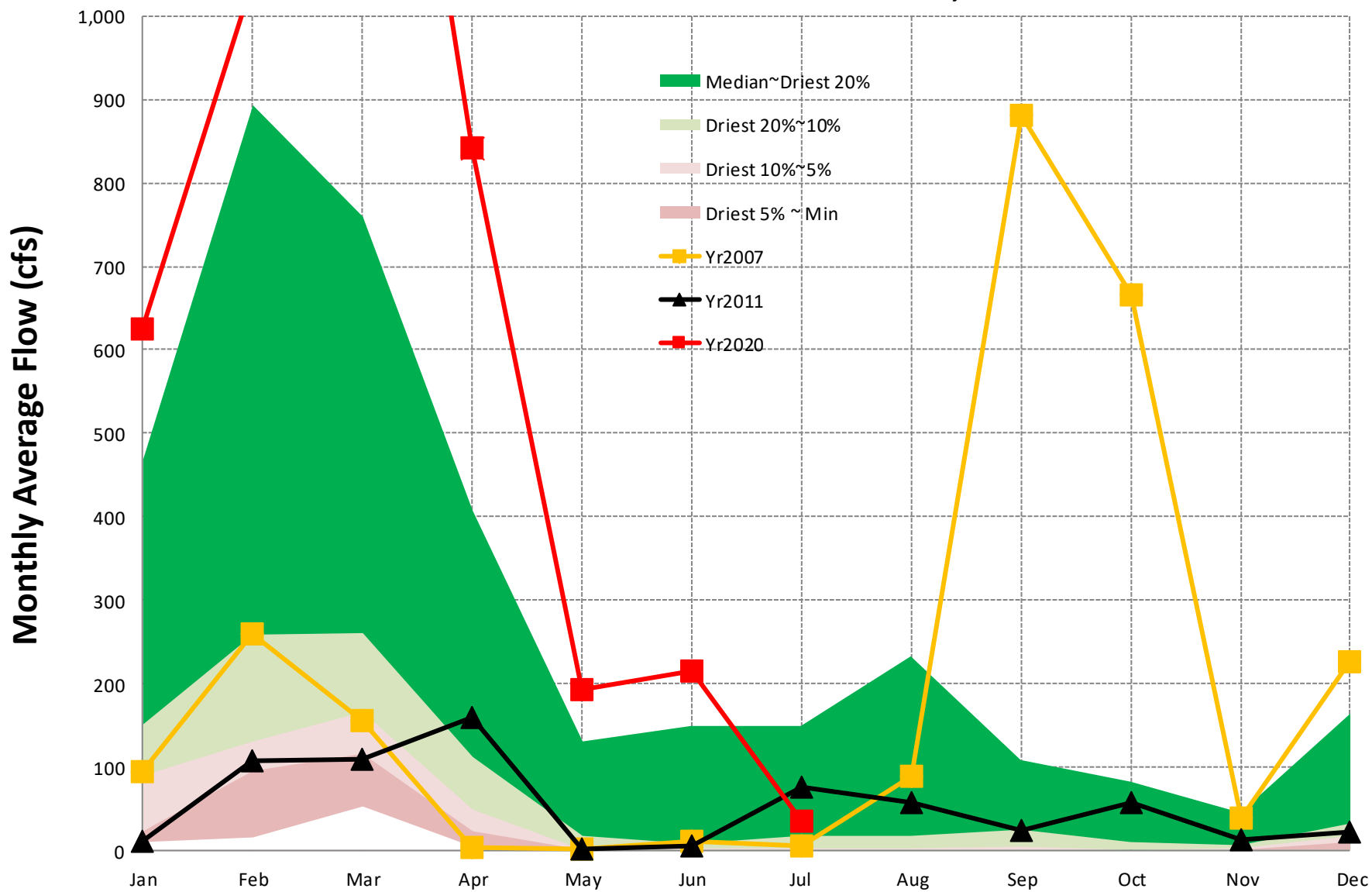
[Back to Map](#)

# Gage #32. USGS #02226500, Satilla Basin, Satilla River near Waycross, GA

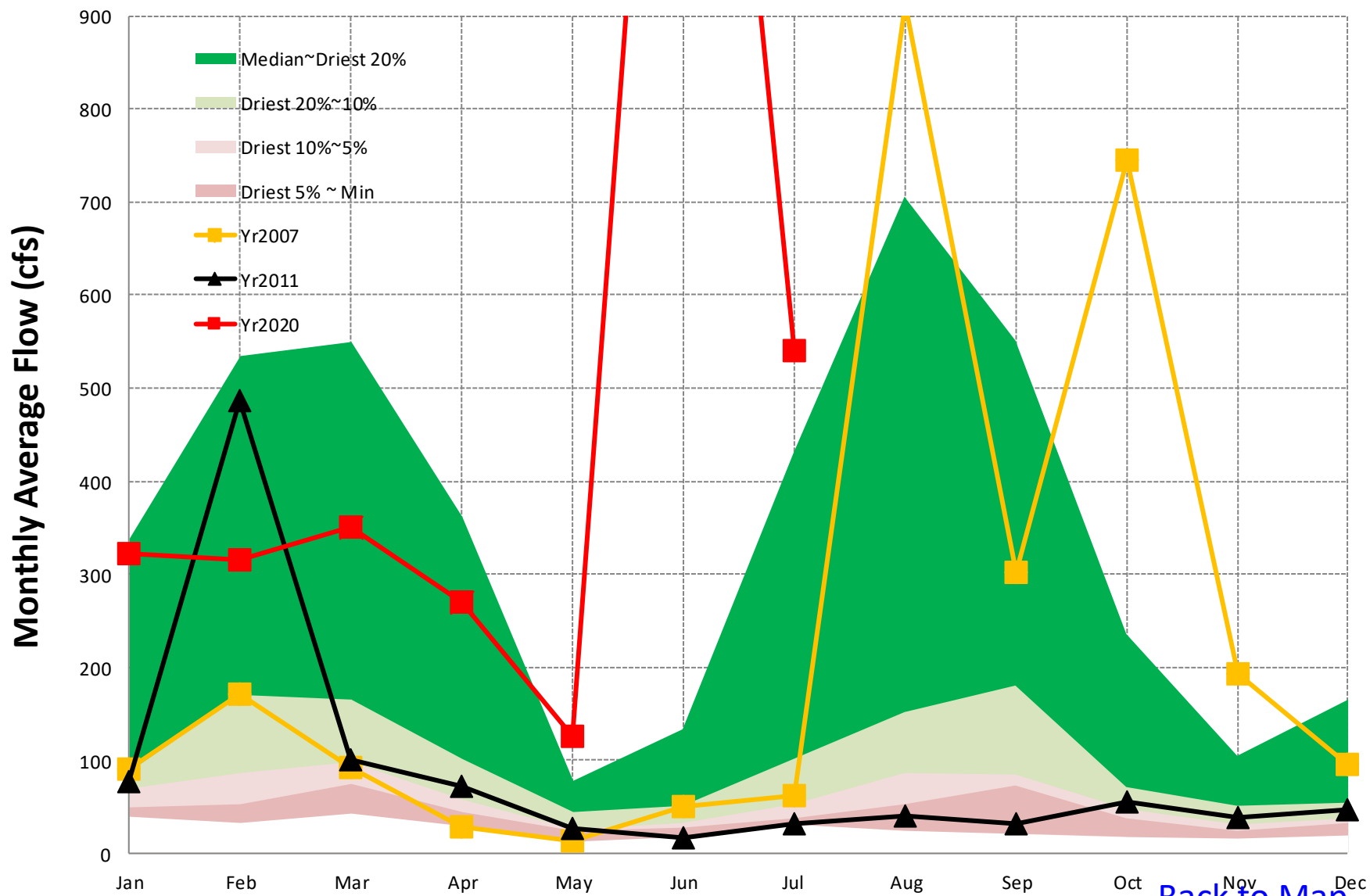


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# Gage #33. USGS #02227500, Satilla Basin, LITTLE SATILLA RIVER near OFFERMAN, GA



# Gage #34. USGS #02231000, St Mary Basin, ST. MARYS RIVER near MACCLENNY, FL



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# Groundwater Levels

Data Source: USGS

## Rationale for Choosing USGS Monitoring Wells

EPD monitors 17 groundwater USGS monitoring wells shown on the following slide to assess drought conditions. These wells were selected for monitoring because they have:

- Long-term monitoring records consisting of three decades or more of data; and
- Real-time monitoring that represents the most up-to-date conditions.



## USGS Wells Monitored

### Chattahoochee Basin

1. 16MM03

### Flint Basin

2. 11AA01
3. 13L180
4. 12M017
5. 08K001
6. 11K003
7. 12K014
8. 13J004
9. 08G001
10. 10G313
11. 09F520
16. 11J011

### Oconee Basin

12. 21T001

### Tennessee Basin

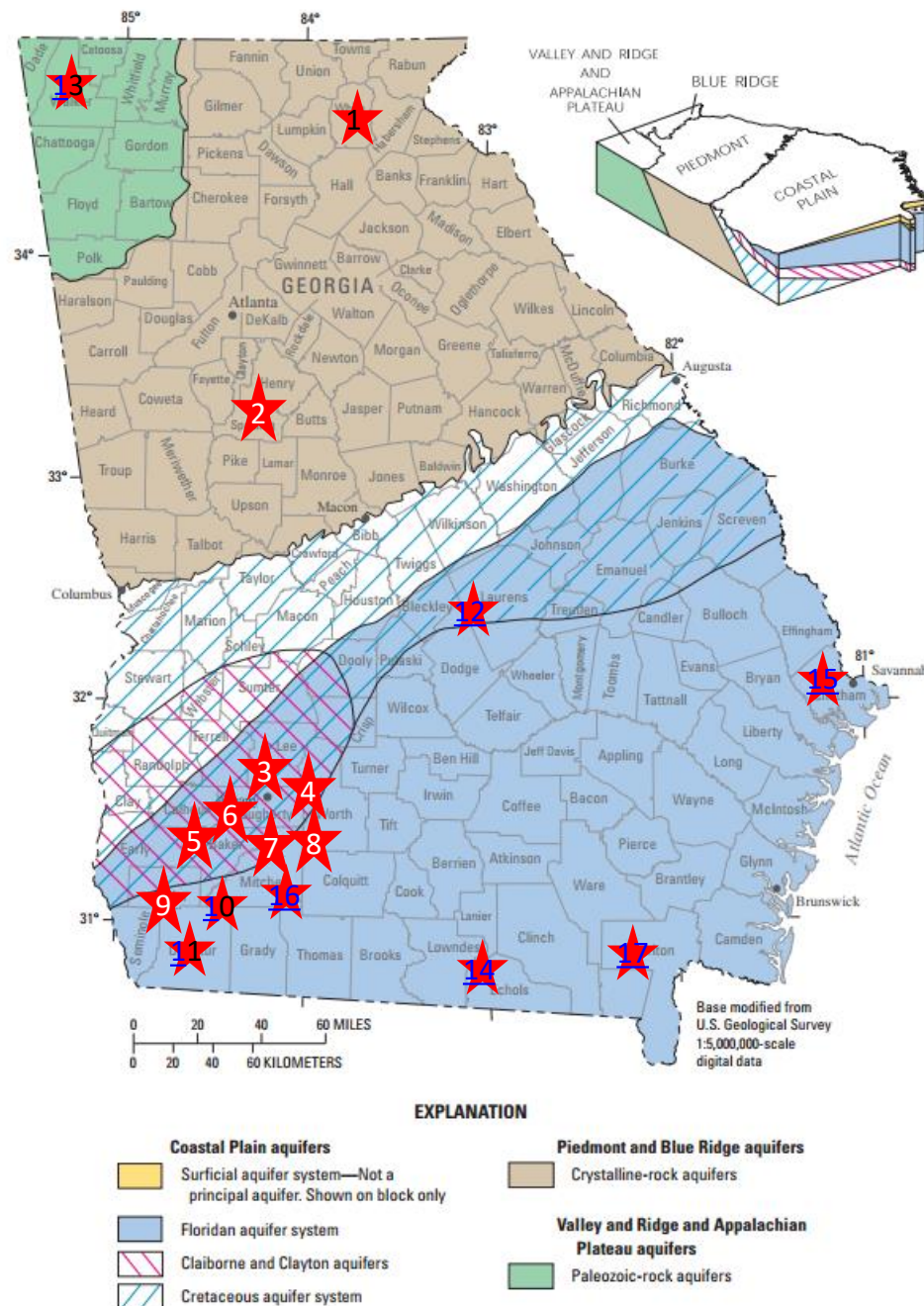
13. 03PP01

### Suwanee Basin

14. 19E009
17. 27E004

### Ogeechee Basin

15. 35P094



**Figure 2.** Area of use of principal aquifers and physiographic provinces in Georgia (modified from U.S. Geological Survey, 2006).

# Groundwater Level Graphs

- For each of the 17 groundwater wells, EPD has prepared a graph that shows monthly average groundwater levels from January 2020 through July 2020;
- To help put these levels into perspective, for comparison purposes, each graph also shows:
  - Monthly average levels at that same well for the years 2007 and 2011 when groundwater levels were at or near recorded low levels across much of the state; and
  - And a statistical composite of historical conditions at that same gage showing the “lowest” 50, 20, 10, and 5 percent of all recorded monthly average levels at the same well.

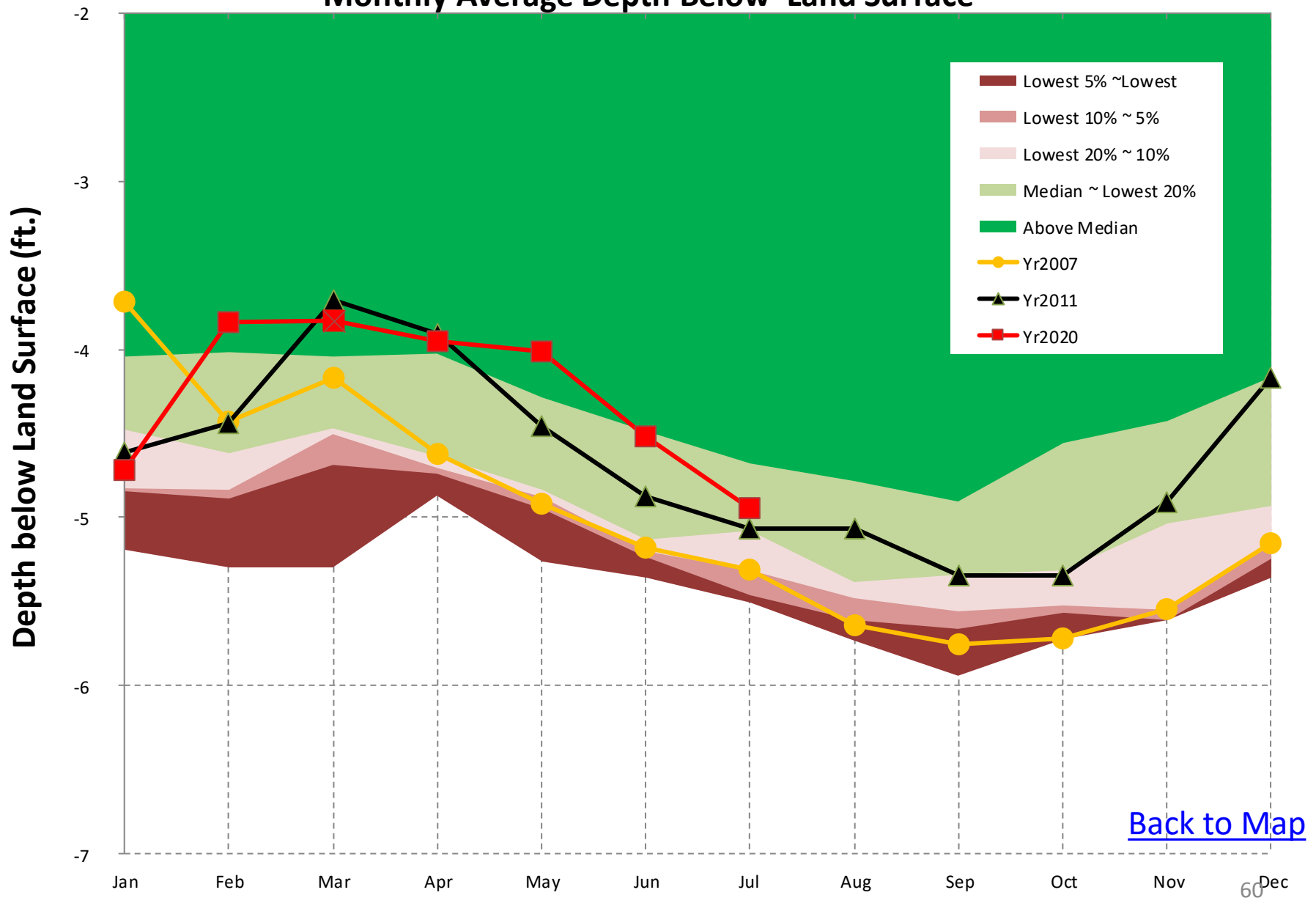
# How to Read the Groundwater Level Graphs

## Example: [Well #11, 09F520, Flint River Basin](#)

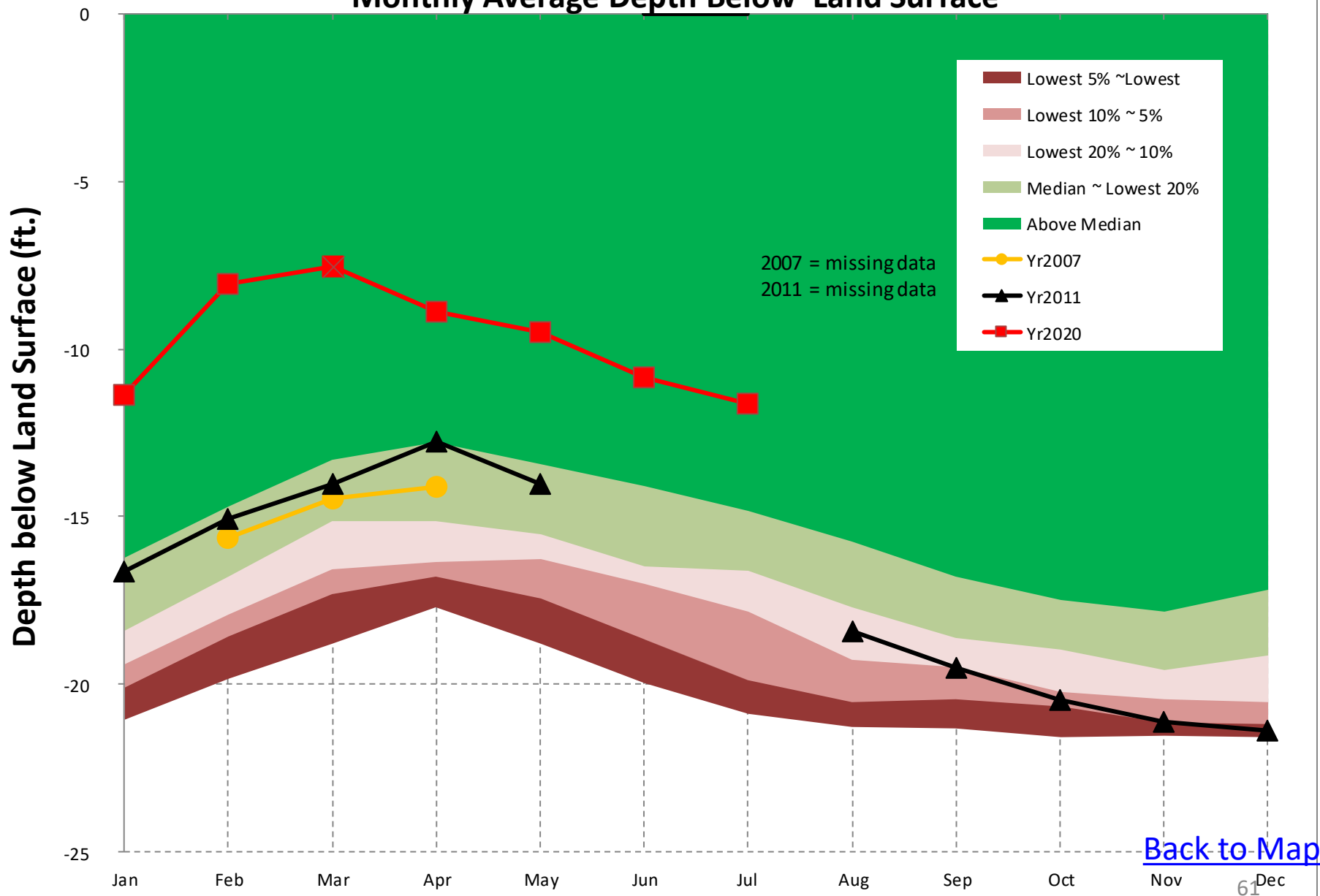
The groundwater level graph for Well #11, USGS 09F520 shows:

- The average monthly groundwater level in July 2020 was 47ft below land surface. The statistical composite of all historical data for this well shows that monthly average groundwater levels in July have historically been lower than July 2020 about 46% of the time; about 54% of the time in July they have been higher.
- The average monthly groundwater level in July 2011 was 52ft below land surface. The statistical composite of all historical data for this well shows that monthly average groundwater levels in July have historically been lower than July 2011 about 5% of the time; about 95% of the time in July they have been higher.
- The average monthly groundwater level in July 2007 was 52.2ft below land surface. This is the lowest average monthly level observed historically for this well.

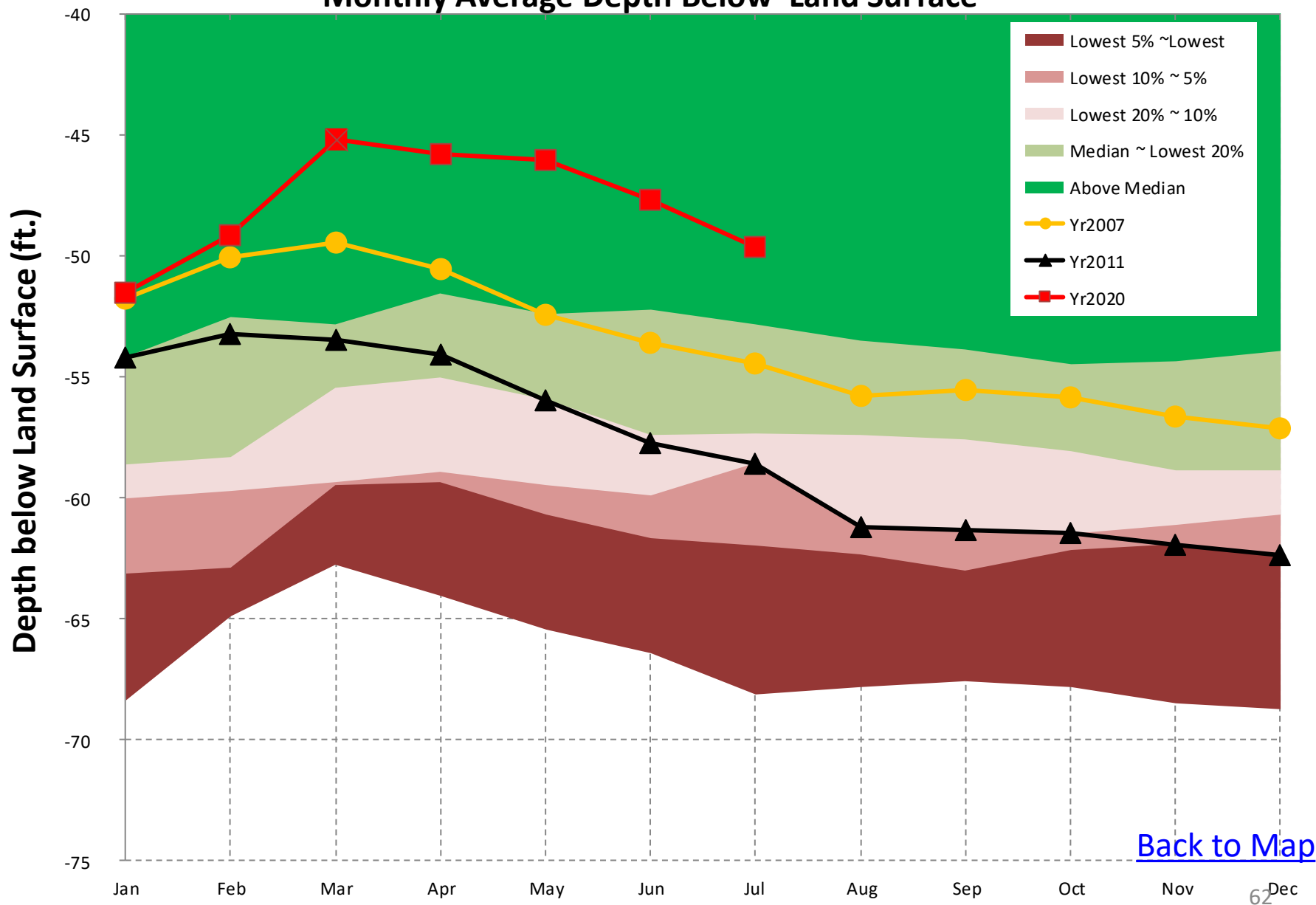
# Well #1, 16MM03, Crystalline Rocks Aquifer in Chattahoochee Basin, Monthly Average Depth Below Land Surface



# Well #2, 11AA01, Surficial Aquifer in Flint Basin, Monthly Average Depth Below Land Surface

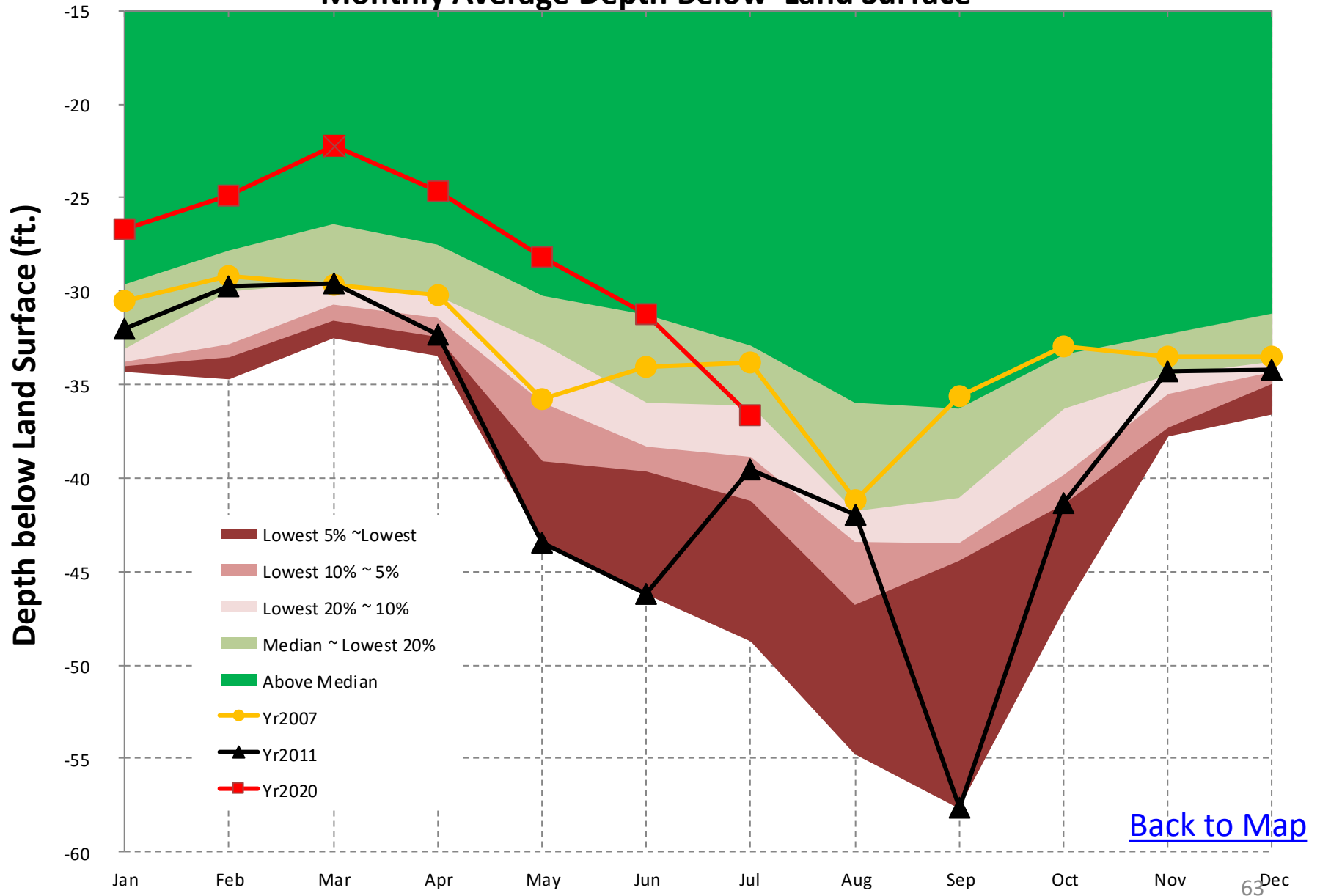


# Well #3, 13L180, Floridan Aquifer in Flint Basin, Monthly Average Depth Below Land Surface



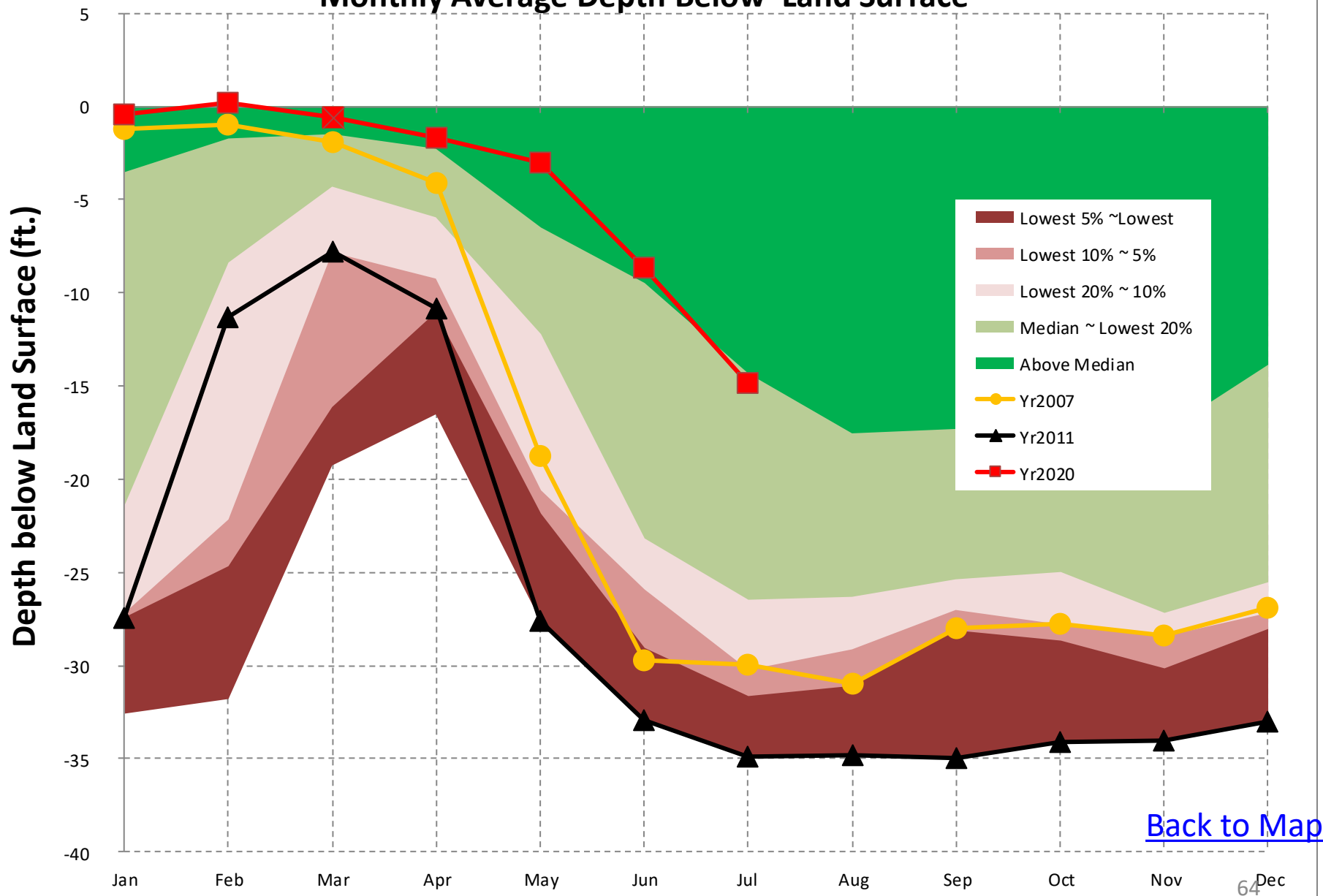
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# Well #4, 12M017, Floridan Aquifer in Flint Basin, Monthly Average Depth Below Land Surface



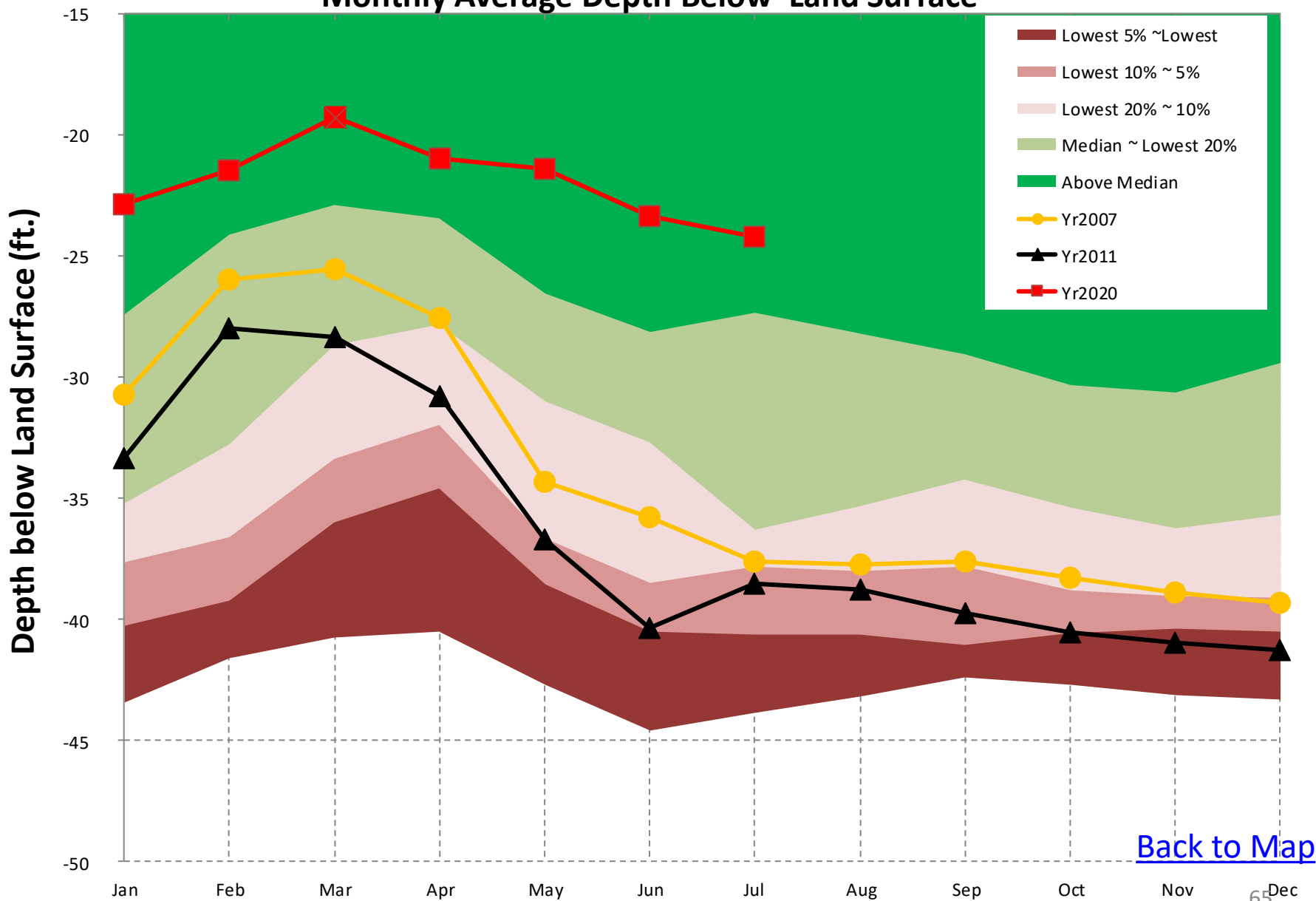
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# Well #5, 08K001, Floridan Aquifer in Flint Basin, Monthly Average Depth Below Land Surface



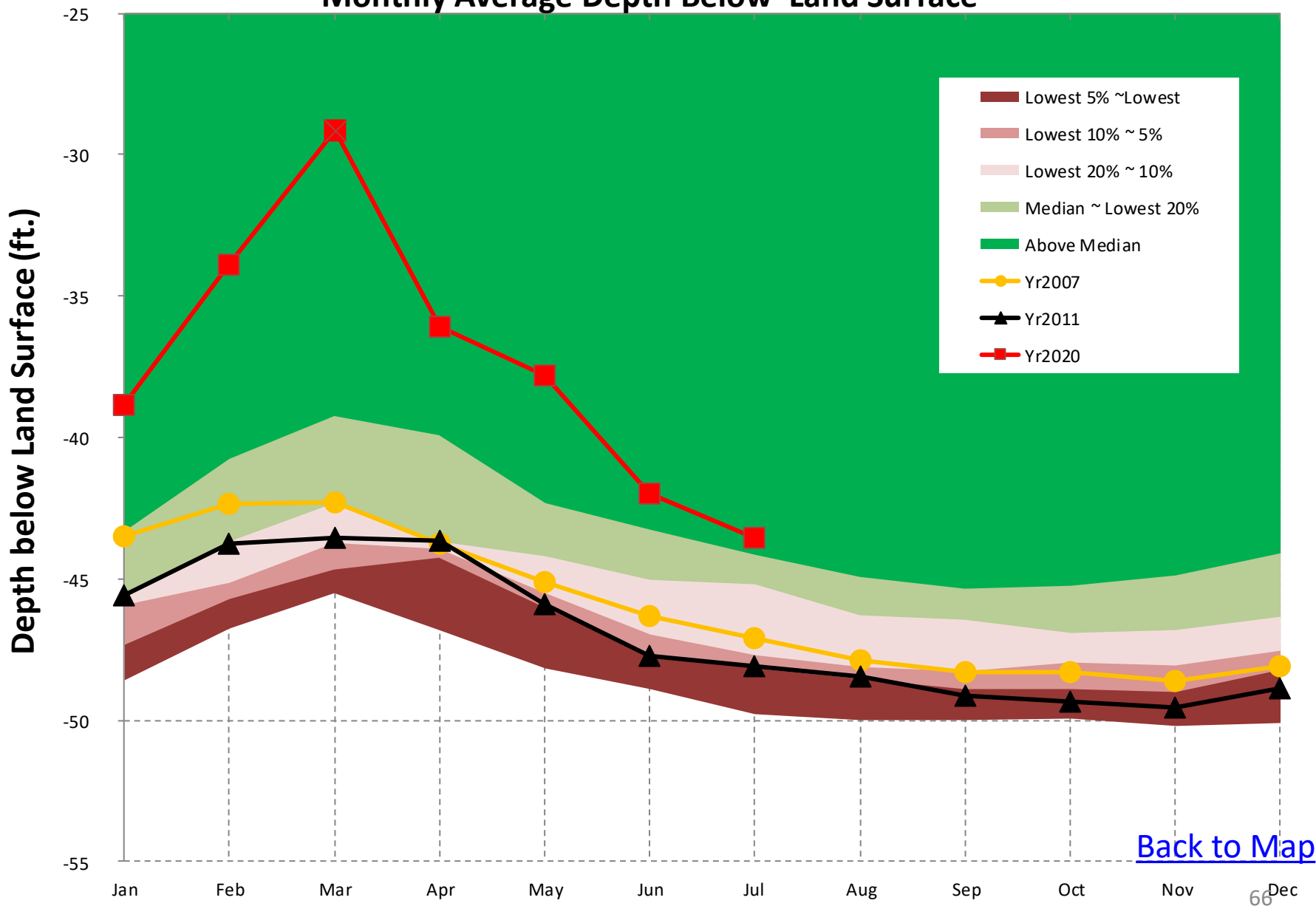


## Well #6, 11K003, Floridan Aquifer in Flint Basin, Monthly Average Depth Below Land Surface



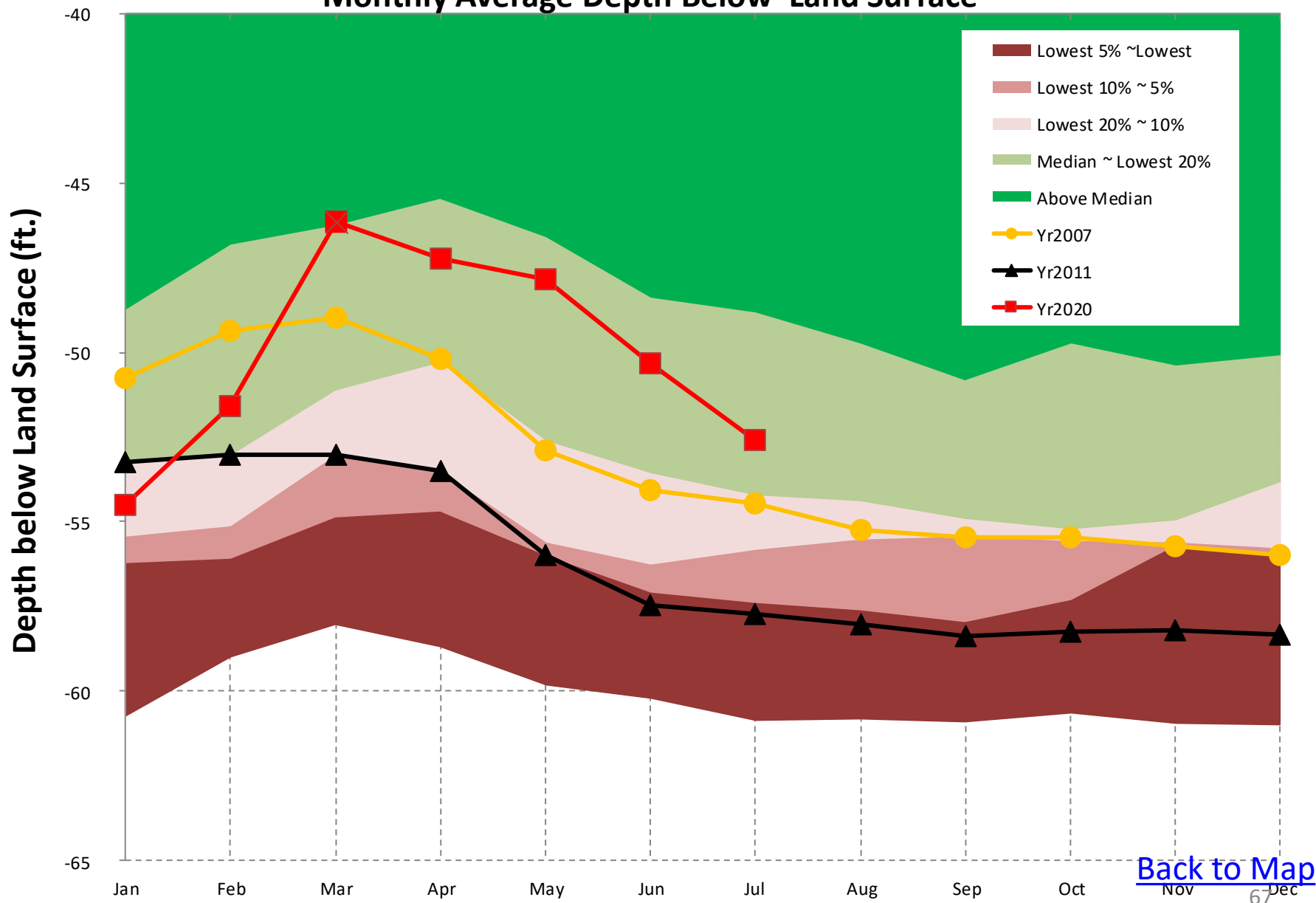
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# Well #7, 12K014, Floridan Aquifer in Flint Basin, Monthly Average Depth Below Land Surface



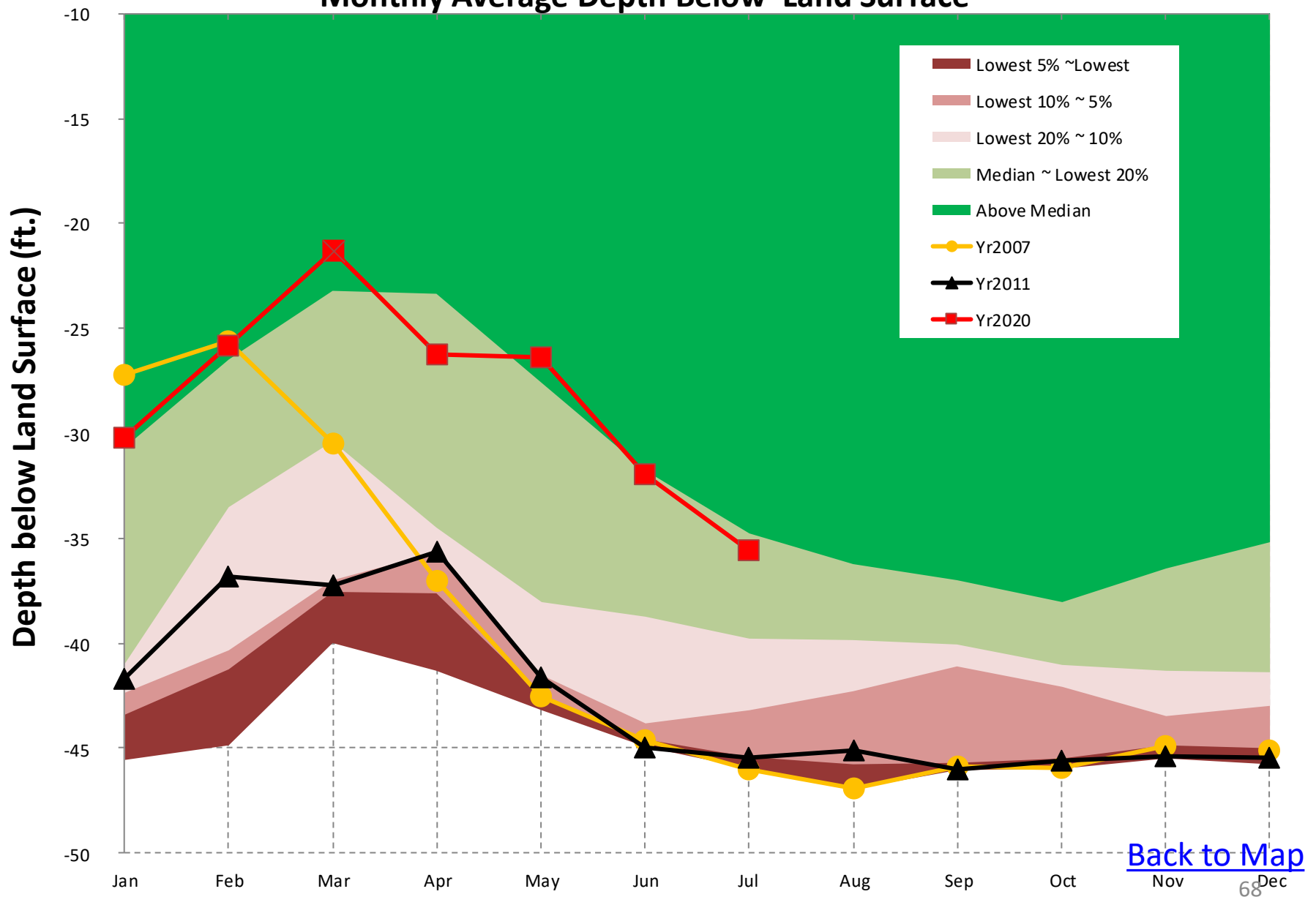
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# Well #8, 13J004, Floridan Aquifer in Flint Basin, Monthly Average Depth Below Land Surface



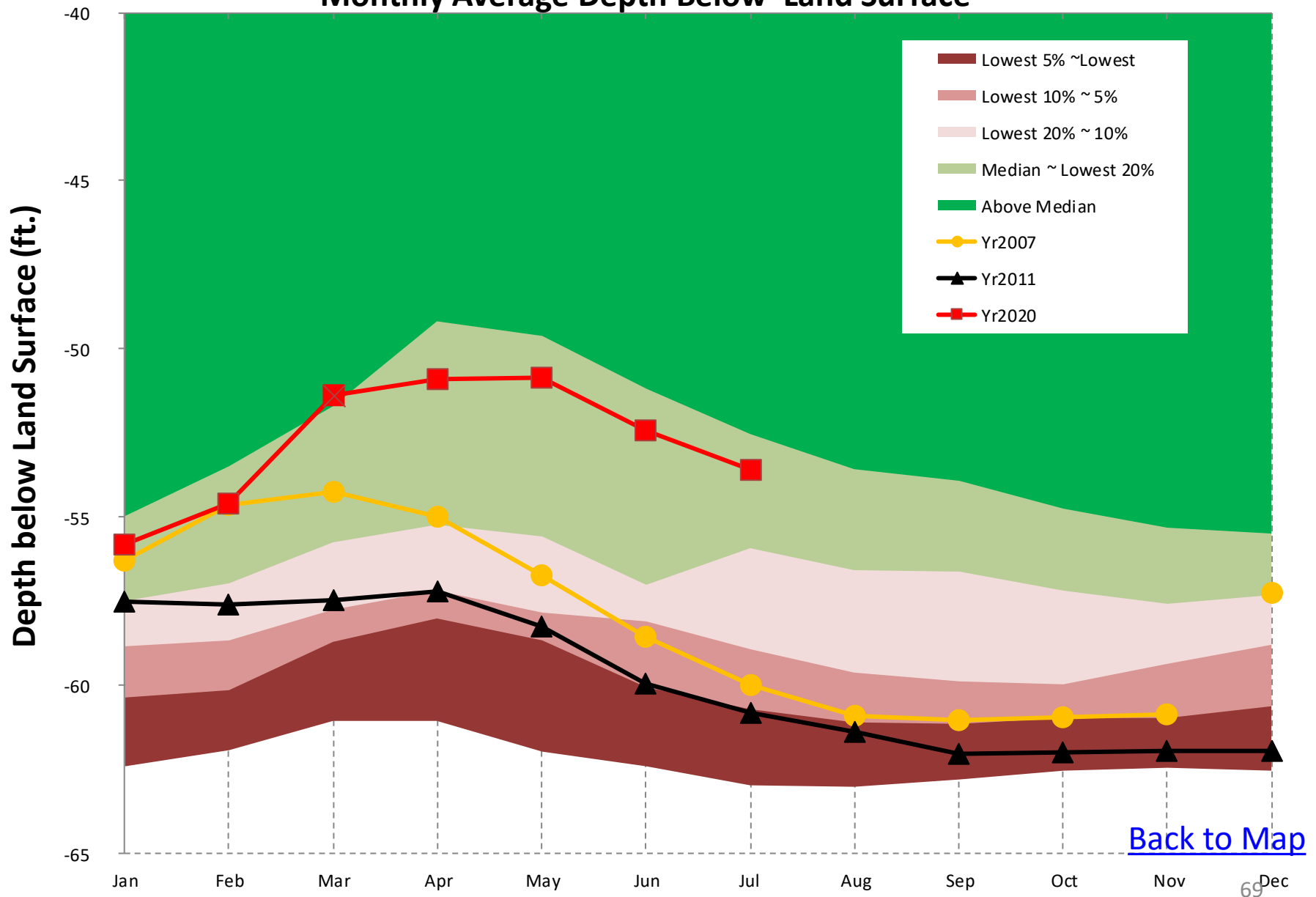
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# Well #9, 08G001, Floridan Aquifer in Flint Basin, Monthly Average Depth Below Land Surface



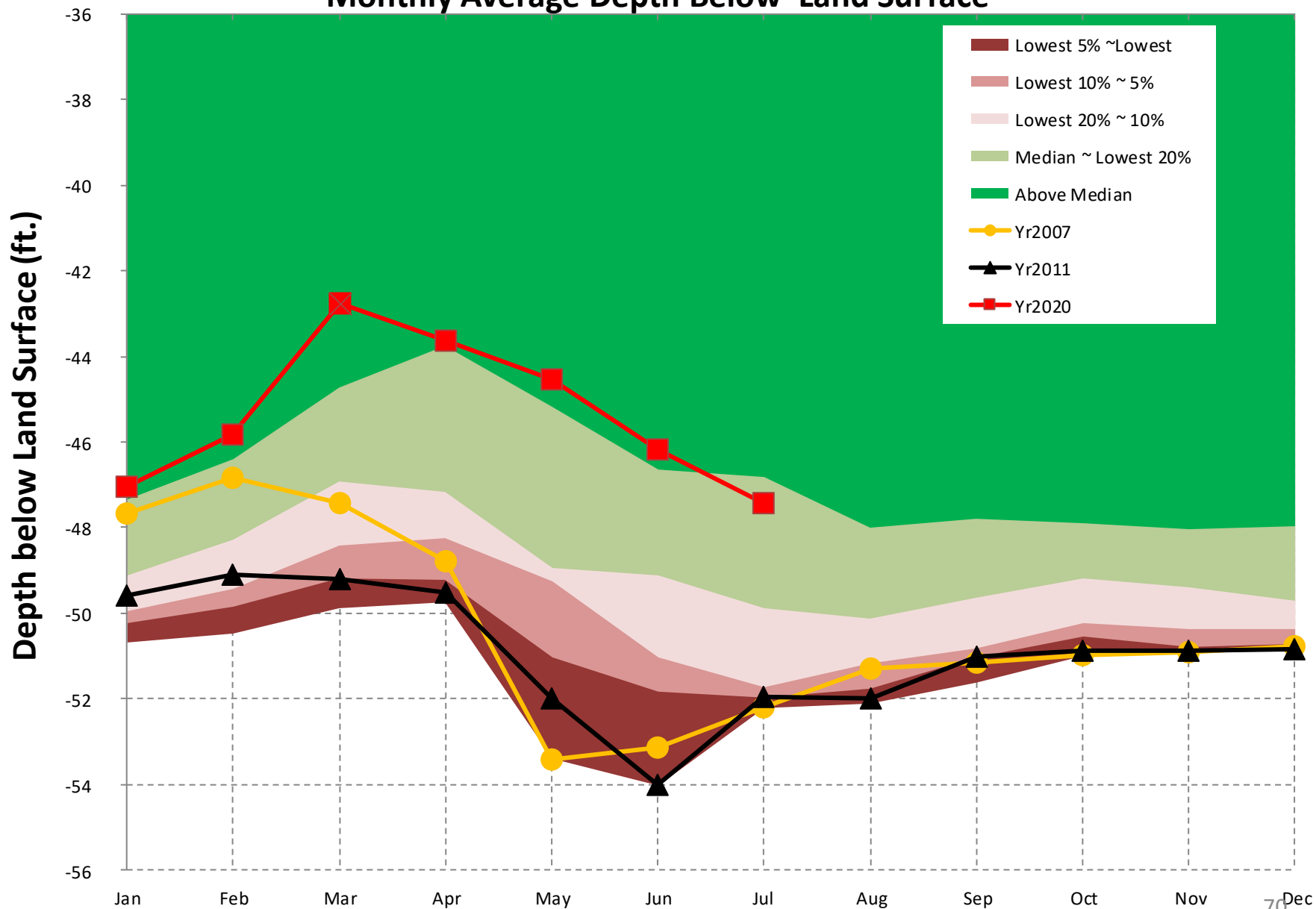
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# Well #10, 10G313, Floridan Aquifer in Flint Basin, Monthly Average Depth Below Land Surface



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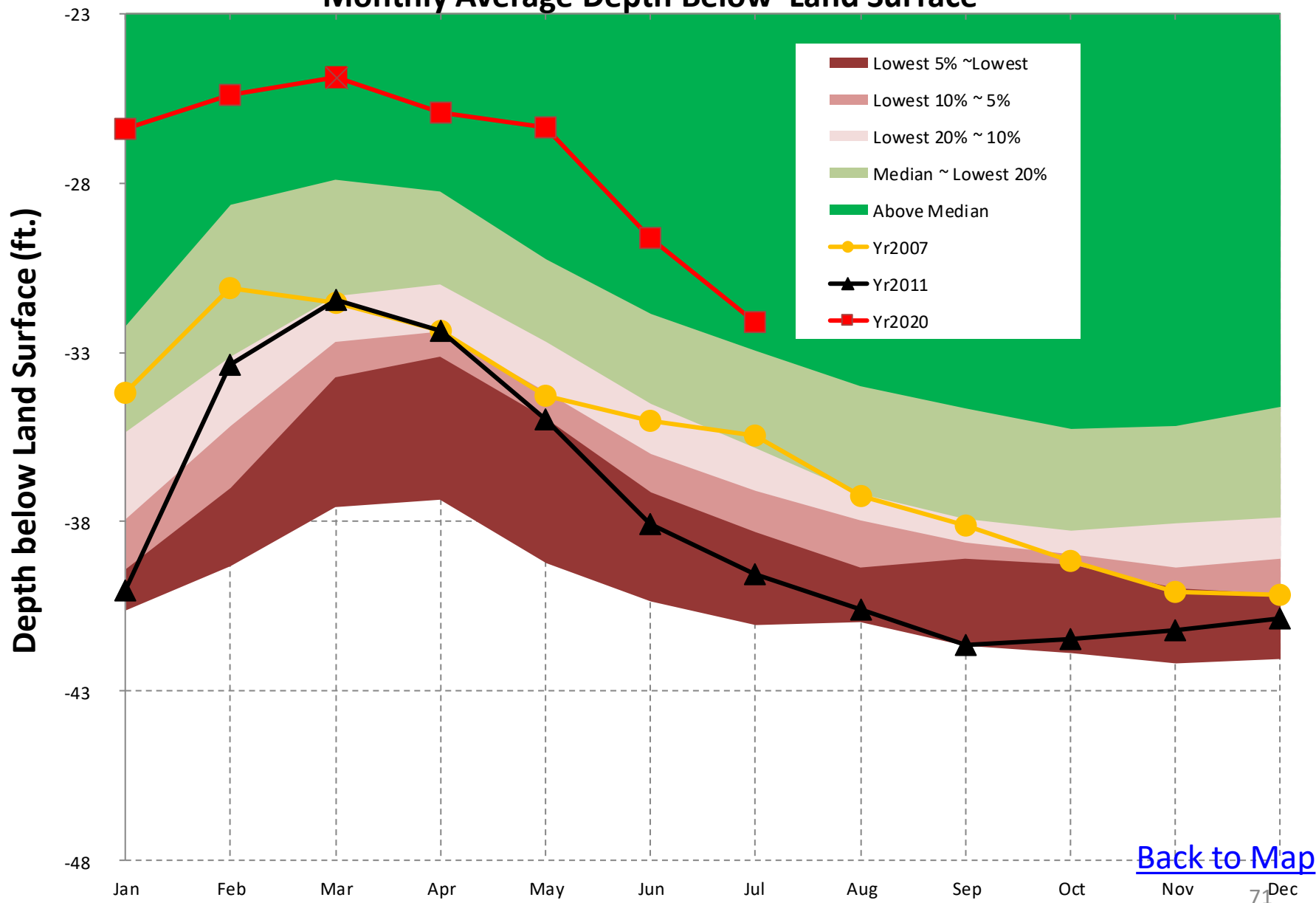
# Well #11, 09F520, Floridan Aquifer in Flint Basin, Monthly Average Depth Below Land Surface



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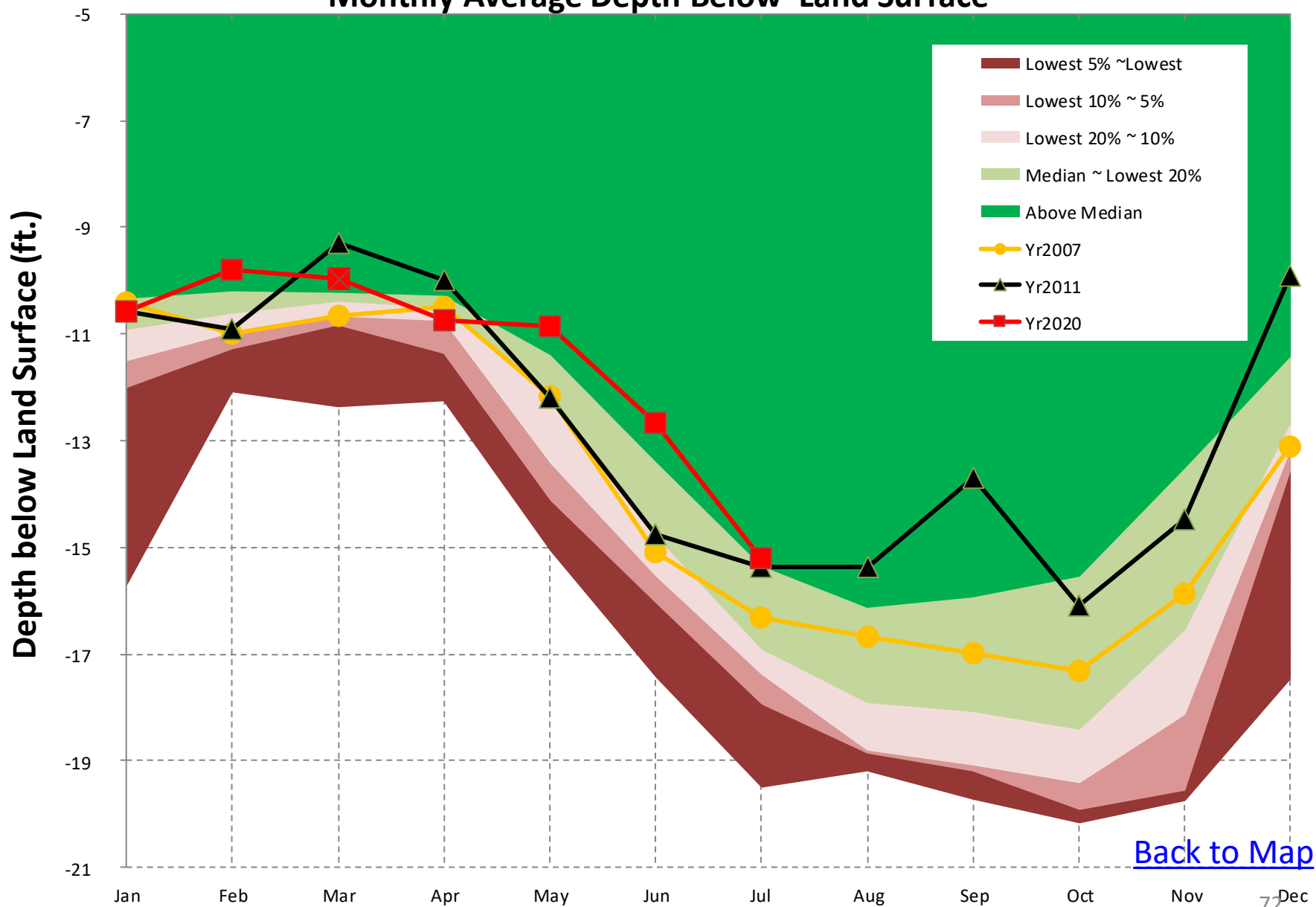
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# Well #12, 21T001, Floridan Aquifer in Ocone Basin, Monthly Average Depth Below Land Surface



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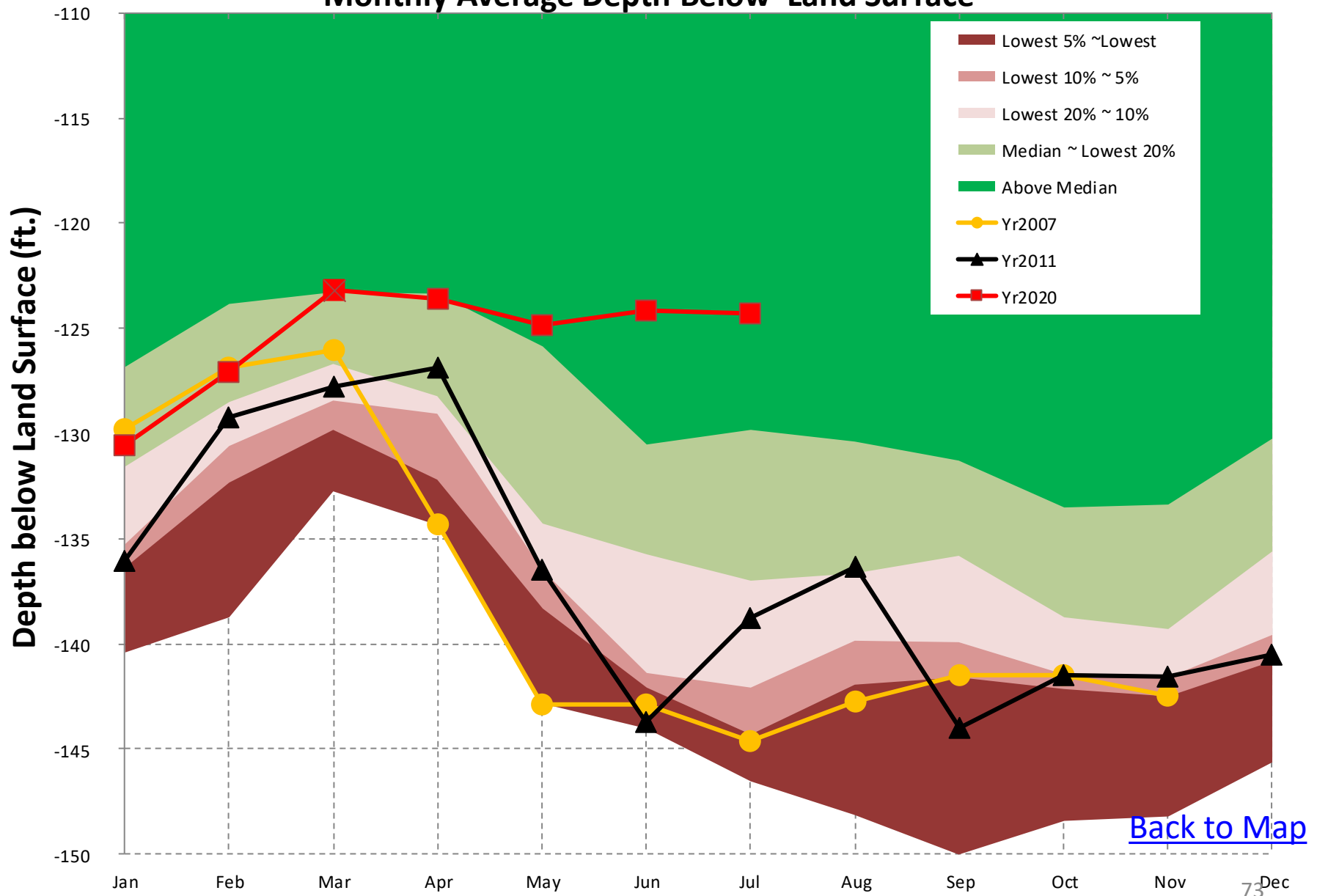
# Well #13, 03PP01, Valley and Ridge Aquifer in Tennessee Basin, Monthly Average Depth Below Land Surface



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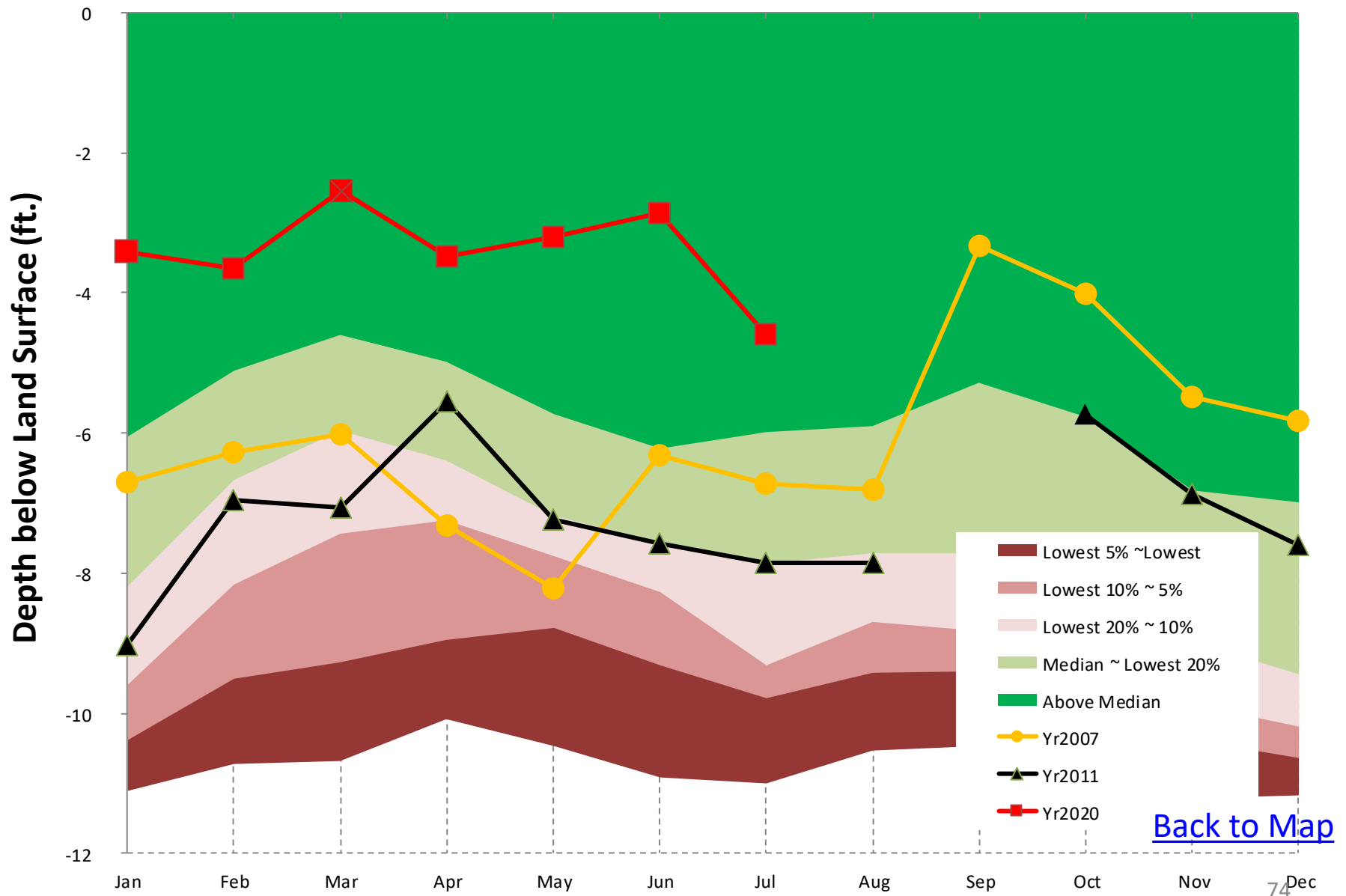


# Well #14, 19E009, Floridan Aquifer in Suwannee Basin, Monthly Average Depth Below Land Surface

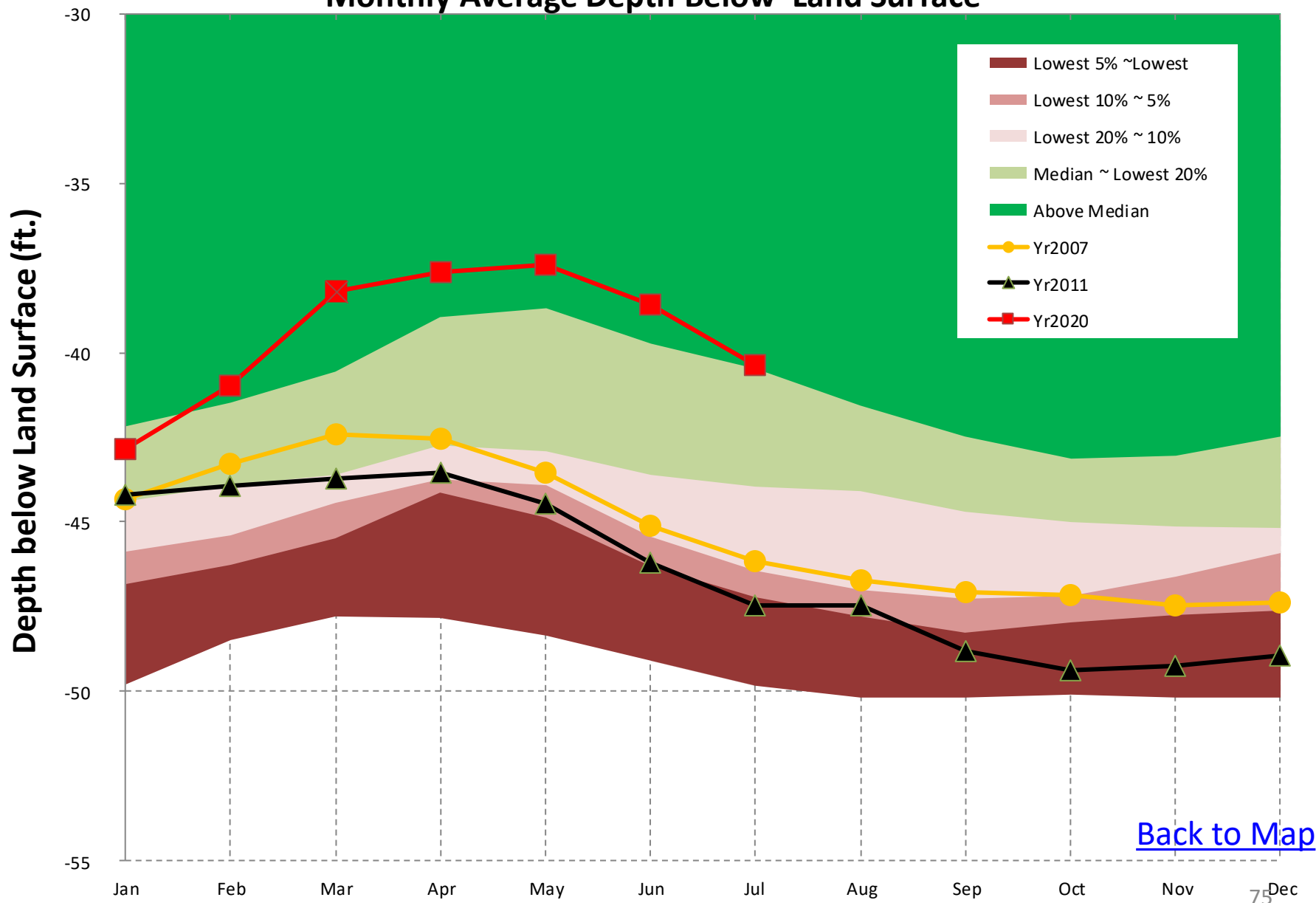


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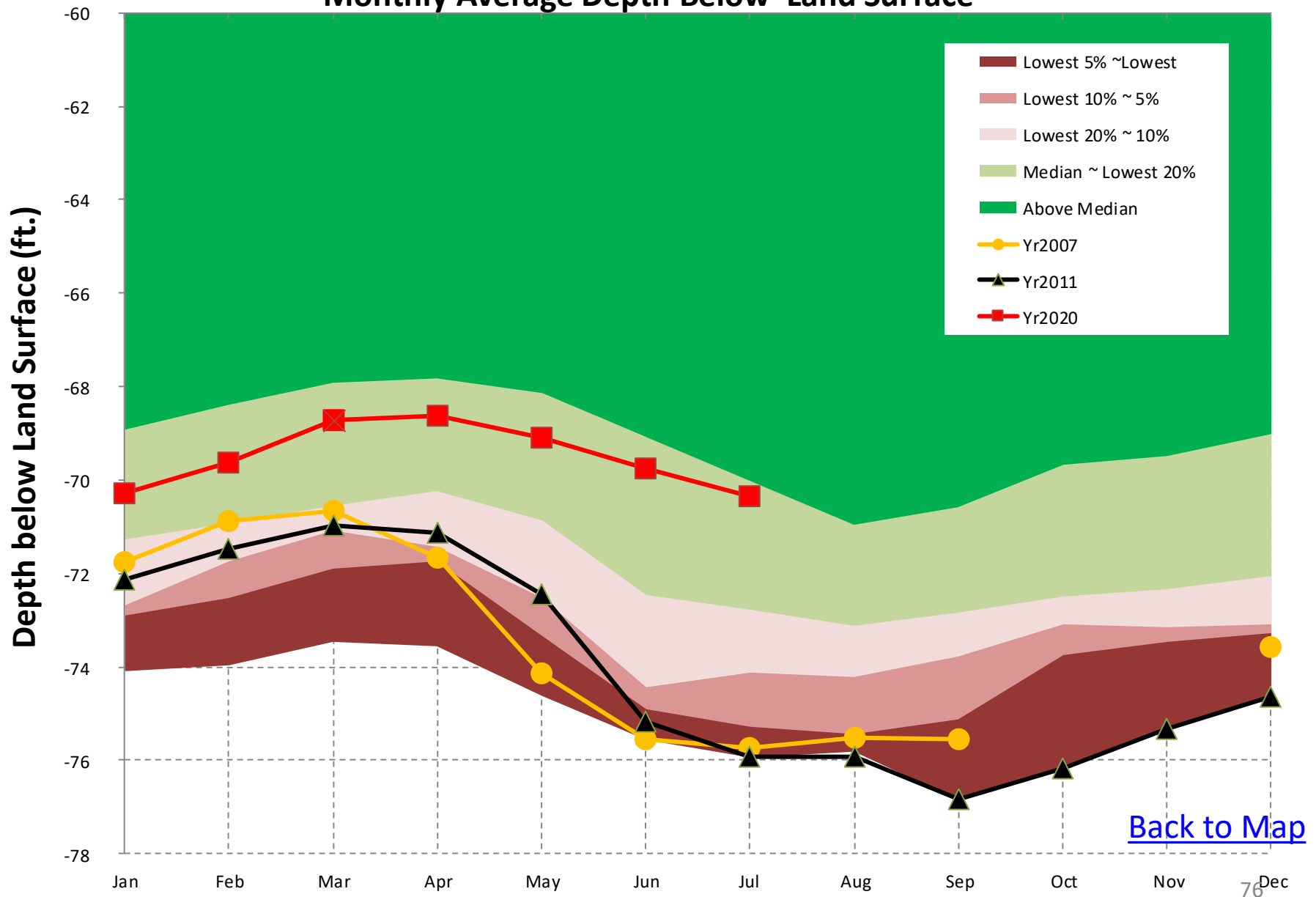
# Well #15, 35P094, Surficial Aquifer in Ogeechee Basin, Monthly Average Depth Below Land Surface



# Well #16, 11J011, Claiborne Aquifer in Flint Basin, Monthly Average Depth Below Land Surface



# Well #17, 27E004, Floridan Aquifer in Suwannee Basin, Monthly Average Depth Below Land Surface



# Reservoir Levels

Data Source:  
US Army Corps of Engineers

### Coosa Basin

1. Carters
2. Allatoona

### Chattahoochee Basin

3. Lanier
4. West Point
5. W.F. George

### Savannah Basin

6. Hartwell
7. Thurmond

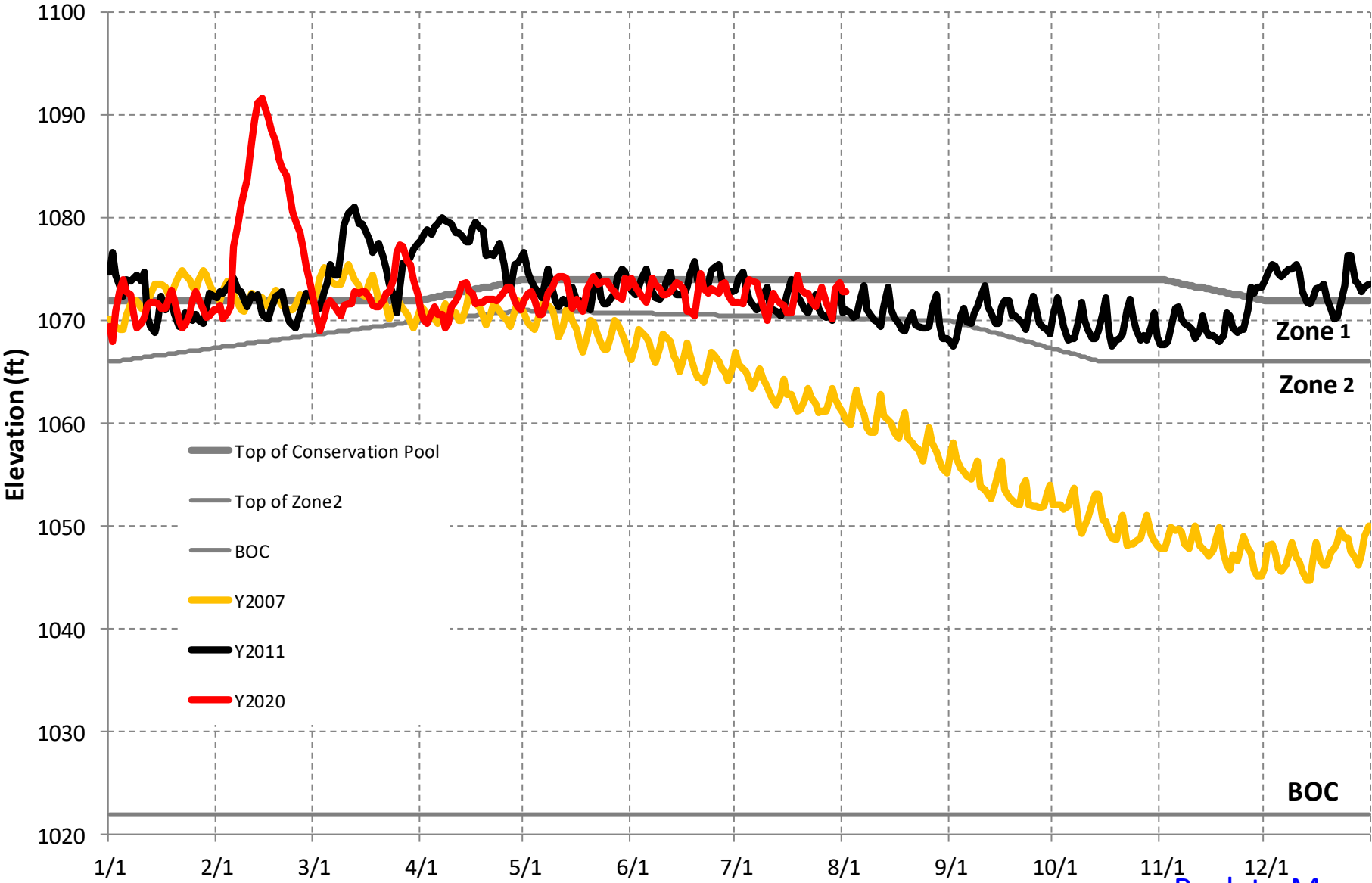


EPD monitors the water levels of seven reservoirs to assess drought conditions.

# Reservoir Elevation Graphs

- The following graphs show the reservoir elevation curves for January 2020 through July 2020.
- Each graph also shows the Action Zone Divides (or Levels) for each reservoir
  - Zone 1 is the top layer of the conservation pool
  - Zone 2 is the layer below Zone 1
  - Zone 4 is the lowest layer in the conservation pool
  - There is no conservation storage below the bottom of Zone 4
- To put 2020 reservoir elevations into perspective, elevations for 2007 and 2011 are also shown.

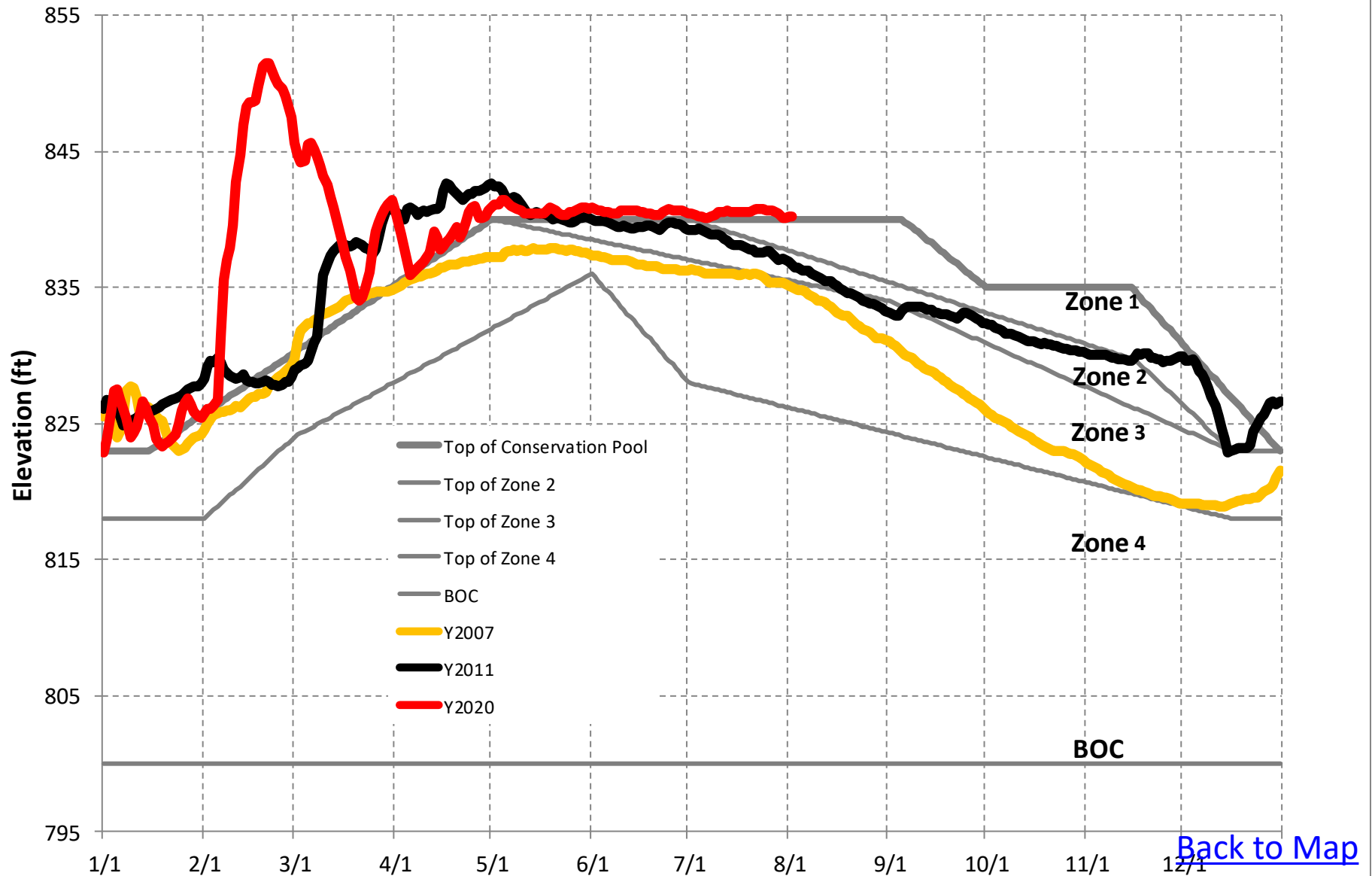
# CARTERS ELEVATION



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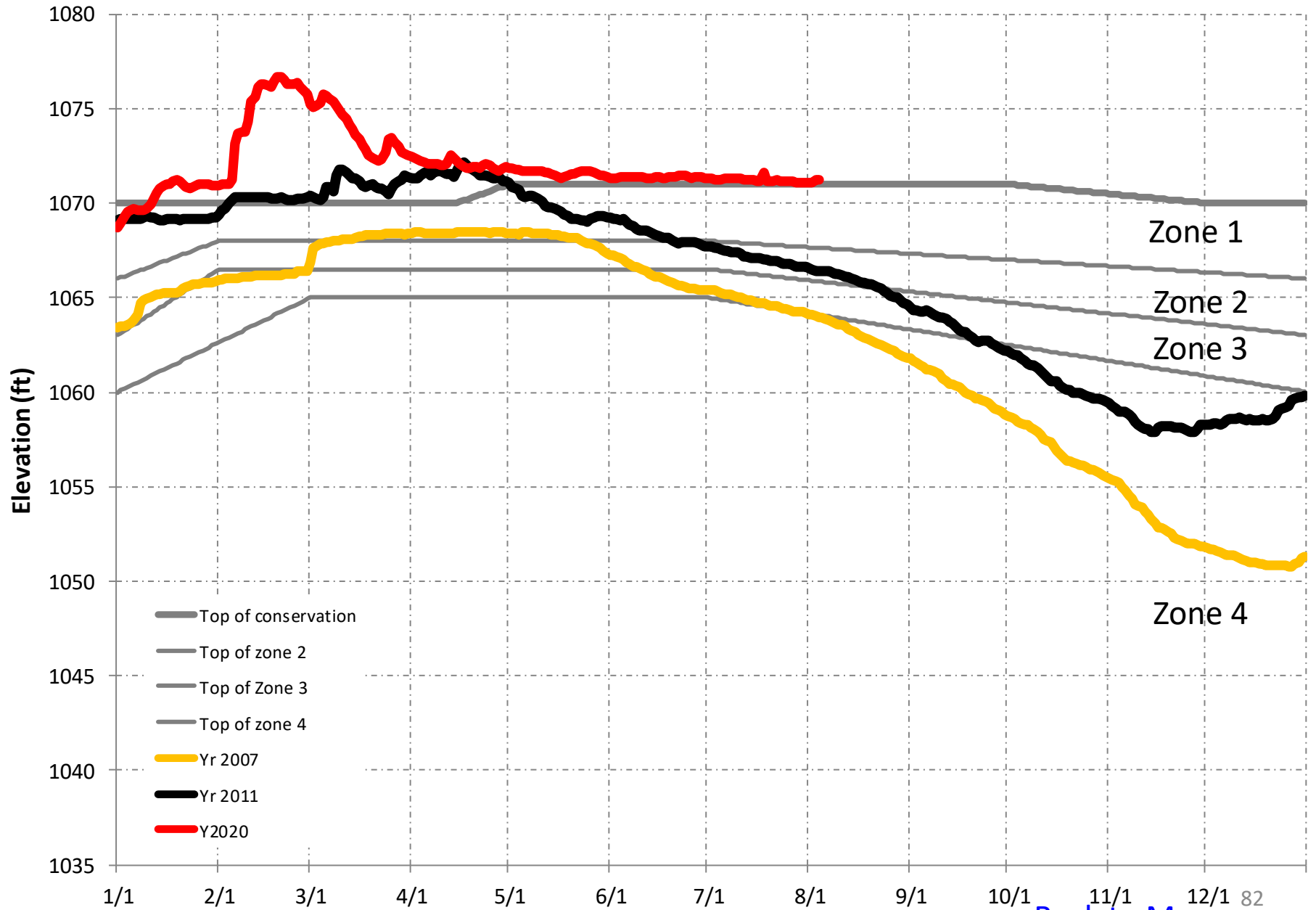


# ALLATOONA ELEVATION



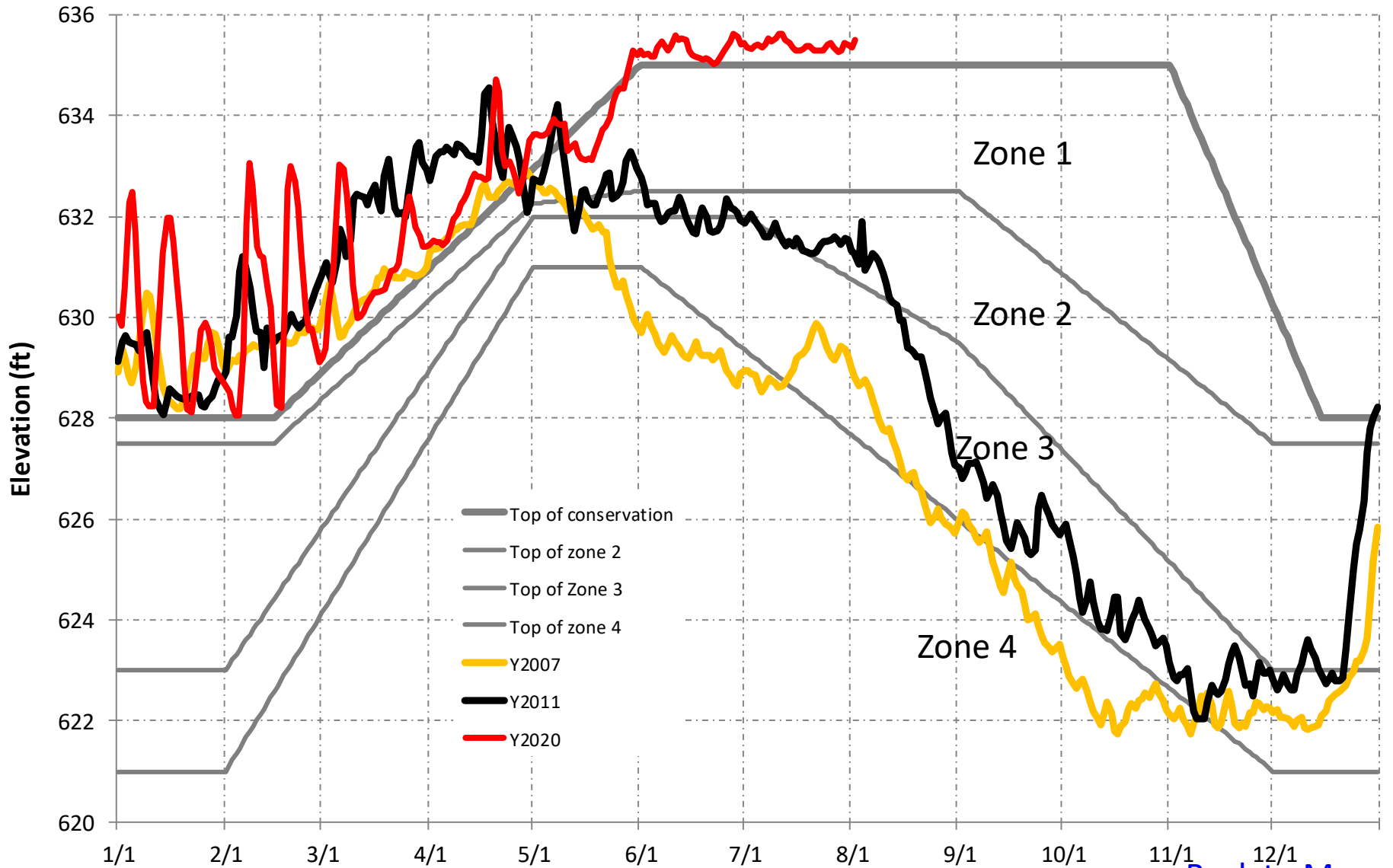
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# LAKE LANIER ELEVATION



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# WEST POINT ELEVATION



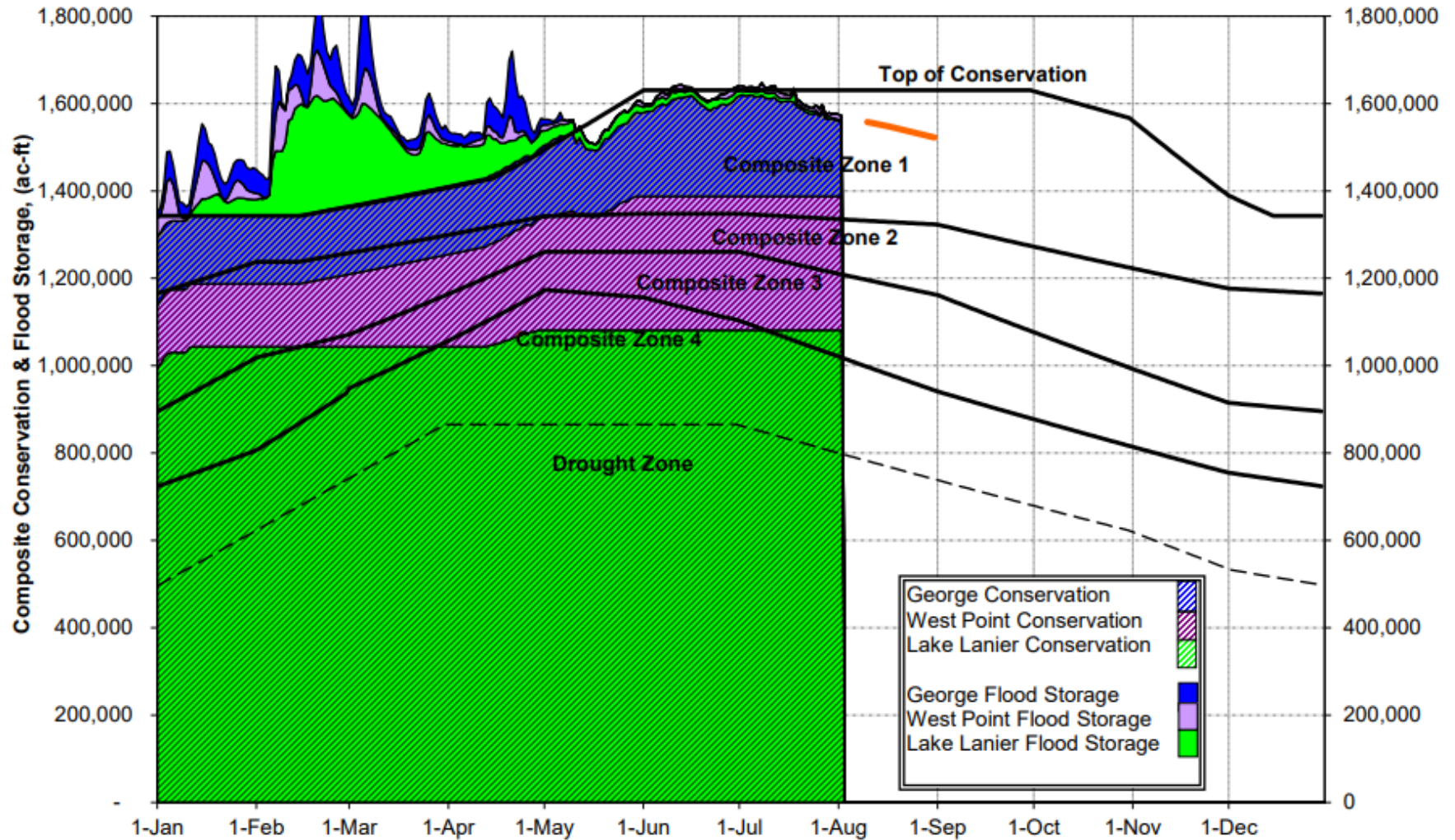
[Back to Map](#)

# W.F.GEORGE ELEVATION



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## 2020 ACF Basin Composite Conservation and Flood Storage

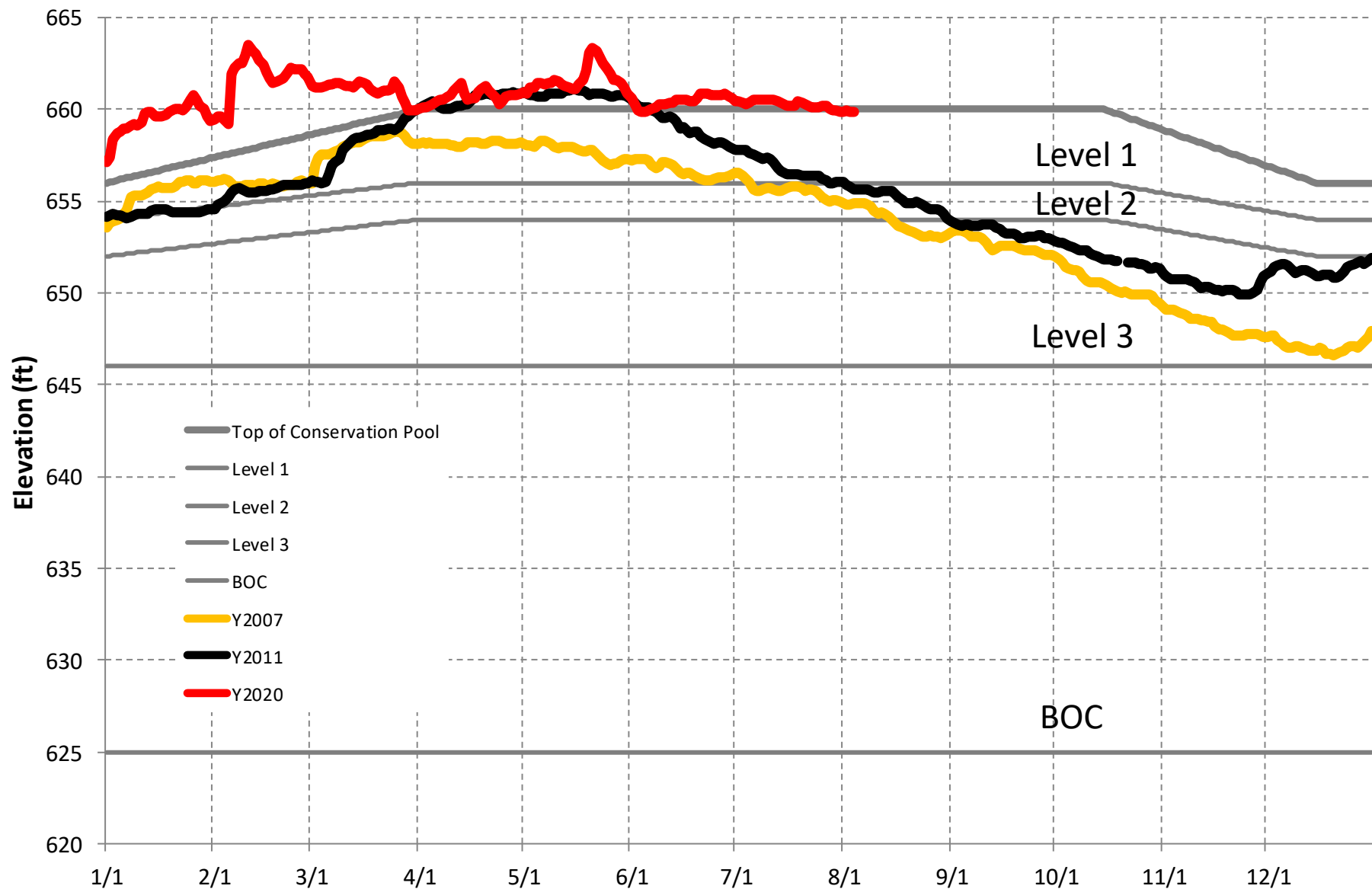


Actual data thru 8-3-2020

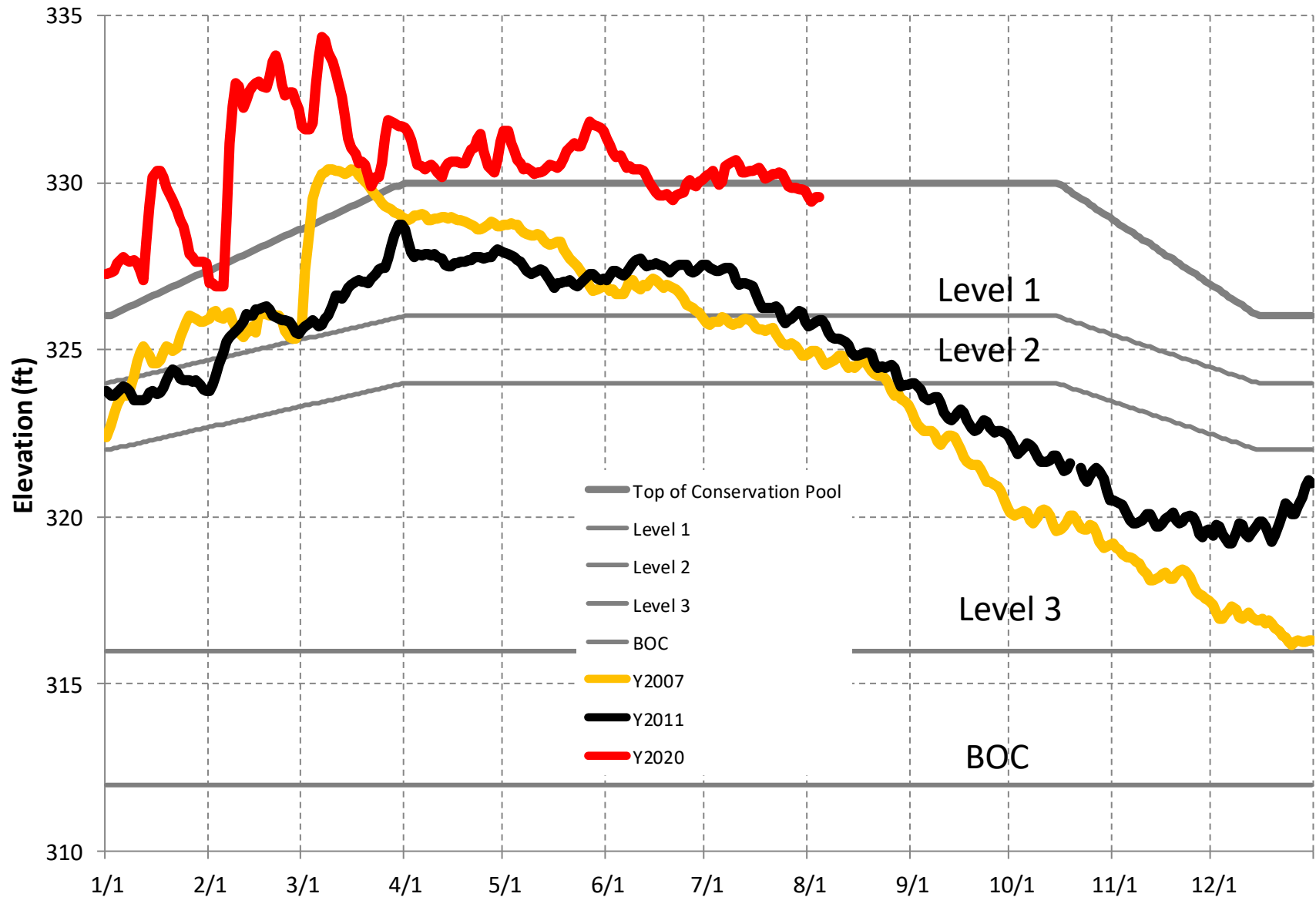
Add value of 1,856,000 acre-ft to include inactive storage.

Compiled by USACE.

# LAKE HARTWELL ELEVATION



## LAKE CLARKS HILL (THURMOND) ELEVATION



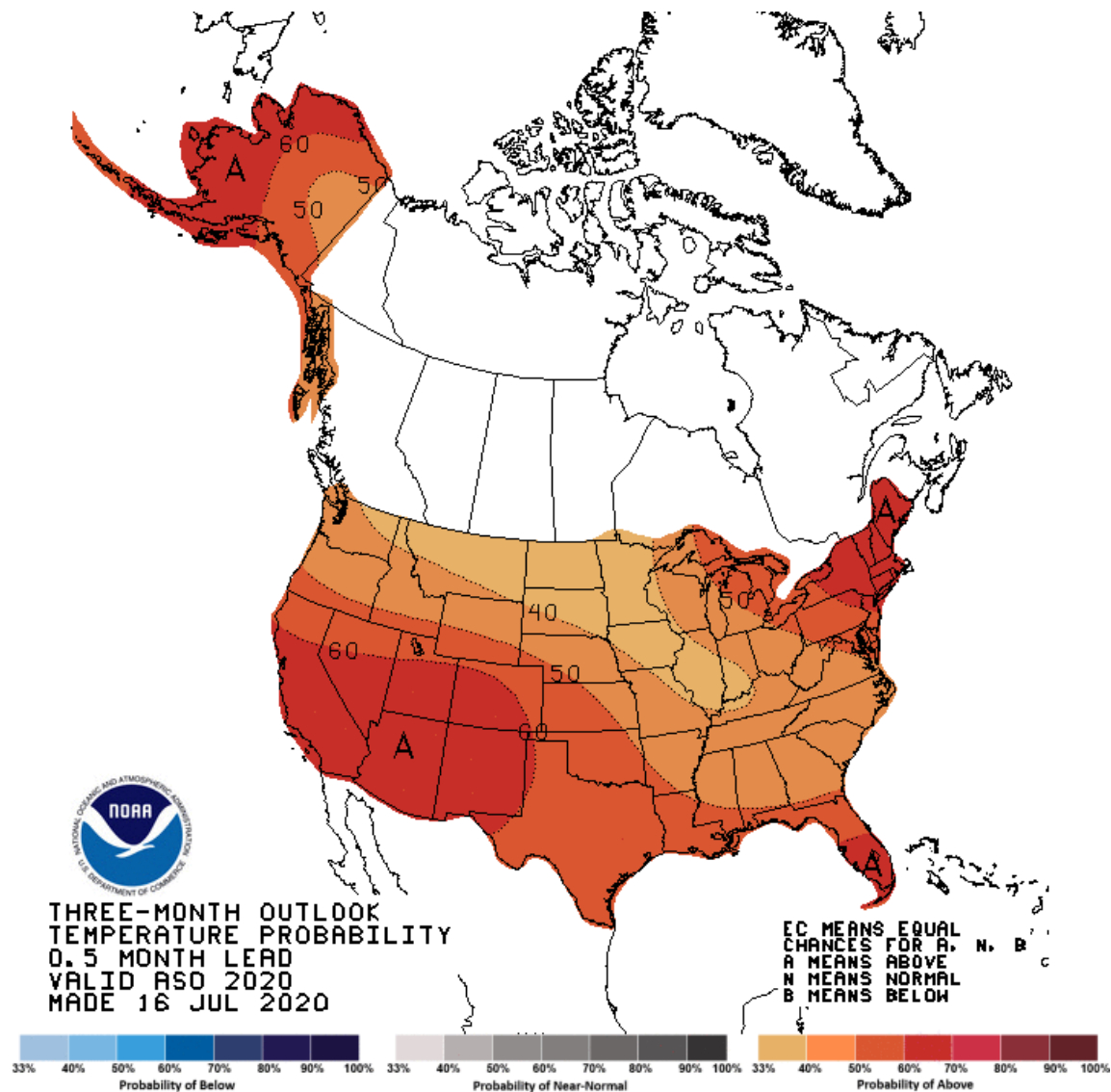
# Climate Prediction Center 3-month Temperature and Precipitation Probability Outlook and Seasonal Drought Outlook

Data Source:

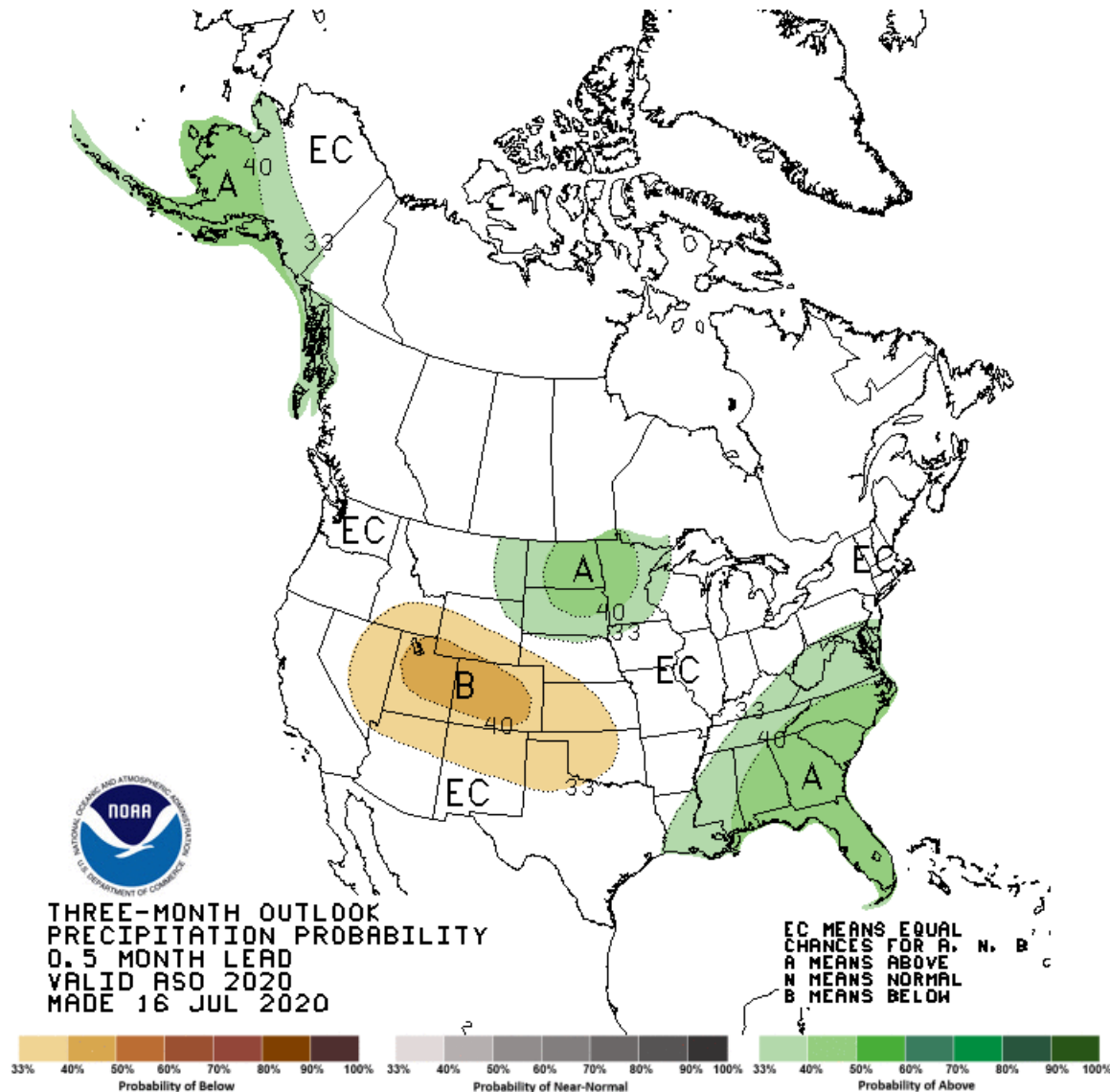
<http://www.cpc.ncep.noaa.gov/>



# Temperature Outlook



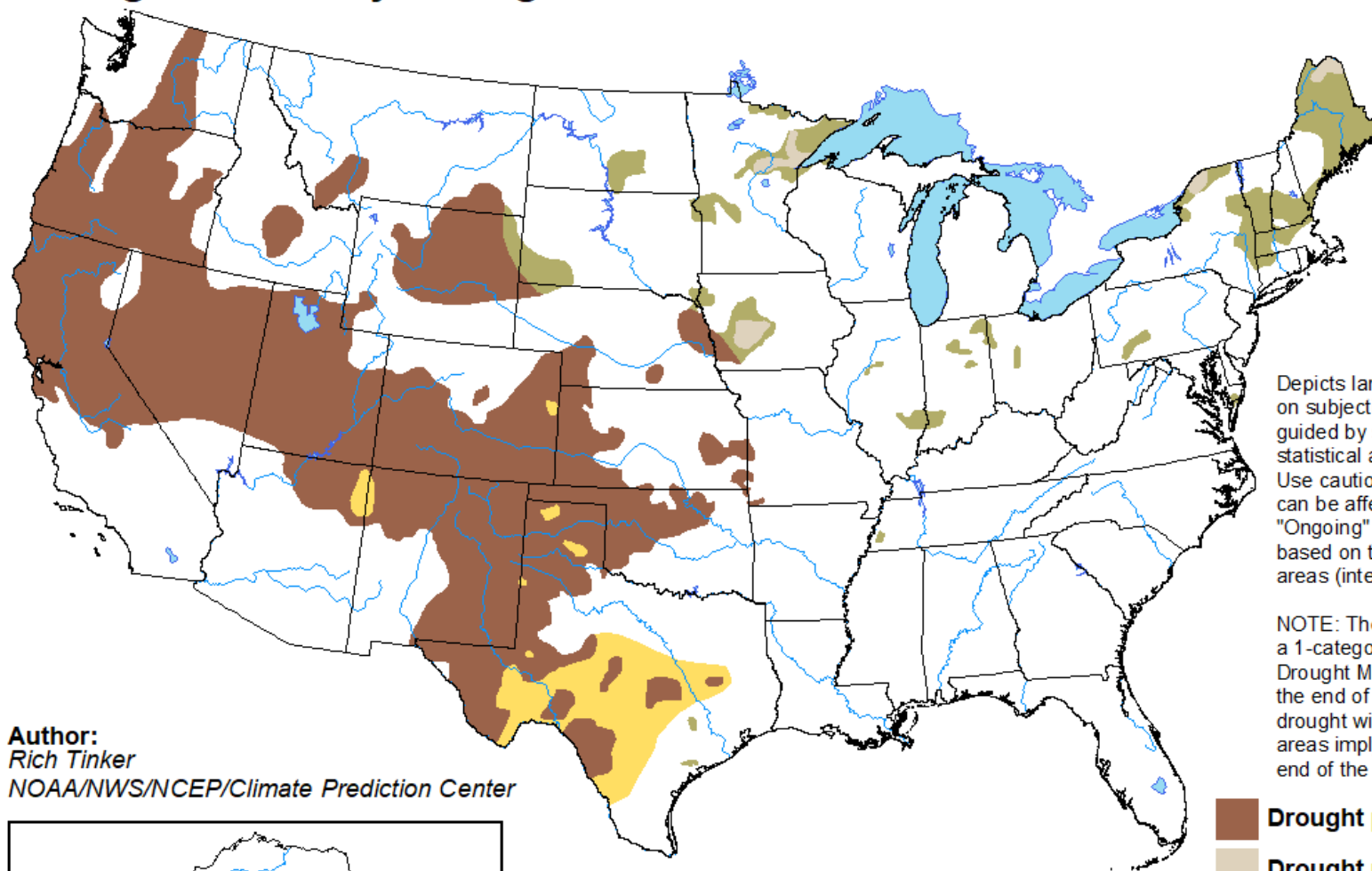
# Precipitation Outlook



# U.S. Seasonal Drought Outlook

## Drought Tendency During the Valid Period

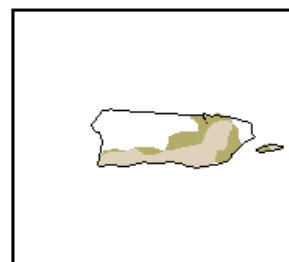
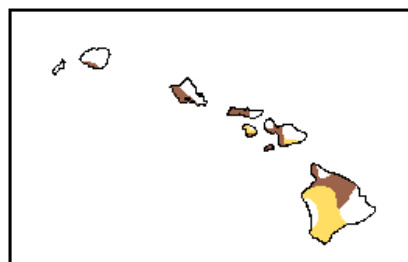
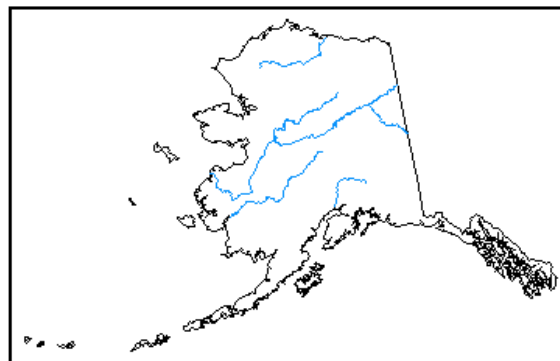
Valid for July 16 - October 31, 2020  
Released July 16







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:**  
Rich Tinker  
NOAA/NWS/NCEP/Climate Prediction Center



-  Drought persists
-  Drought remains but improves
-  Drought removal likely
-  Drought development likely



<http://go.usa.gov/3eZ73>