Drought Indicators Report

Georgia Environmental Protection Division

October 2019

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 September 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 October 3, 2019.

Drought Indicator Analysis Summary (slide 1 of 2)

- **U.S. Drought Monitor** – Drought has progressed to different levels statewide. Extreme Drought (D3) exists in part or entirety of Bartow, Pickens, Cherokee, Forsyth, Hall, Coweta, Fulton, Fayette, Clayton, Wilkinson counties and their surrounding areas. Severe Drought (D2) exists in the vicinity of D3 areas and isolated areas in central and southeastern GA. Moderate Drought (D1) exists in the periphery of D2 and D3 areas. Abnormally dry (D0, the least intense level) covers the rest of the state.
- **Precipitation -** Three-month precipitation is below normal statewide with 25% to 50% of normal precipitation in south metro and surrounding area. Six-month precipitation is below normal statewide with some isolated area being slightly above normal. Twelve-month precipitation is normal or above normal in northwest half of the state and below normal in southeast half of the state.
- **Soil Moisture** – Soil moisture conditions show different levels of dryness statewide. Some extreme dryness (2^{th} - 5^{th} percentiles) exists in upper Chattahoochee basin, mid Flint-Ocmulgee basin, and a large area in southeast GA. Some severe dryness (5^{th} - 10^{th} percentiles) exists in the vicinity of the extreme dry area. Less severe dryness (10^{th} - 30^{th} percentiles) exists in the rest of the state.

Drought Indicator Analysis Summary (slide 2 of 2)

- **Streamflow** – Stream flows observed at all selected USGS gages have been below normal. Most of gage flows are between driest 10th and 20th percentiles. Four gages flows are between driest 5th and 10th percentiles (each in mid Flint, mid Oconee, lower Savannah and Satilla basins). Six gages flows are below driest 5th percentile (one in Tennessee, one in middle Flint, two in upper Ocmulgee, one in lower Oconee, and one in lower Suwanee basins).
- **Groundwater Level** – One third of the groundwater levels observed at selected wells are above normal and the other two thirds are below normal, with three being below driest 20th percentiles (one in Crystalline Rock Aquifer in Chattahoochee basin, two in Floridan Aquifer in Flint and Oconee basins), and rest being between lowest 20th percentile and median.
- **Reservoir Levels** – In September 2019, all federal reservoir levels in Georgia (ACF, ACT, and Savannah River Basins) are below their respective top of conservation (normal) pools but above the Zone 1, except Lake Hartwell being near the bottom of its Level 1, Lake Allatoona and Lake Clark Hill being below their respective Zone1\Level 1 since the late September 2019.
- **Short-term Climate Prediction** - National Climatic Prediction Center projects above normal temperature statewide and above normal precipitation in southeast half of the state in October – December 2019. U.S. Drought Outlook predicts drought persists in current D3 and D2 areas, and drought development likely in northwest half of the state in October – December 2019.
- **Water Supplies** – EPD has granted a Drought Level 1 Variance to City of Griffin and a Drought Level 2 Variance to Coweta County.

US Drought Monitor

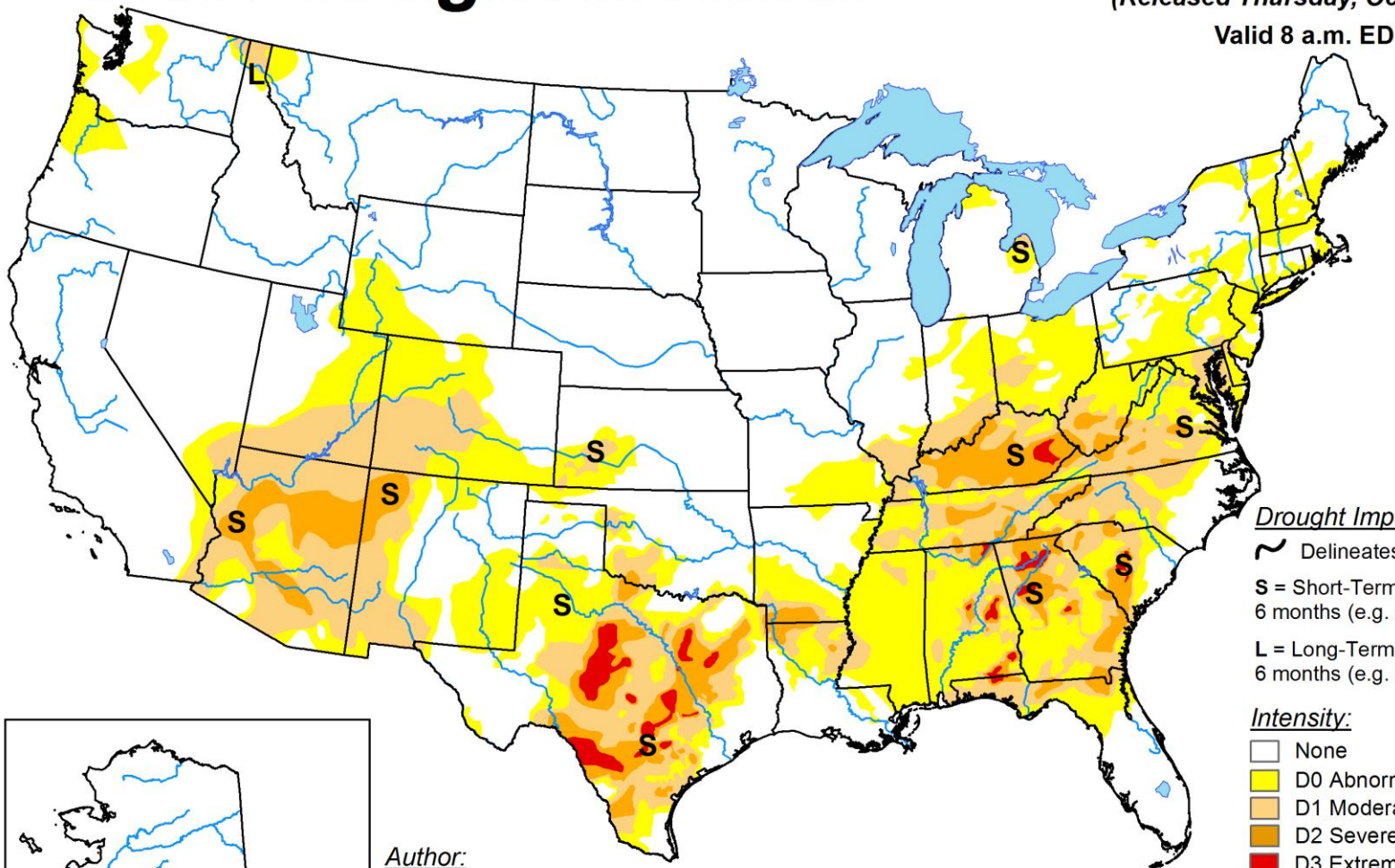
Data Source:
http://droughtmonitor.unl.edu/

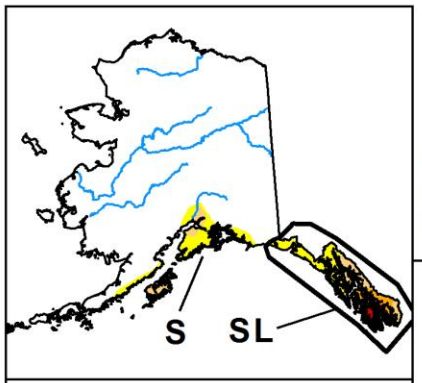
U.S. Drought Monitor

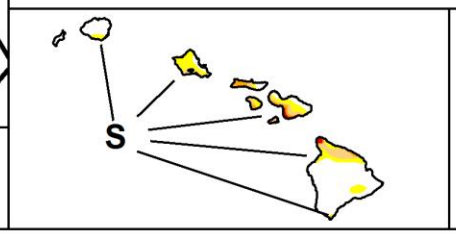
October 1, 2019

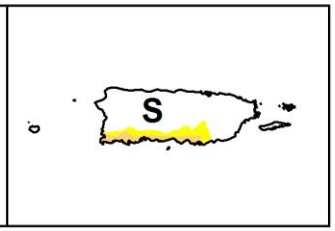
(Released Thursday, Oct. 3, 2019)

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

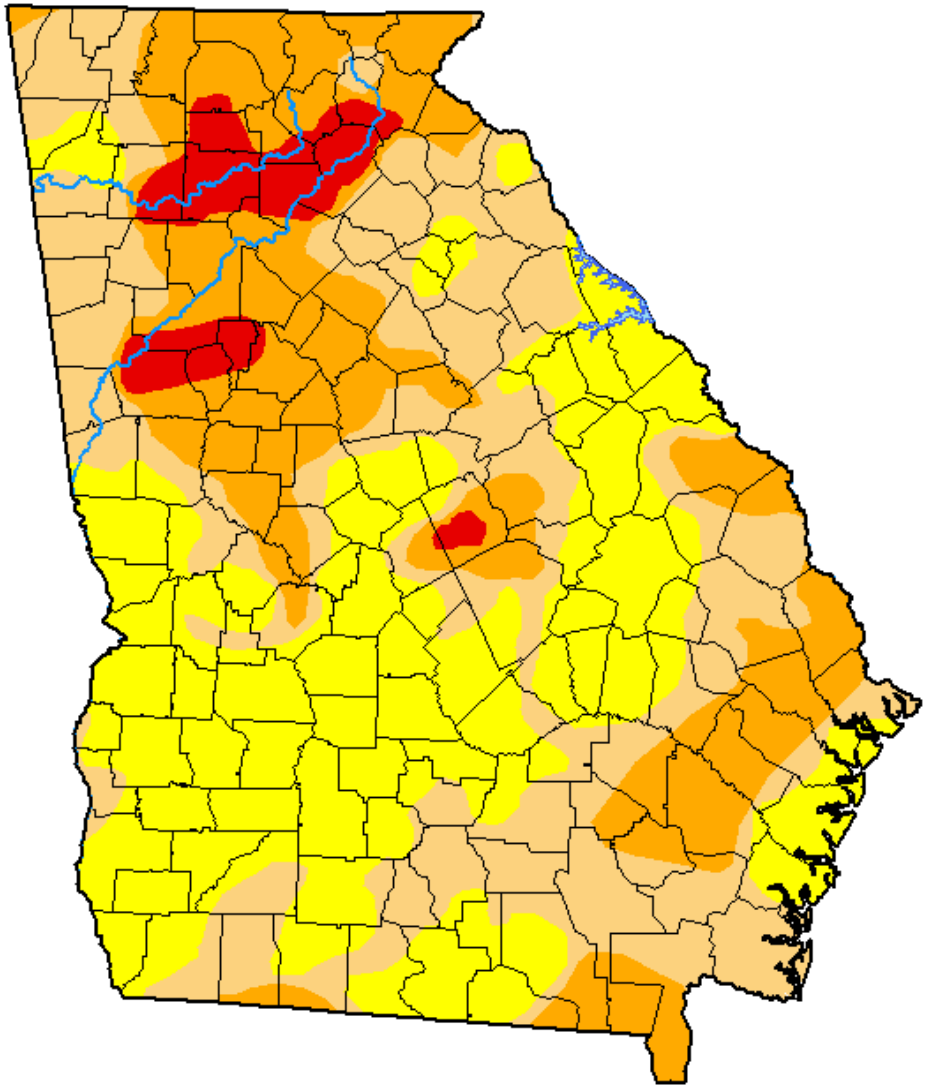
National Drought Mitigation Center

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

USDA NDMC NOAA

droughtmonitor.unl.edu

U.S. Drought Monitor
Georgia



October 1, 2019
(Released Thursday, Oct. 3, 2019)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	61.58	28.35	4.49	0.00
Last Week *09-24-2019*	0.72	99.28	56.20	16.11	0.00	0.00
3 Months Ago *07-02-2019*	63.35	36.65	6.89	0.00	0.00	0.00
Start of Calendar Year *01-01-2019*	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year *10-01-2019*	0.00	100.00	61.58	28.35	4.49	0.00
One Year Ago *10-02-2018*	54.52	45.48	8.27	0.00	0.00	0.00

Intensity:

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

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

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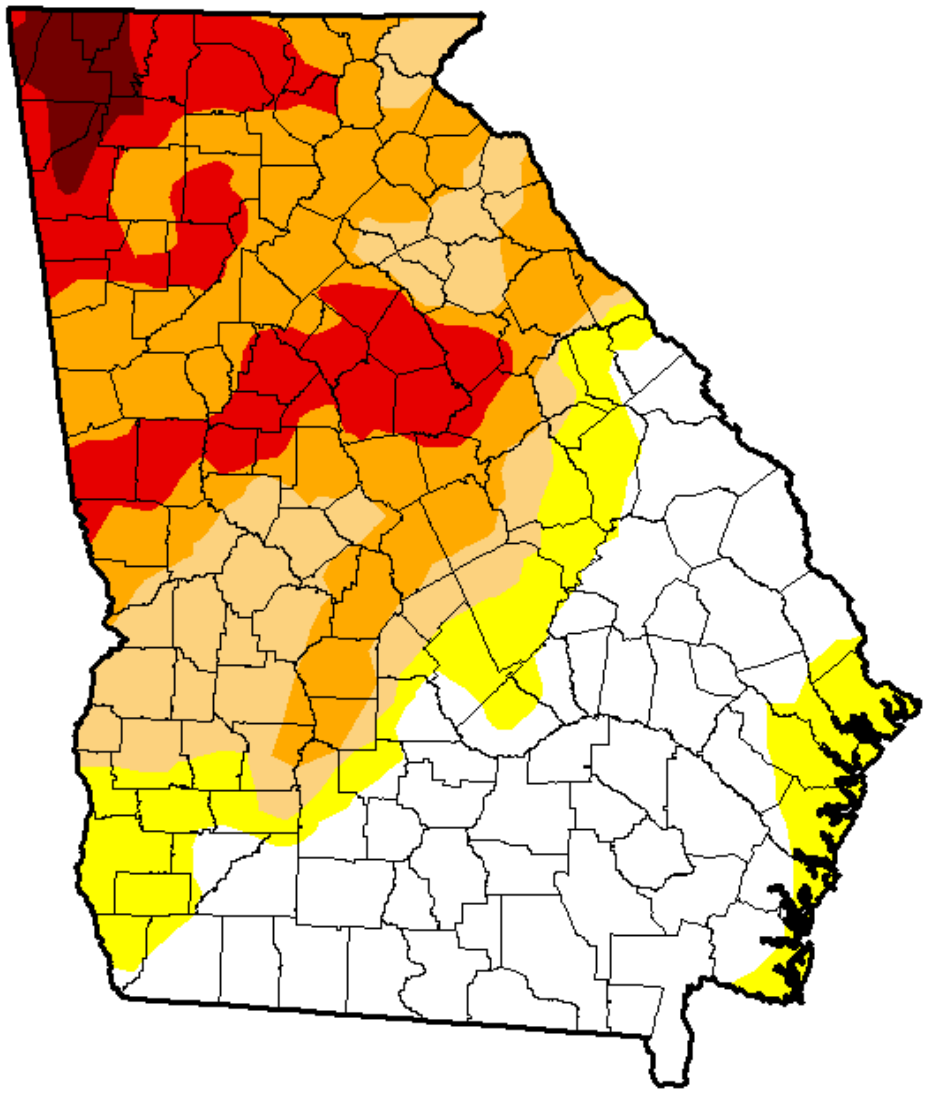
droughtmonitor.unl.edu

U.S. Drought Monitor
Georgia



October 4, 2016

(Released Thursday, Oct. 6, 2016)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	35.32	64.68	51.86	37.46	15.01	2.29
Last Week 9/27/2016	35.37	64.63	45.84	34.50	14.67	1.58
3 Months Ago 7/5/2016	51.69	48.31	33.76	28.12	6.77	0.00
Start of Calendar Year 12/29/2015	87.36	12.64	0.00	0.00	0.00	0.00
Start of Water Year 9/27/2016	35.37	64.63	45.84	34.50	14.67	1.58
One Year Ago 10/6/2015	71.24	28.76	12.93	0.00	0.00	0.00

Intensity:

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

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

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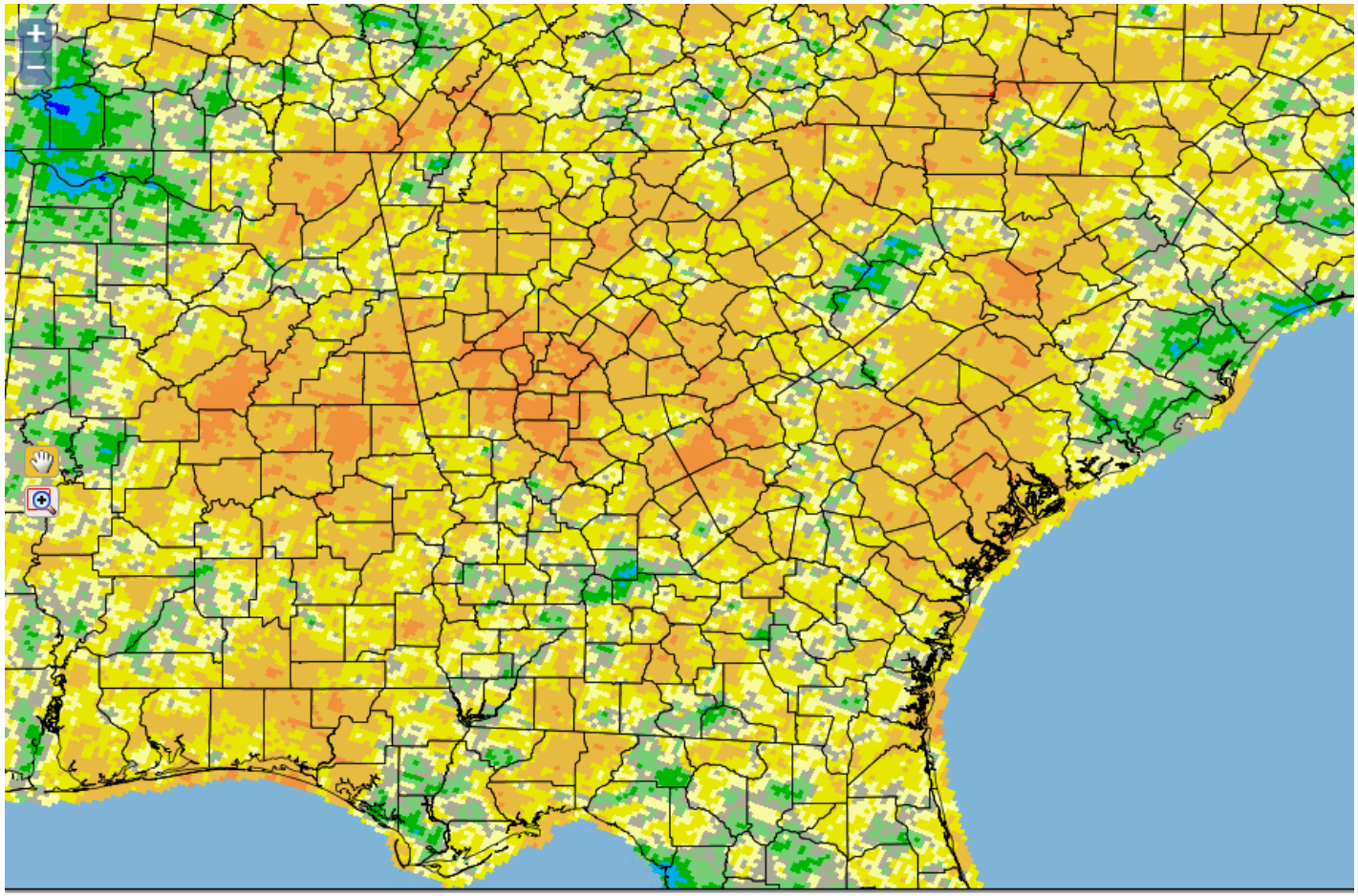
National Drought Mitigation Center

http://droughtmonitor.unl.edu/

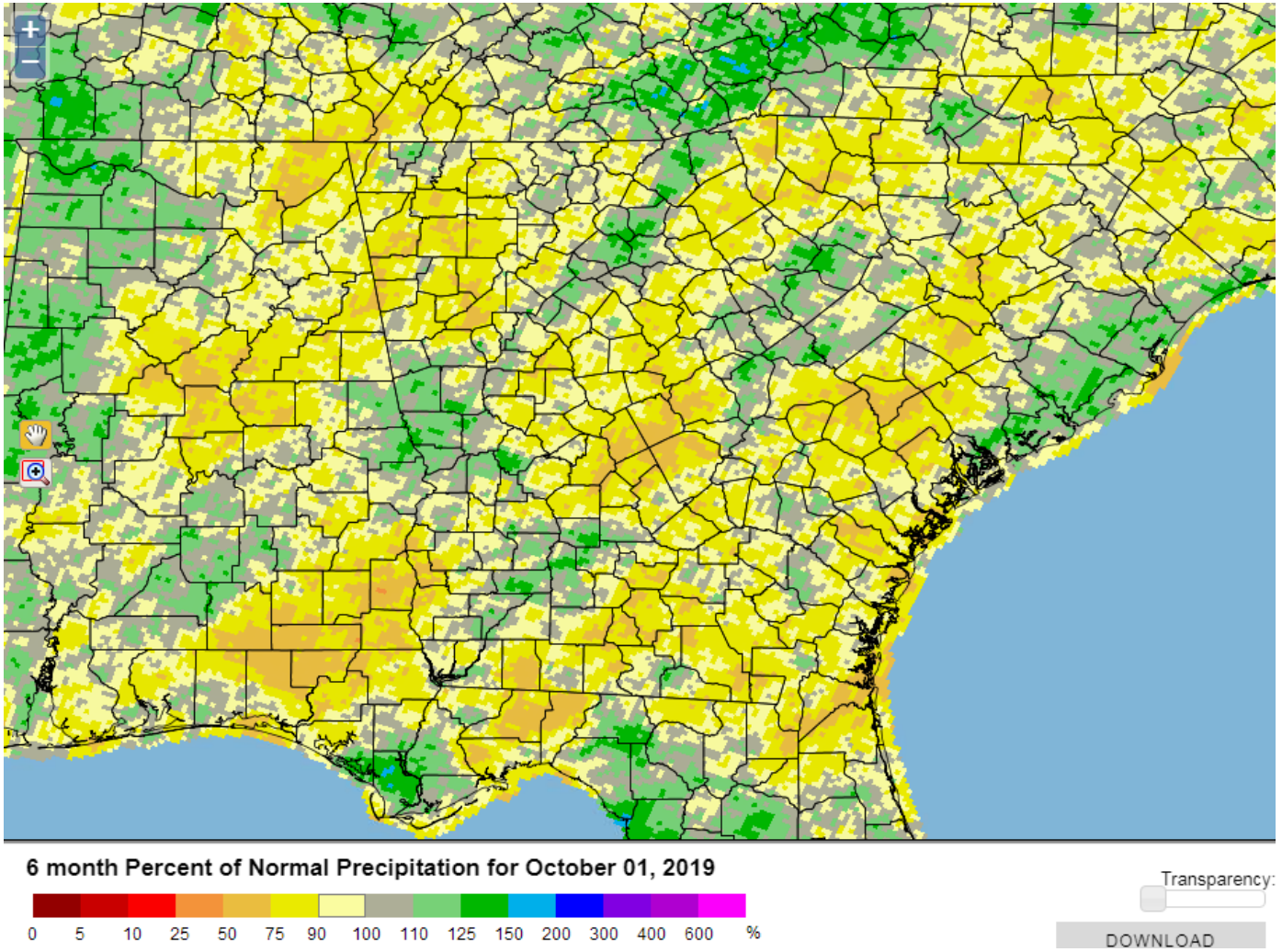
3, 6, and 12 Month
Percent of Normal Precipitation

Data Source:
http://climate.ncsu.edu/drought/map

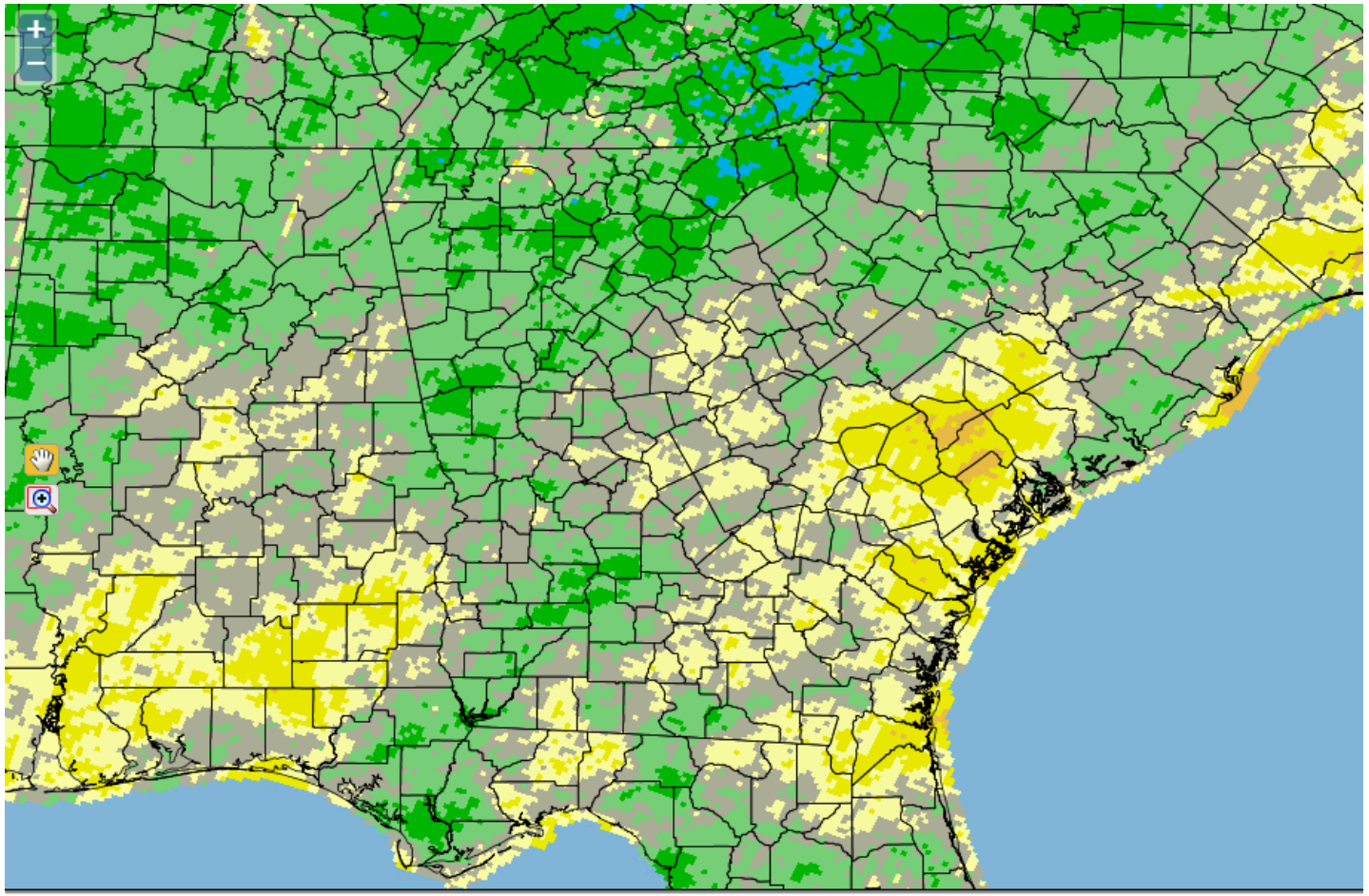
3 Month Percent of Normal Precipitation



6 Month Percent of Normal Precipitation

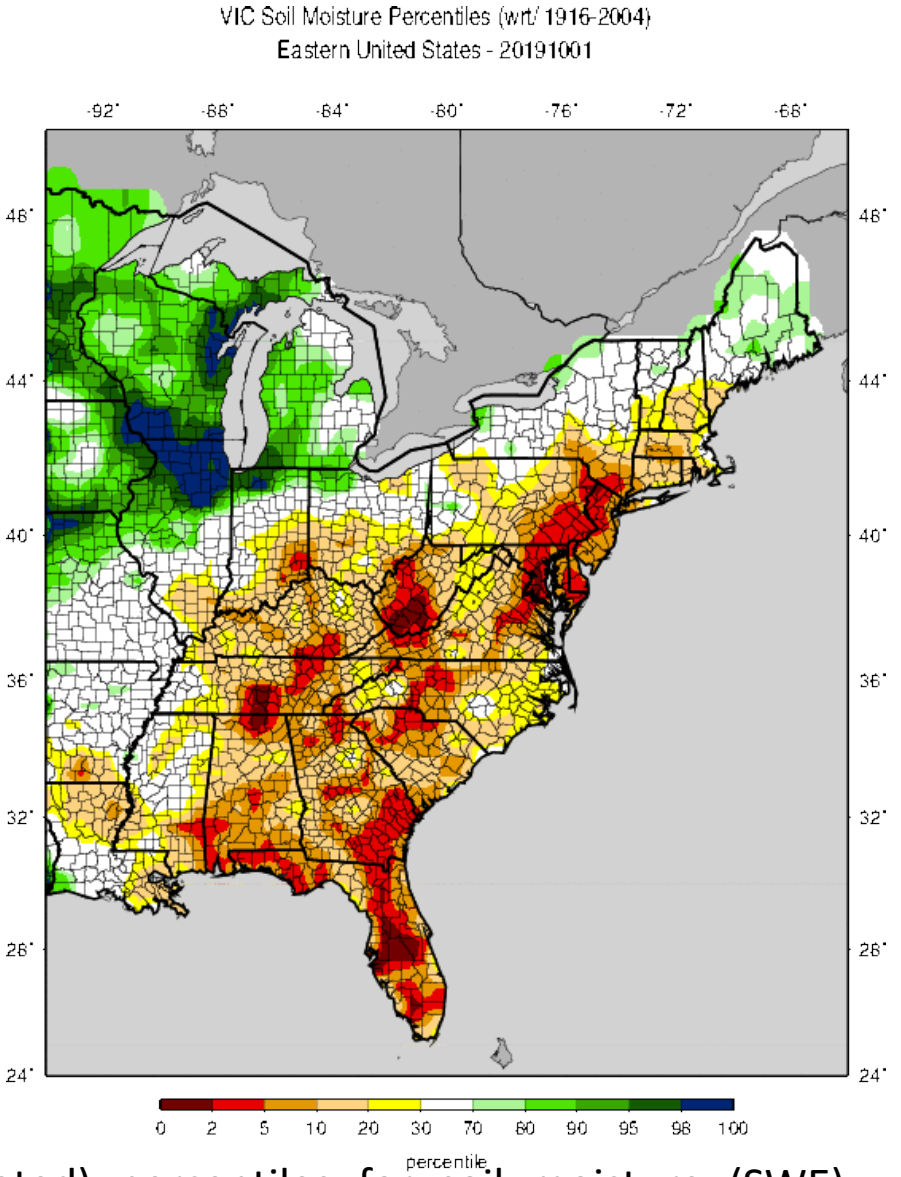


12 Month Percent of Normal Precipitation



Soil Moisture Conditions

Data Source:
http://www.hydro.ucla.edu/SurfaceWaterGroup/forecast/monitor/curr/conus.mexico/east.vic.sm_qnt.gif



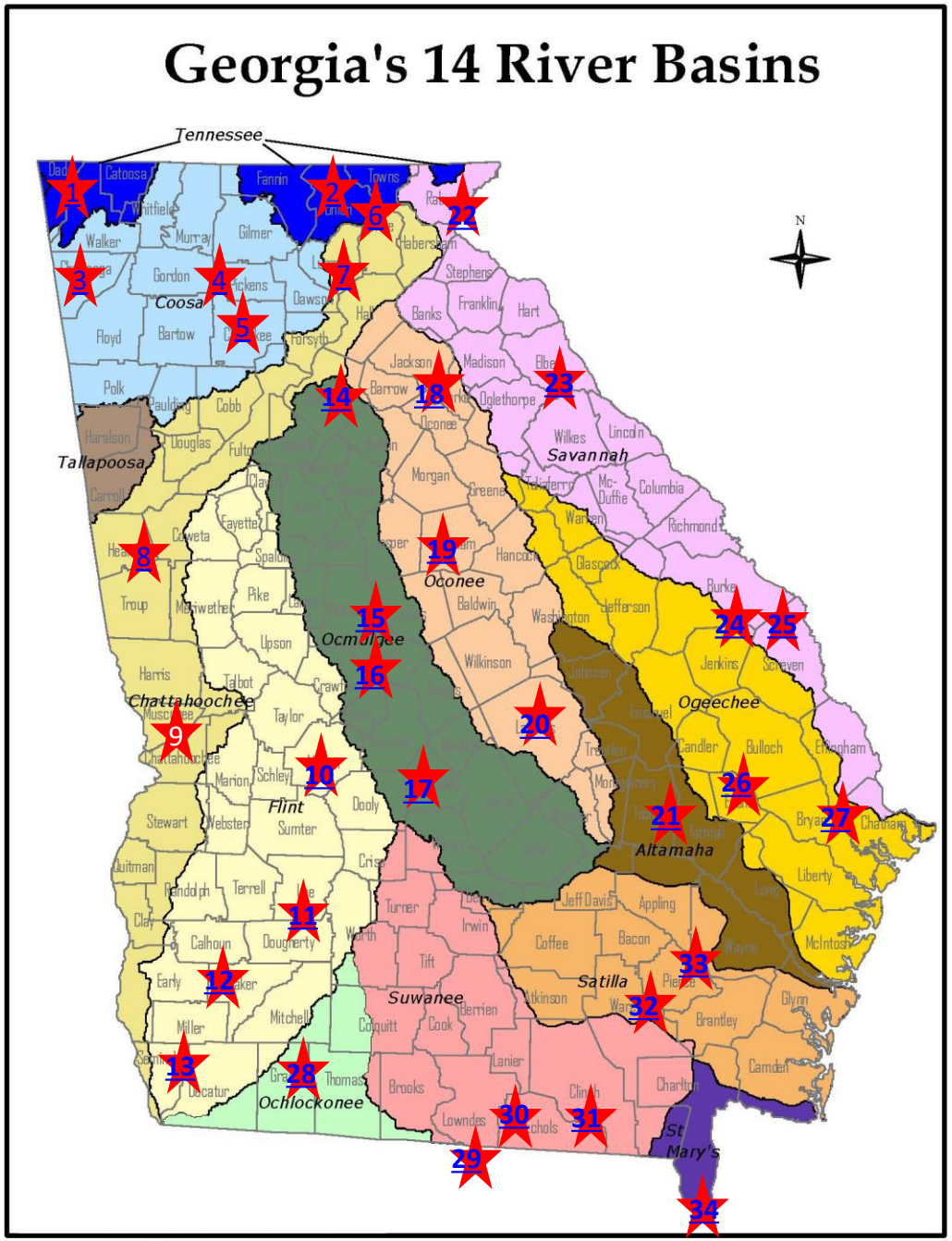
Current (daily updated) percentiles for soil moisture (SWE) with respect to the climatological period (1916-2004).

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



USGS Stream Gages Monitored by EPD to Assess Drought Conditions

GAGE#	BASIN	GAGE NAME
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	TOBESOFKEE 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 2019 through September 2019;
- 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**

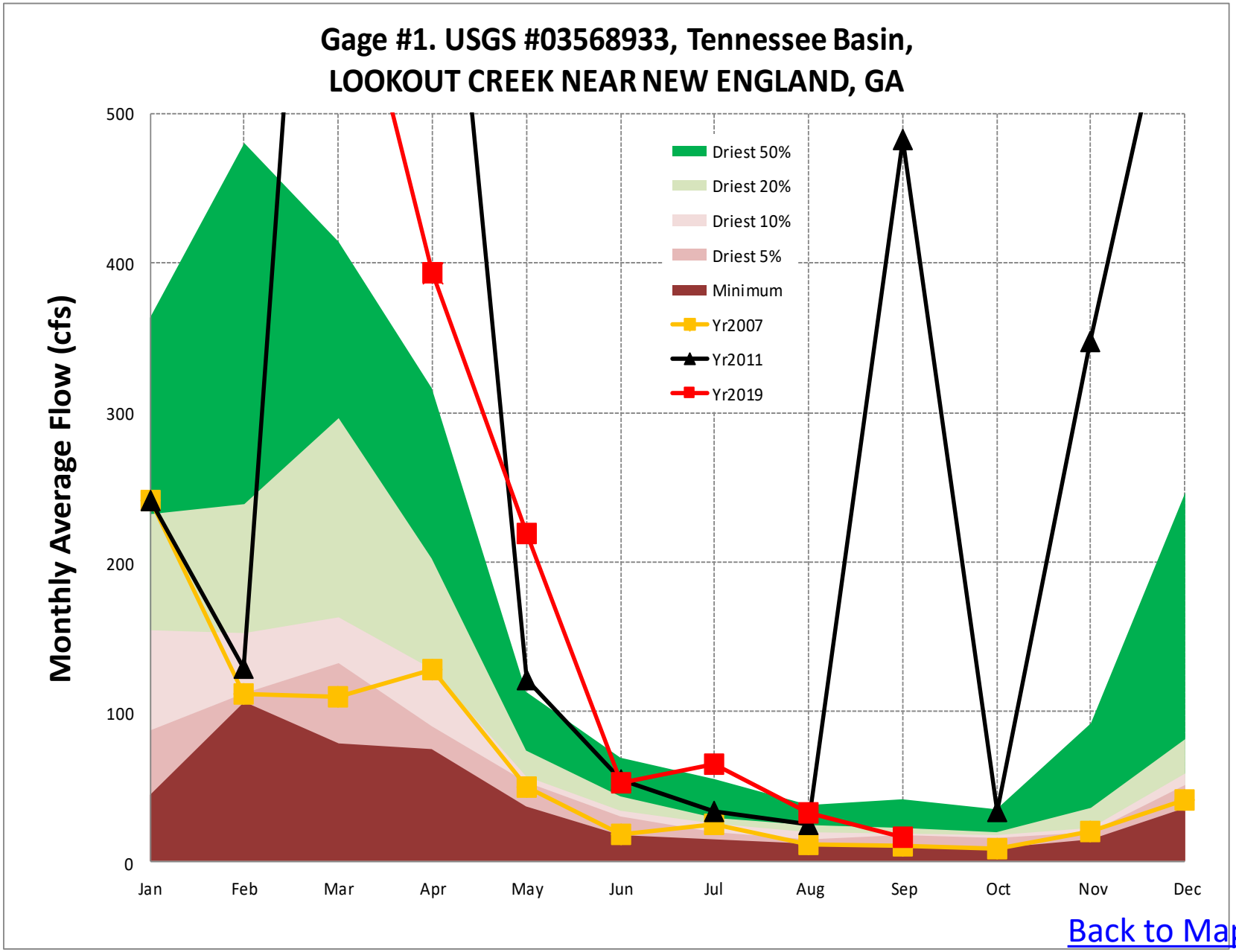
The streamflow graph for Gage #5, USGS Etowah River gage at Canton shows :

- Average stream flow for September 2019 was 350 cfs. The statistical composite of all historical data for this gage shows that average streamflow in September has historically been lower than September 2019 about 10-20% of the time; about 80-90% of the time in September it has been higher.
- Average stream flow in September 2011 was 341 cfs. The statistical composite of all historical data for this gage shows that average streamflow in September has historically been lower than September 2011 only 10-20% of the time; 80-90% of the time in September it has been higher.
- Average stream flow in September 2007 was 130 cfs. The statistical composite of all historical data for this gage shows that average streamflow in September has historically been lower than September 2007 only 0.1% of the time; 99.9% of the time in September 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 for September 2019 was 1,268 cfs. The statistical composite of all historical data for this gage shows that average streamflow in September has historically been lower than September 2019 about 5~10% of the time; about 90-95% of the time in September it has been higher.
- Average stream flow in September 2011 was 764 cfs. The statistical composite of all historical data for this gage shows that average streamflow in September has historically been lower than September 2011 about 0.01% of the time; about 99.99% of the time in September it has been higher.
- Average stream flow in September 2007 was 1,385 cfs. The statistical composite of all historical data for this gage shows that average streamflow in September has historically been lower than September 2007 about 5~10% of the time; about 90~95% of the time in September it has been higher.


Gage #1. USGS #03568933, Tennessee Basin,
LOOKOUT CREEK NEAR NEW ENGLAND, GA
Monthly Average Flow (cfs)
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019

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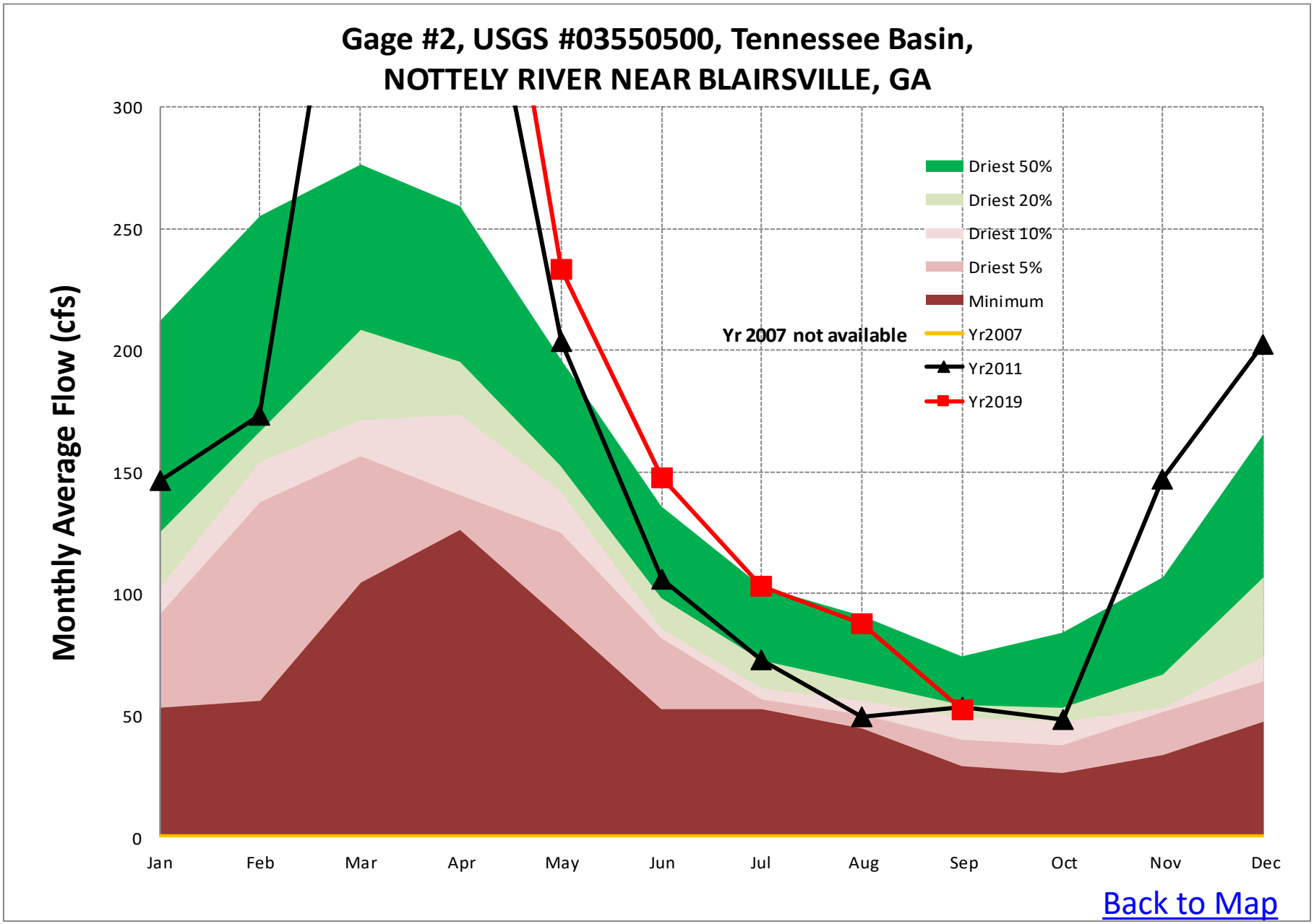
Gage #2, USGS #03550500, Tennessee Basin,
NOTTELY RIVER NEAR BLAIRSVILLE, GA
Monthly Average Flow (cfs)
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019
Yr 2007 not available

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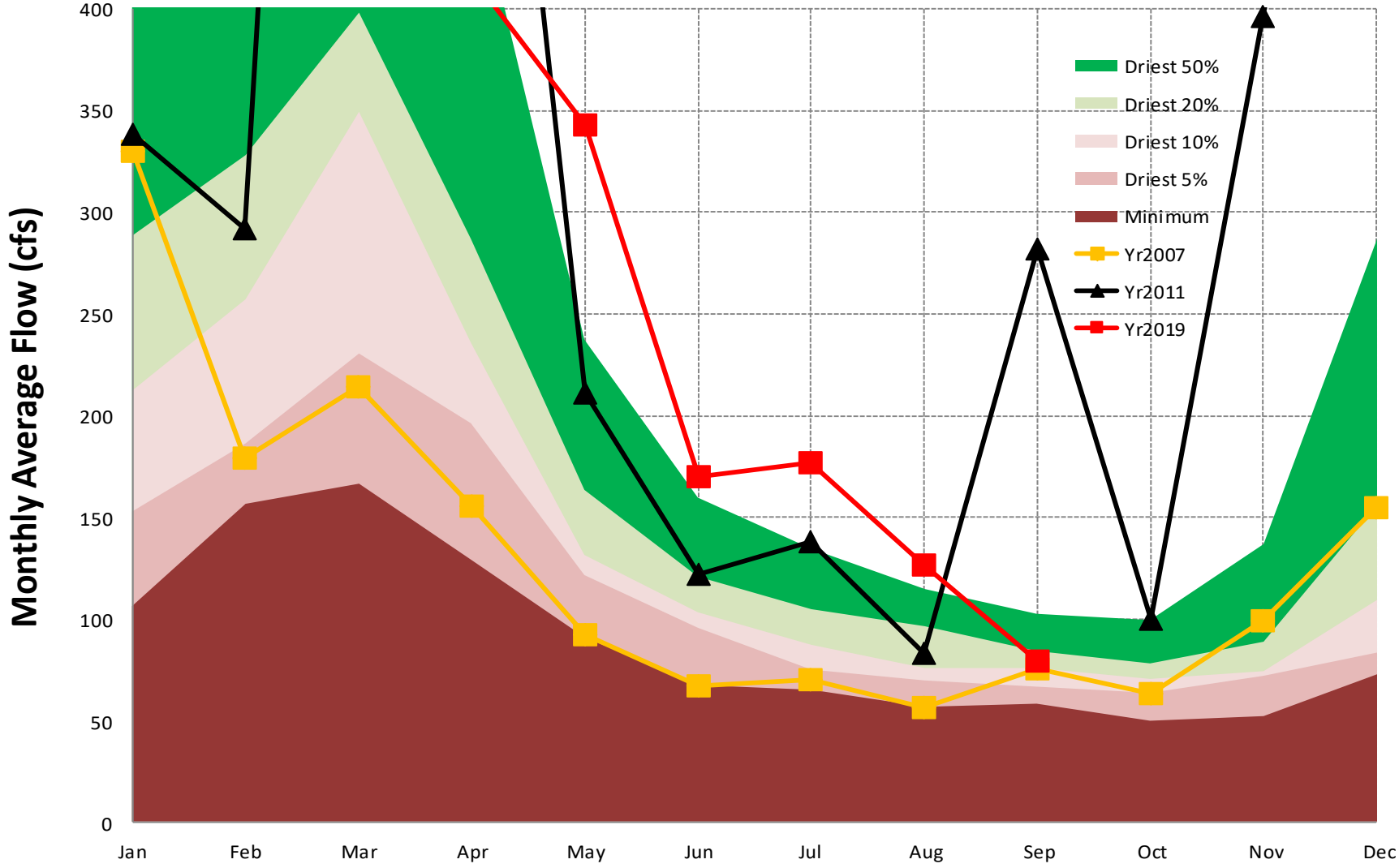
Gage #3. USGS #02398000, Coosa Basin, Chattooga River at Summerville, GA



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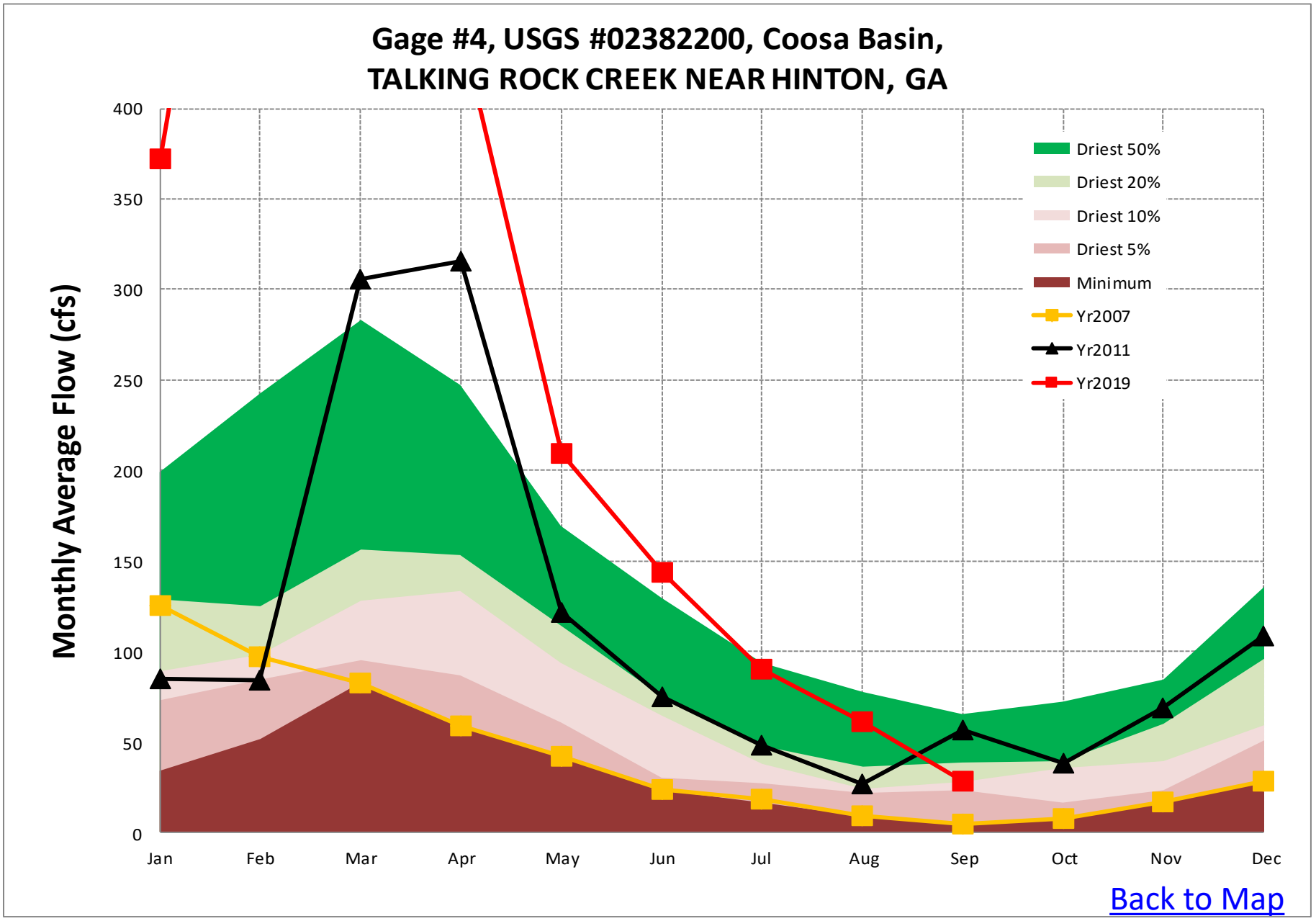
Gage #4, USGS #02382200, Coosa Basin,
TALKING ROCK CREEK NEAR HINTON, GA
Monthly Average Flow (cfs)
400
350
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019

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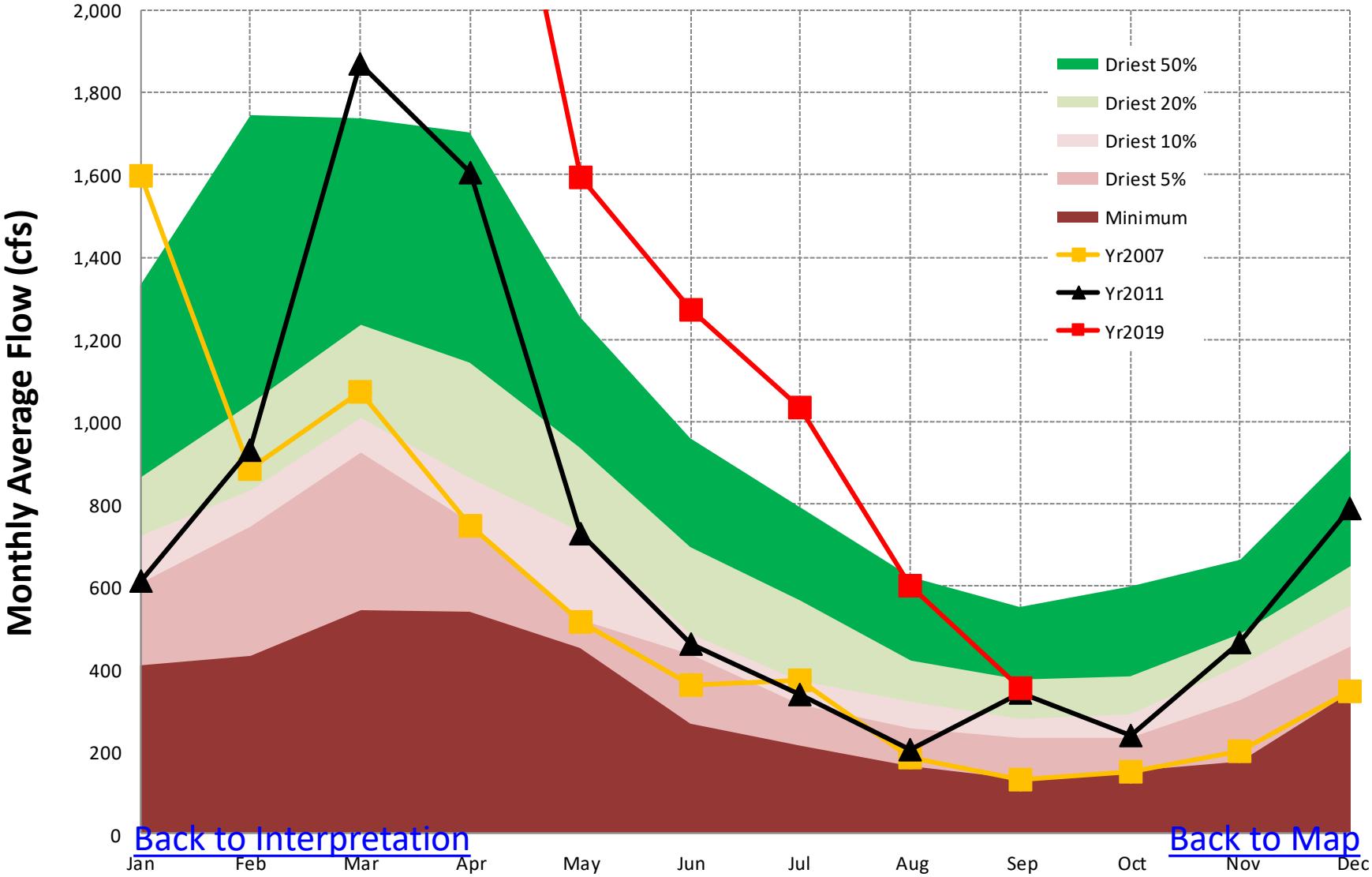
Gage #5, USGS #02392000, Coosa Basin, Etowah River at Canton, GA



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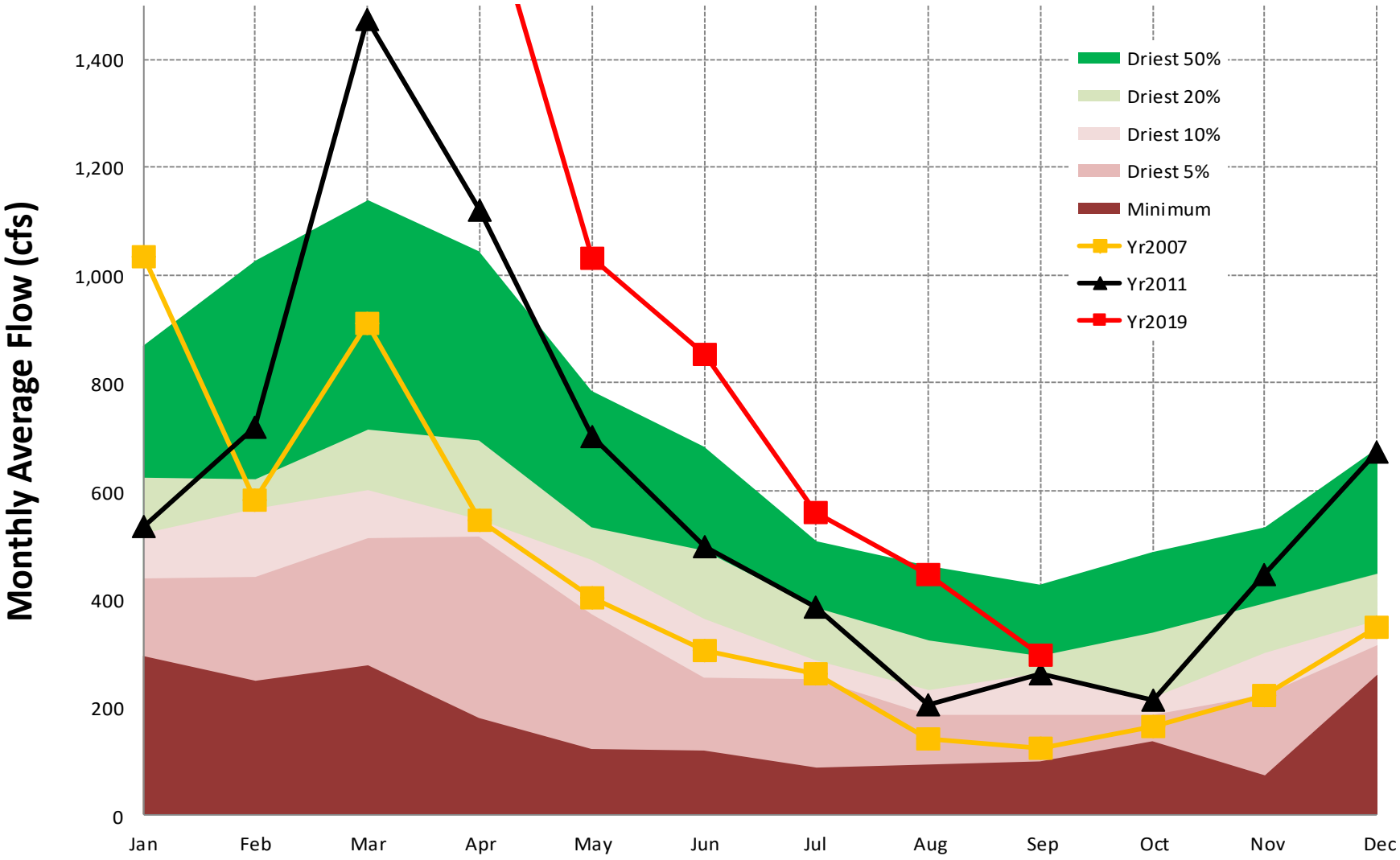
Gage #6, USGS #02331600, Chatthoochee Basin, CHATTAHOOCHEE RIVER AT CORNELIA, GA



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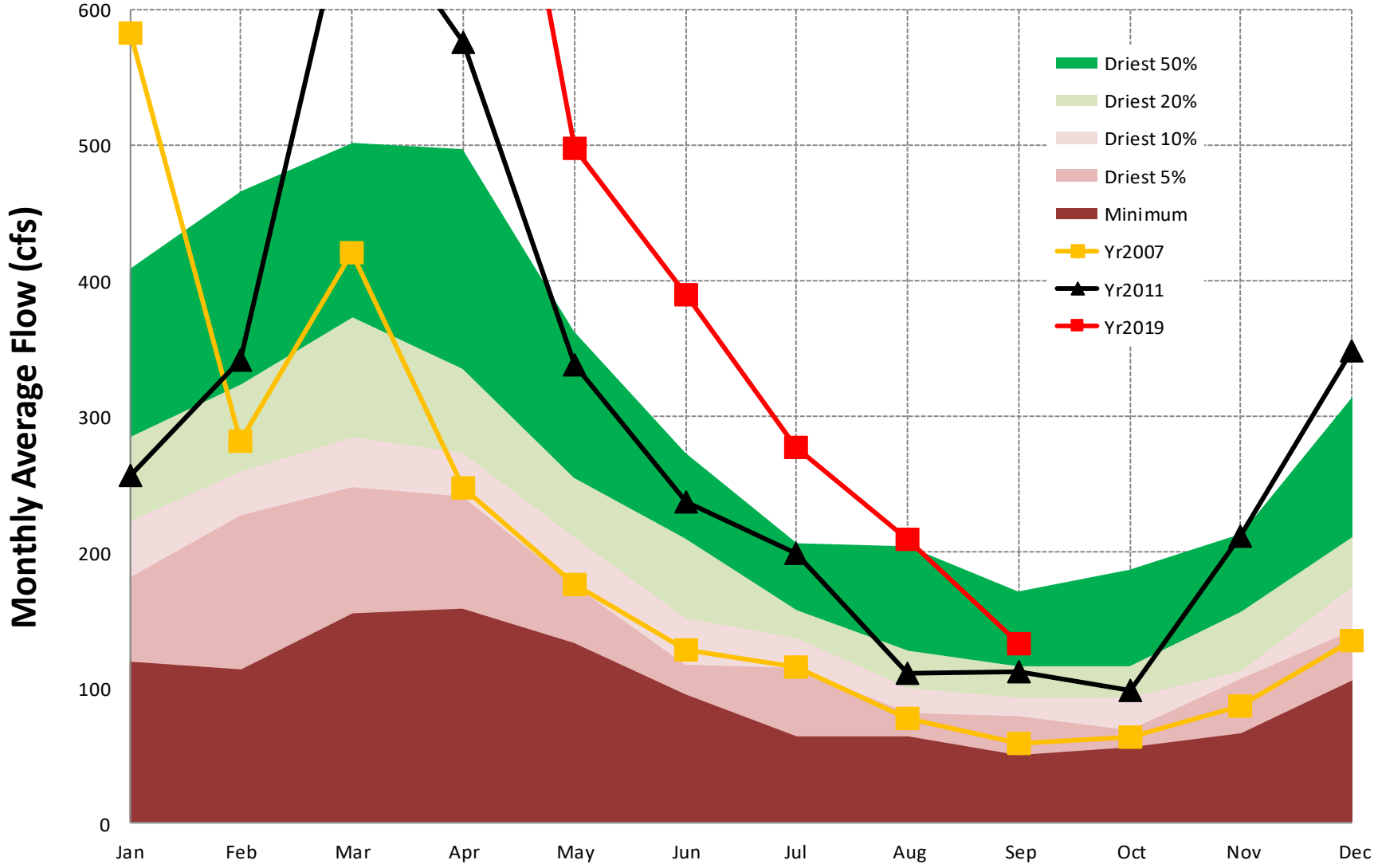
Gage #7, USGS #02333500, Chatahoochee Basin, CHESTATEE RIVER NEAR DAHLONEGA, GA



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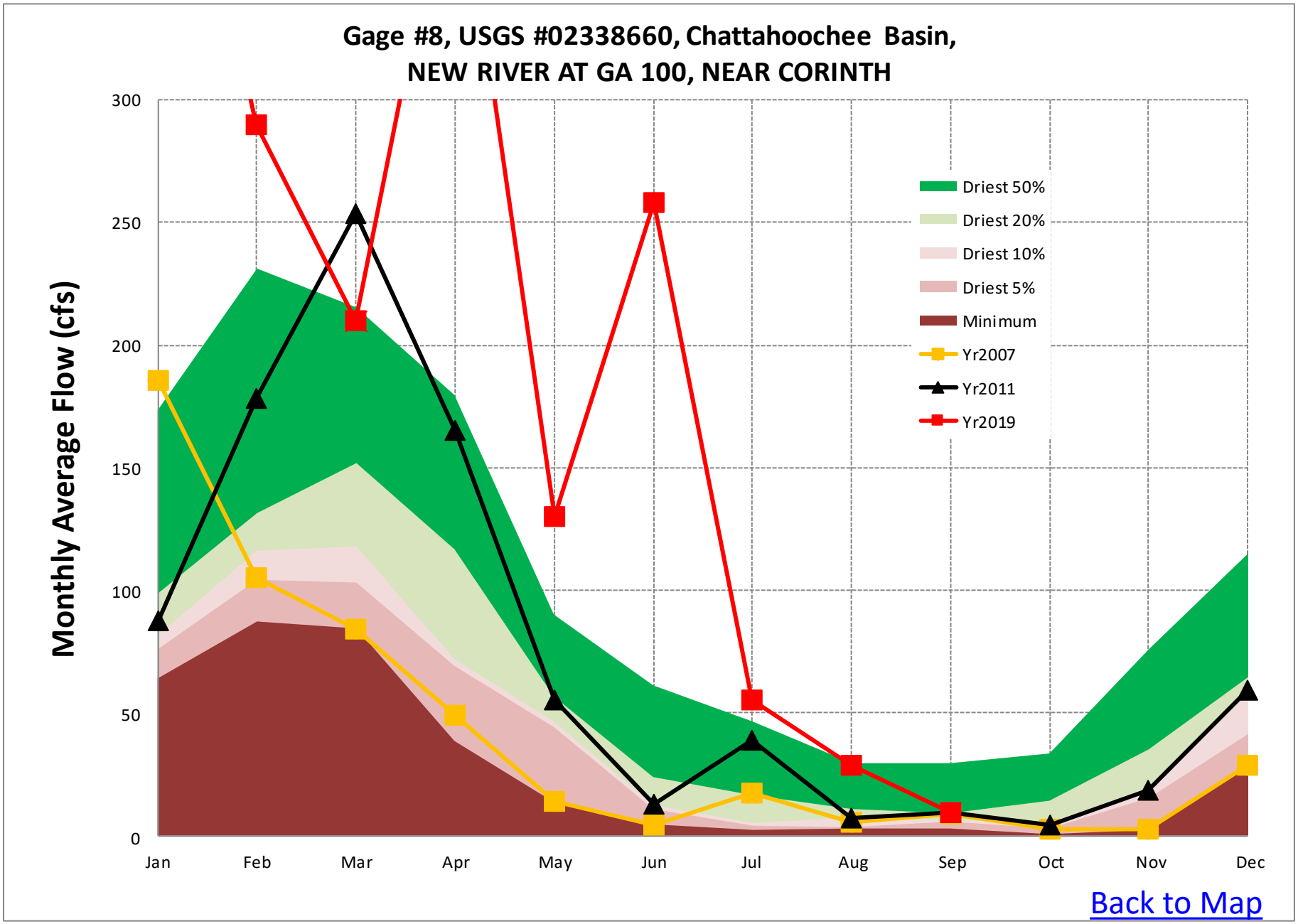
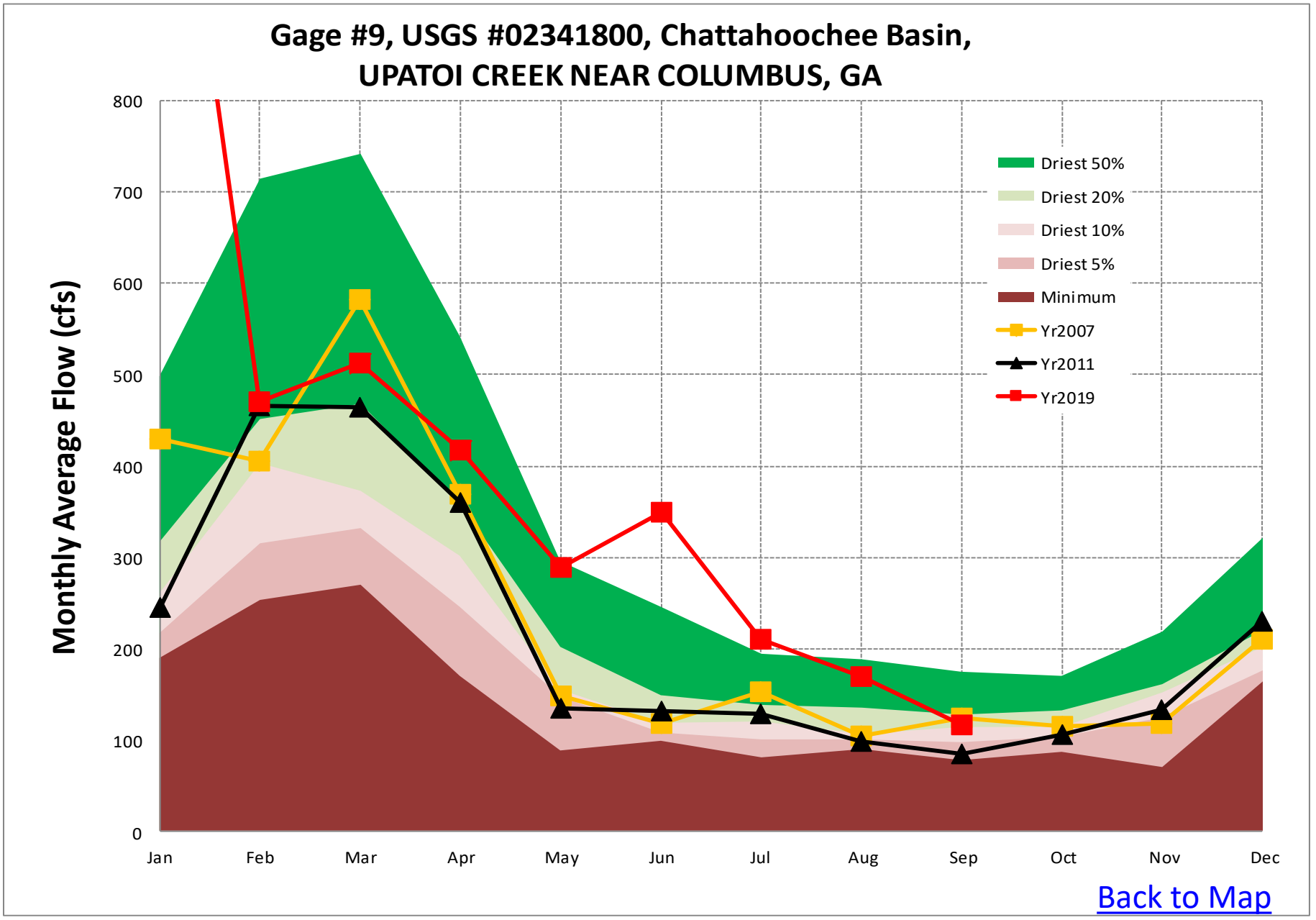

Gage #8, USGS #02338660, Chattahoochee Basin,
NEW RIVER AT GA 100, NEAR CORINTH
Monthly Average Flow (cfs)
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019

Back to Map


Gage #9, USGS #02341800, Chattahoochee Basin,
UPATOI CREEK NEAR COLUMBUS, GA
Monthly Average Flow (cfs)
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019

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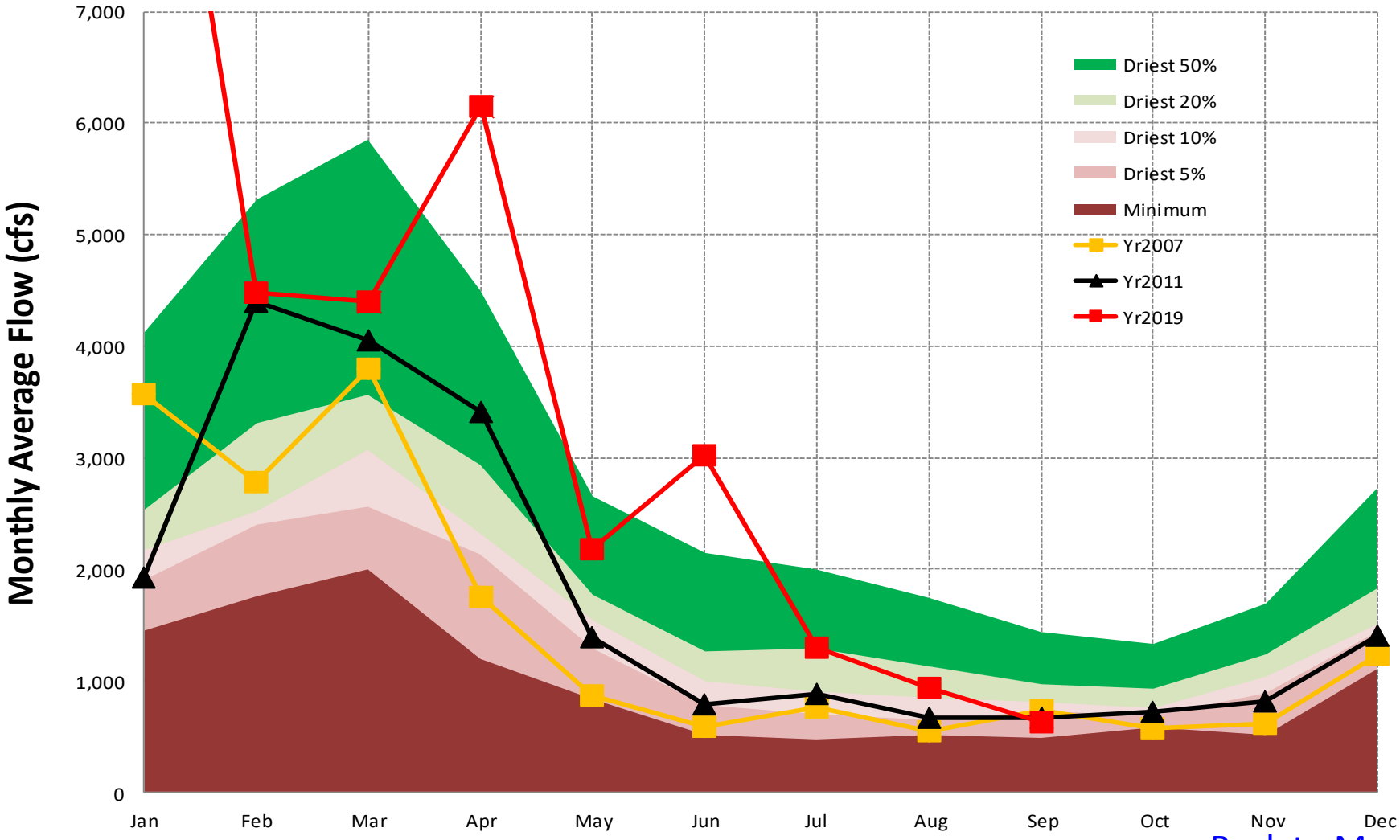
Gage #10. USGS #02349605, Flint Basin,
FLINT RIVER AT GA26 NEAR MONTEZUMA, GA



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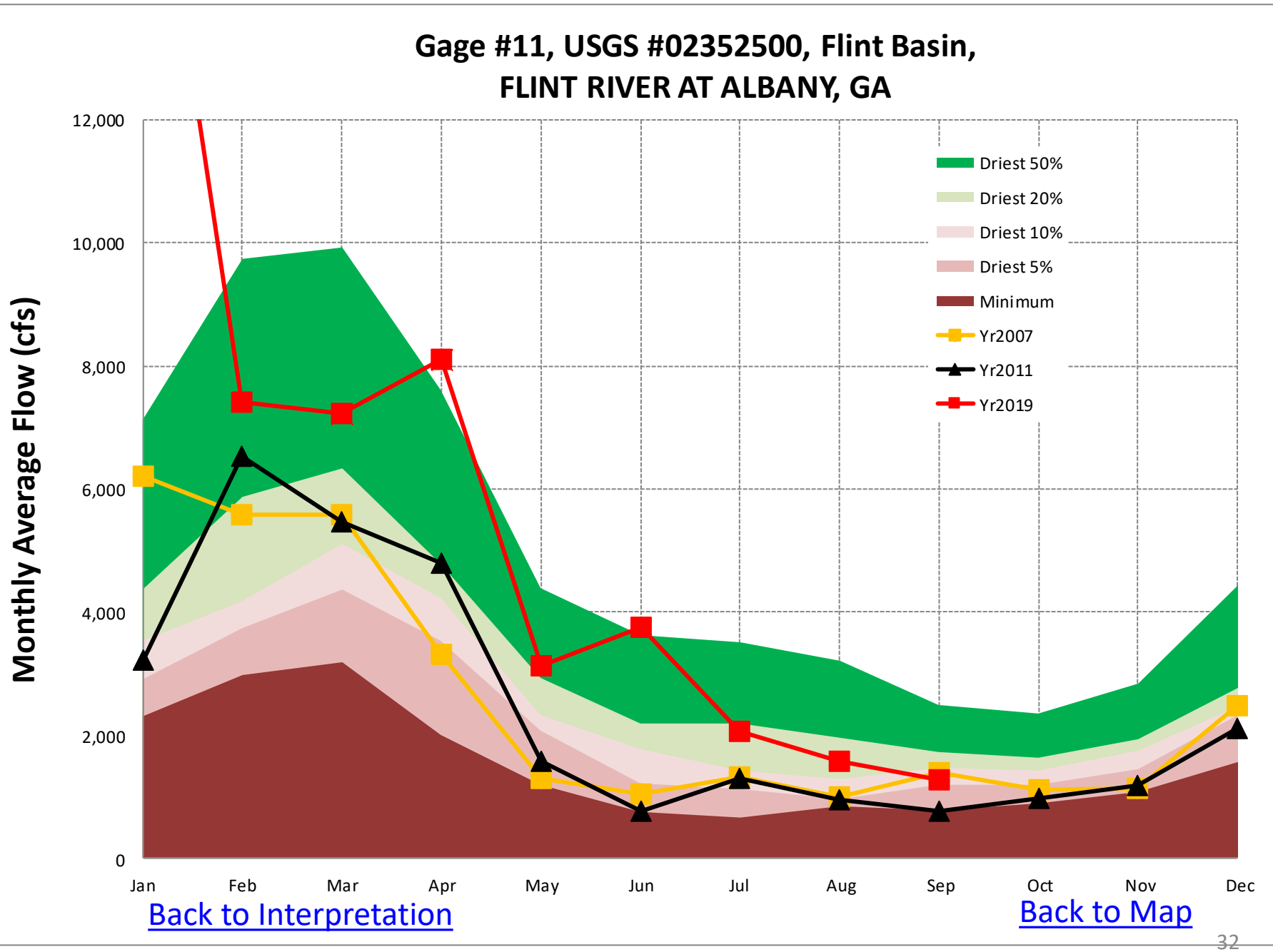

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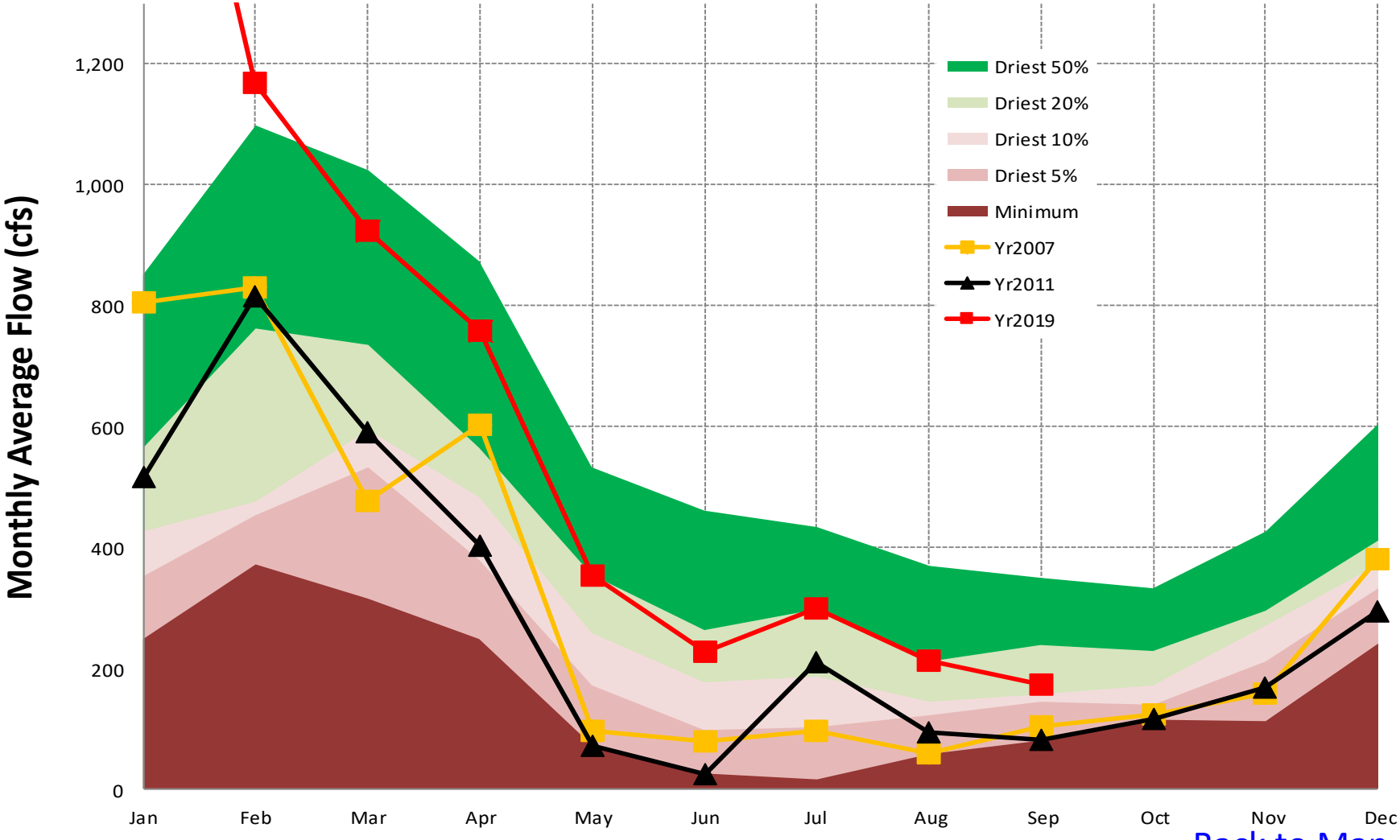
Gage #12. USGS #02353500, Flint Basin, Ichawaynochaway Creek at Milford, GA



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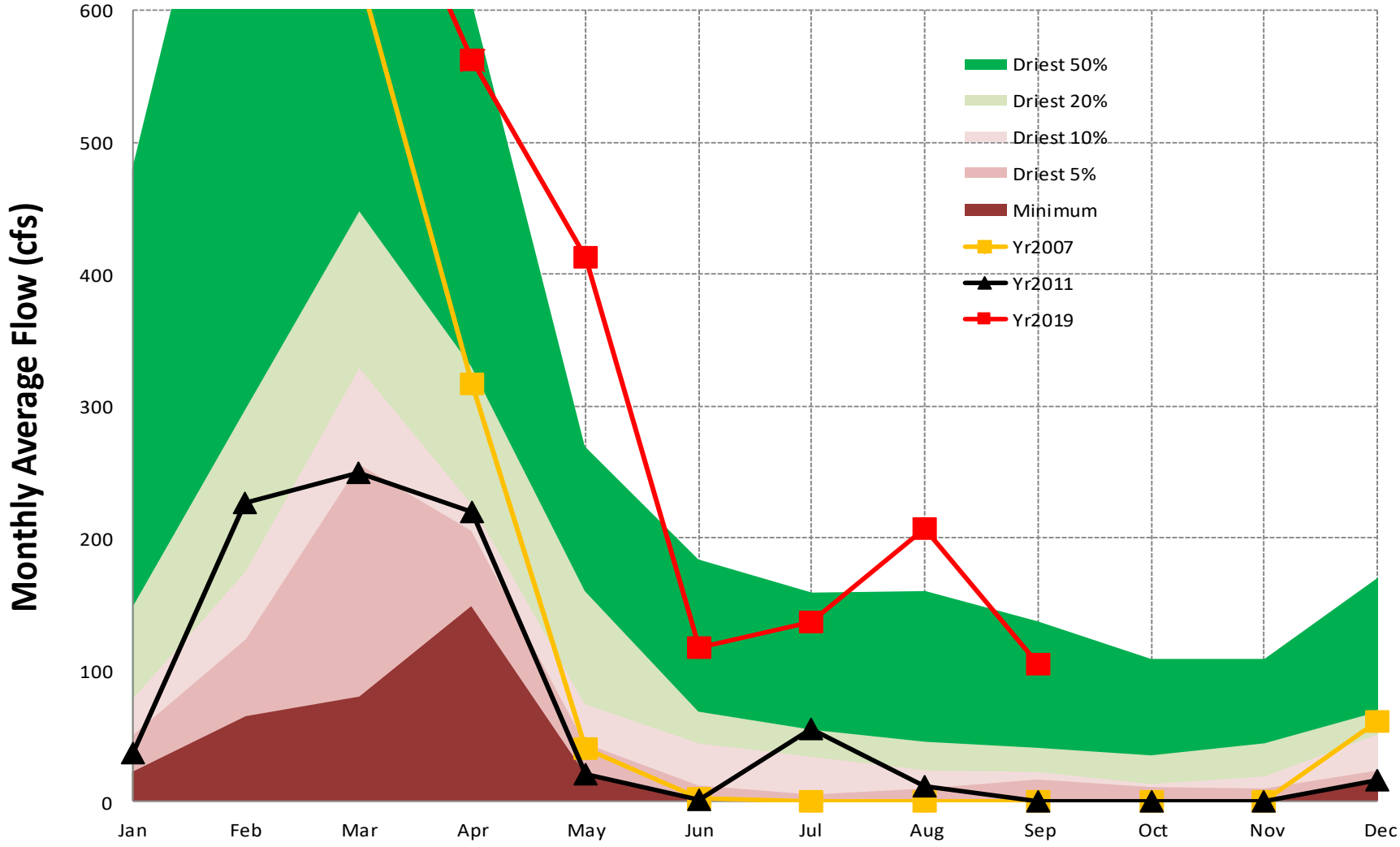
Gage #13. USGS #02357000, Flint River, Spring Creek near Iron City, GA



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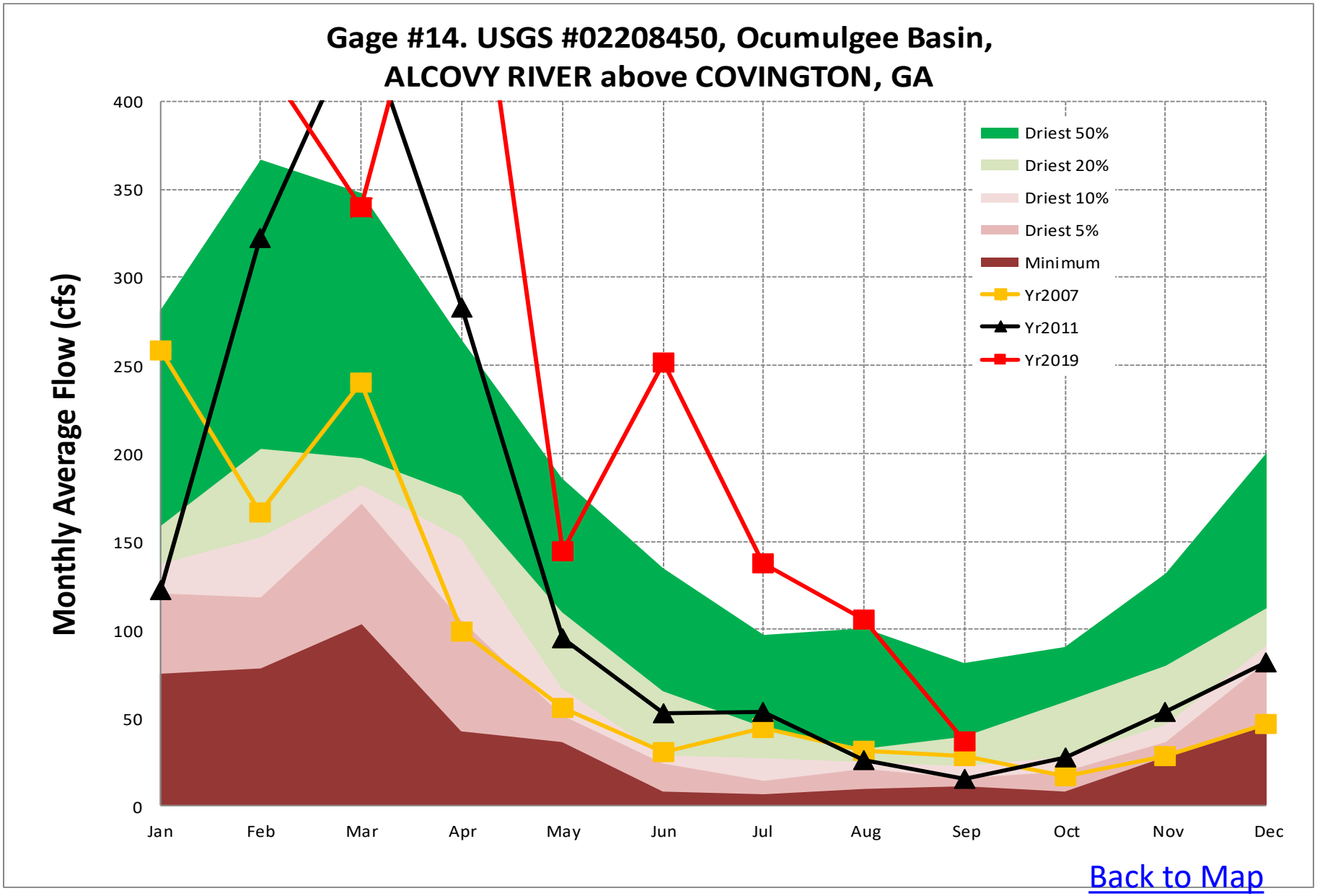
Gage #14. USGS #02208450, Ocumulgee Basin,
ALCOVY RIVER above COVINGTON, GA
Monthly Average Flow (cfs)
400
350
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019

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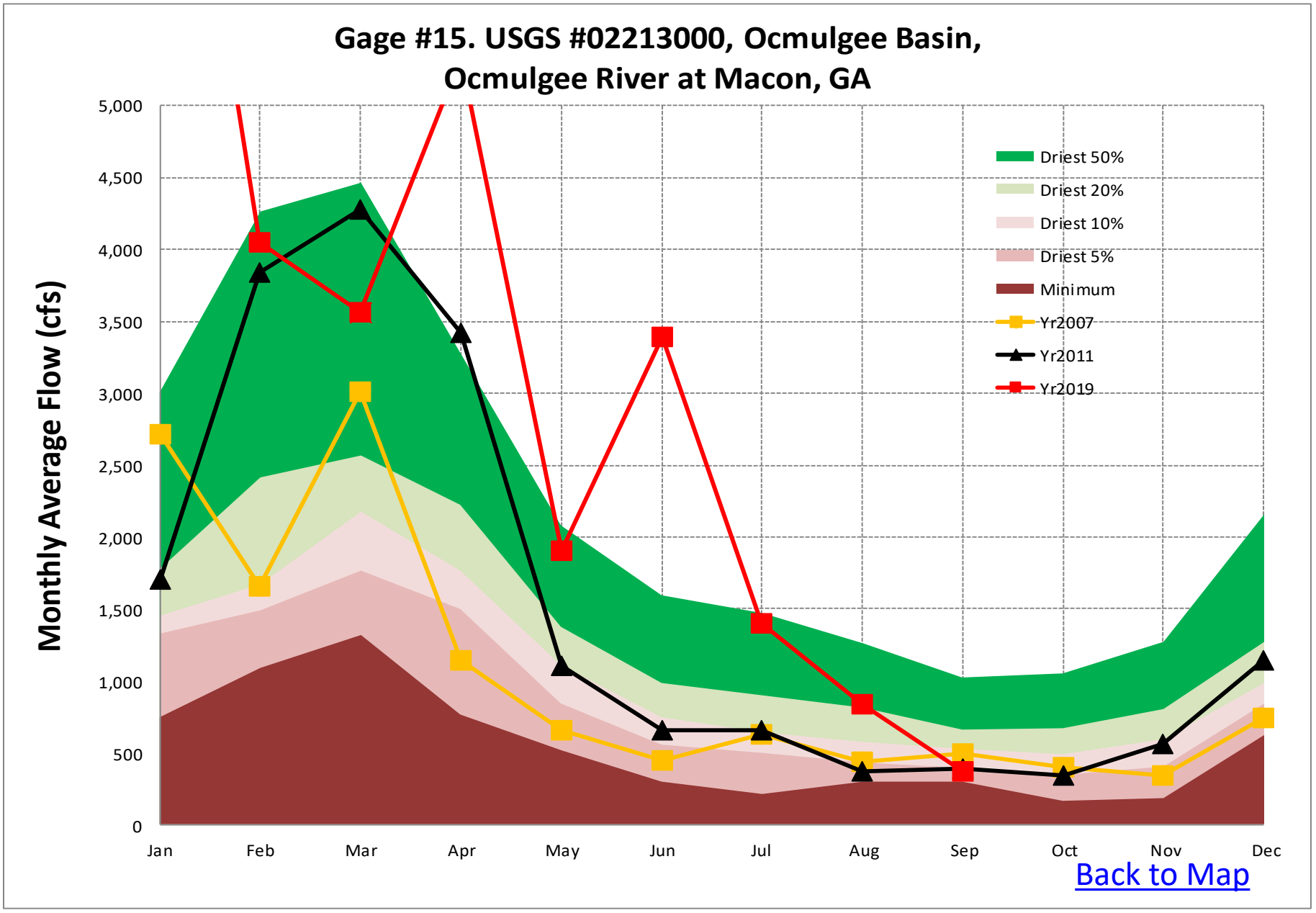
Gage #15. USGS #02213000, Ocmulgee Basin,
Ocmulgee River at Macon, GA
Monthly Average Flow (cfs)
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019

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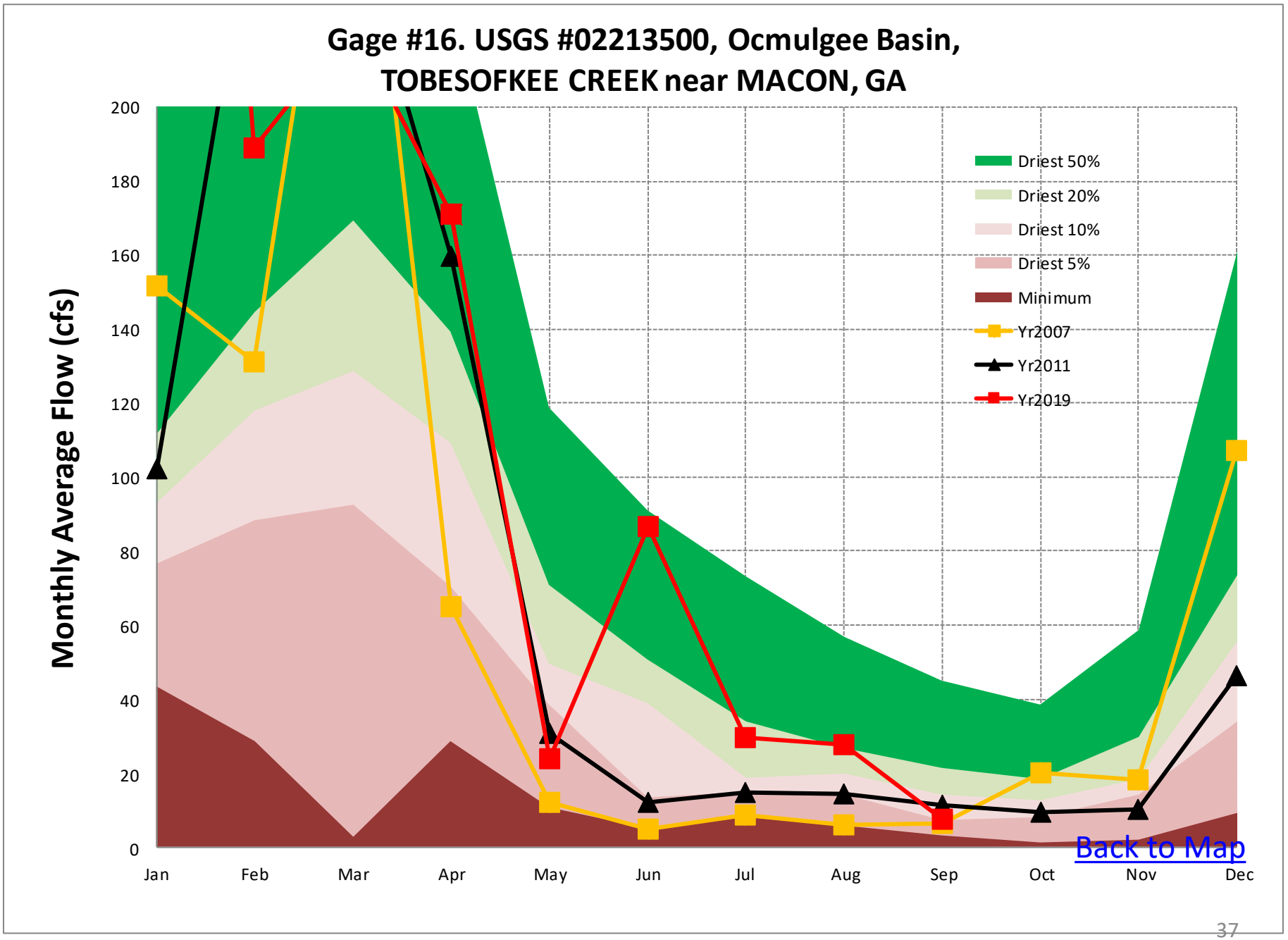
Gage #16. USGS #02213500, Ocmulgee Basin,
TOBESOFKEE CREEK near MACON, GA
Monthly Average Flow (cfs)
200
180
160
140
120
100
80
60
40
20
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019
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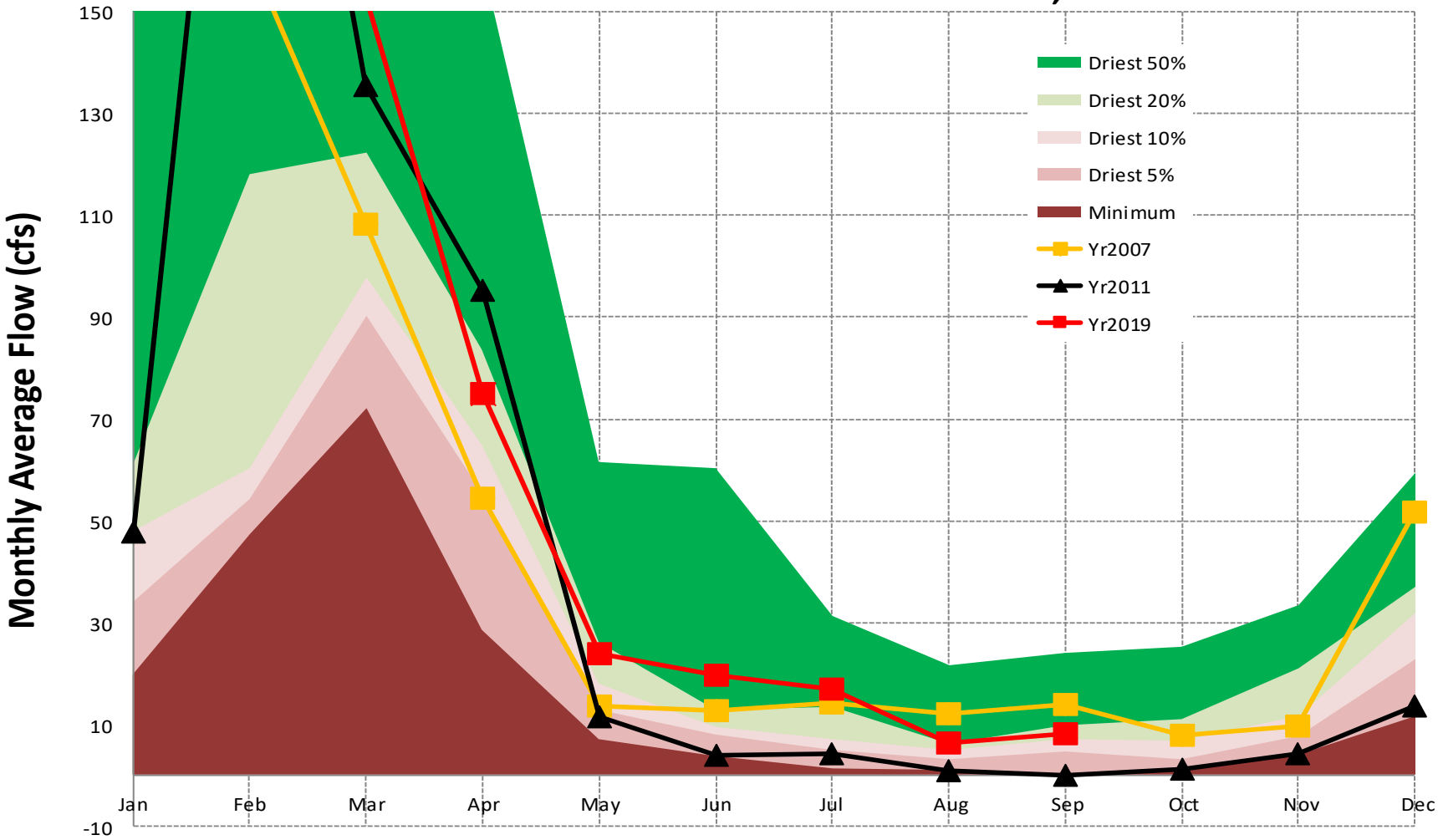
Gage #17. USGS #02215100, Ocmulgee Basin, TUCSAWHATCHEE CREEK near HAWKINSVILLE, GA



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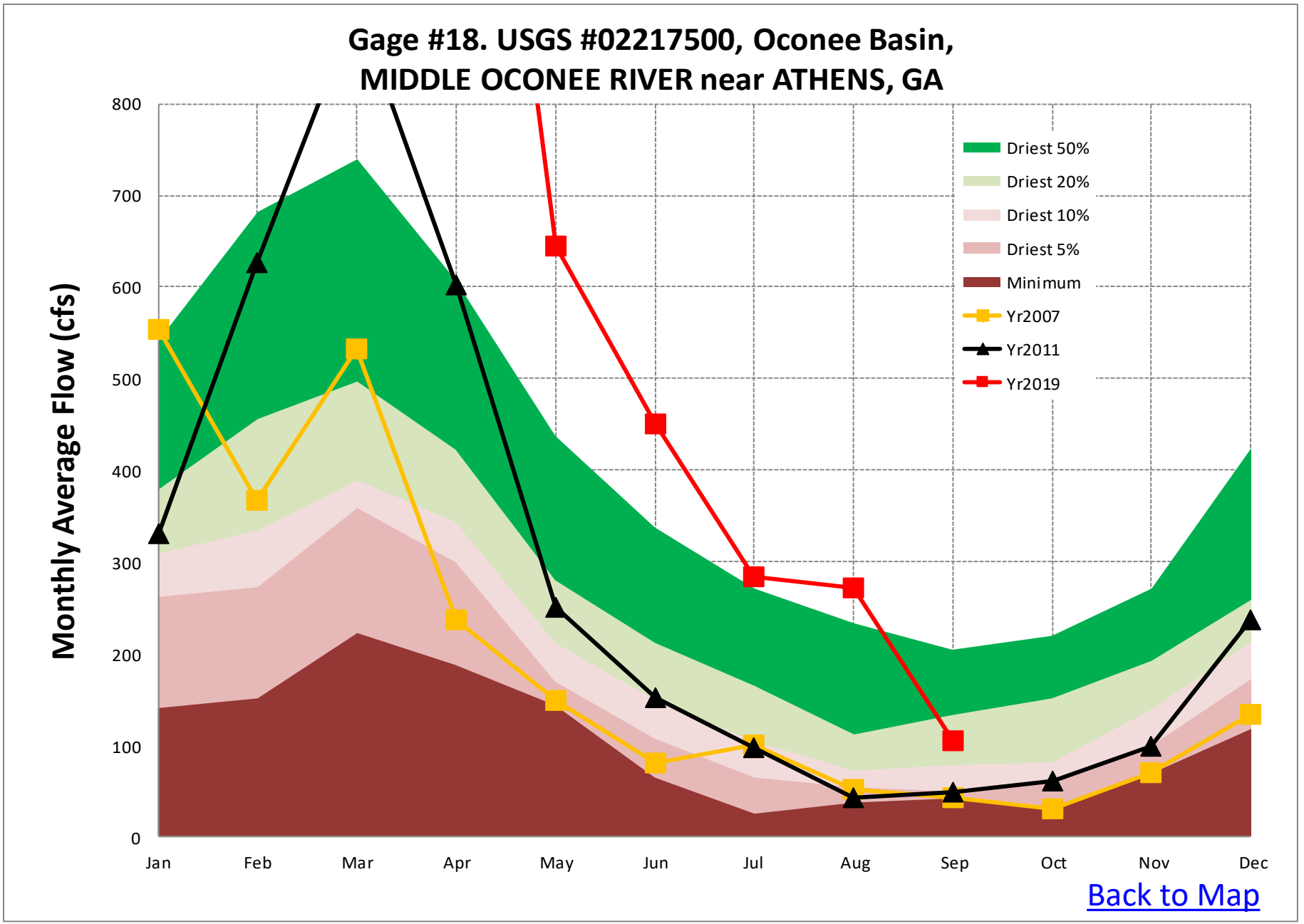
Gage #18. USGS #02217500, Oconee Basin,
MIDDLE OCONEE RIVER near ATHENS, GA
Monthly Average Flow (cfs)
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019

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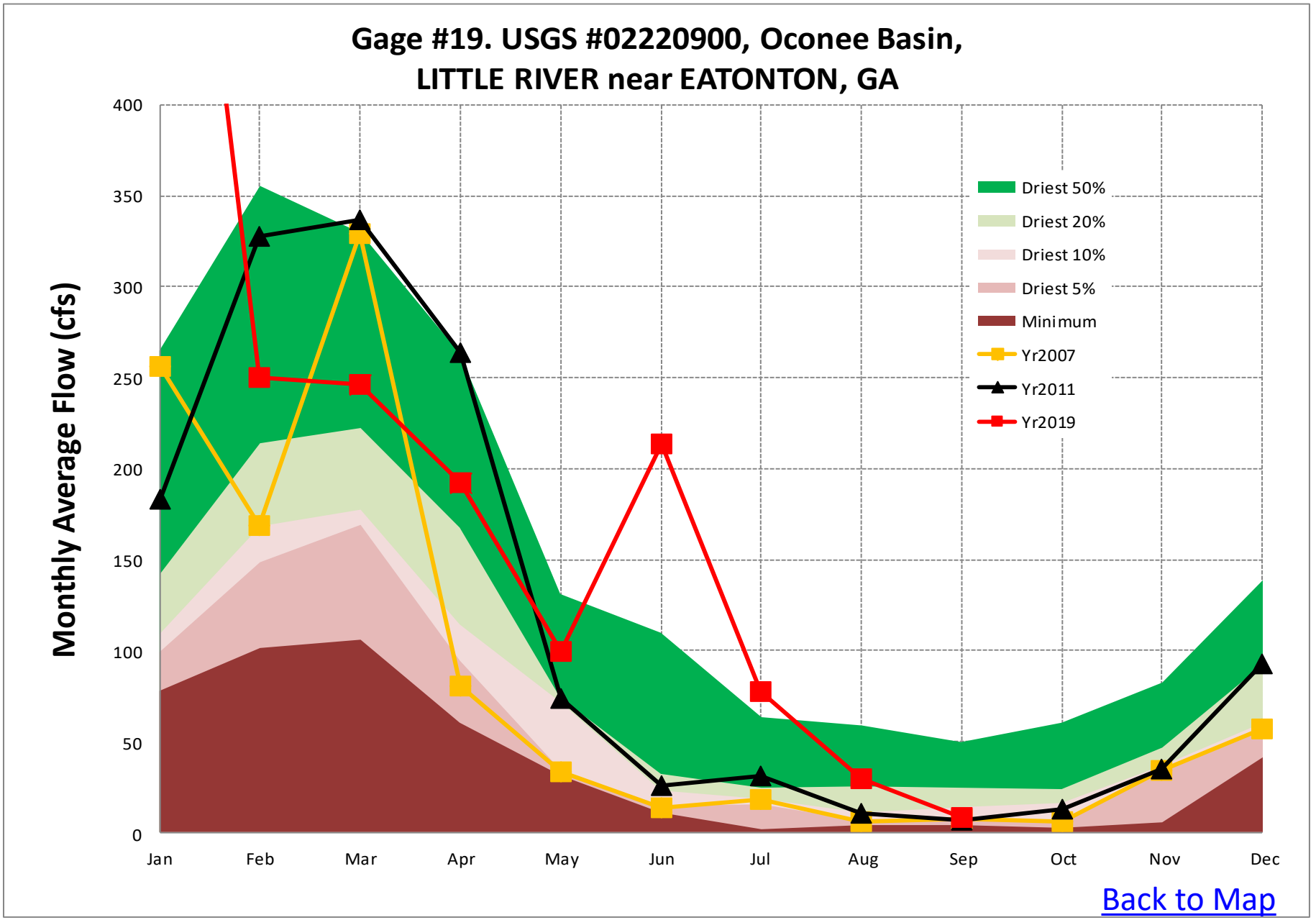
Gage #19. USGS #02220900, Oconee Basin,
LITTLE RIVER near EATONTON, GA
Monthly Average Flow (cfs)
400
350
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019

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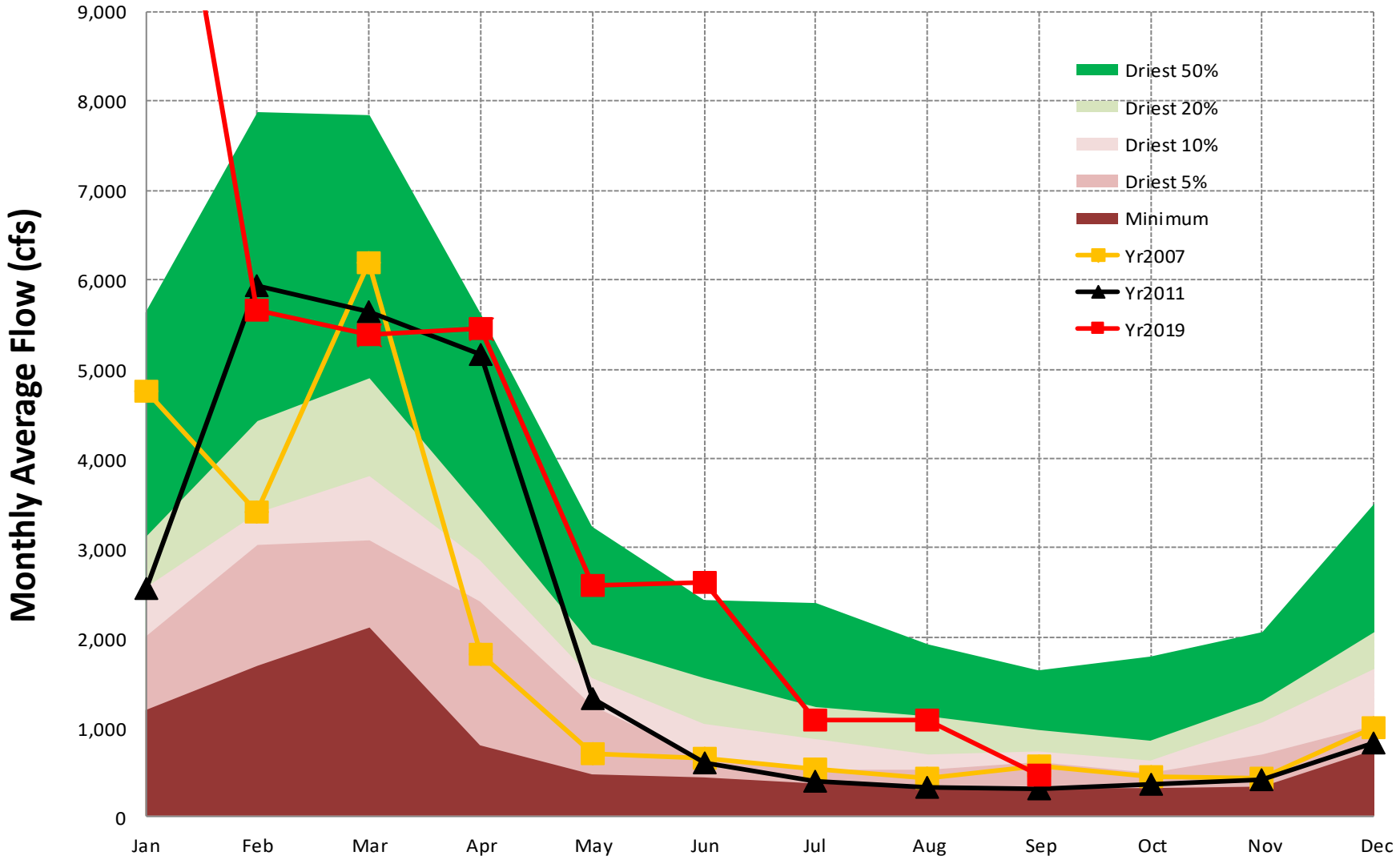
Gage #20. USGS #02223500, Oconee Basin, Oconee River at Dublin, GA



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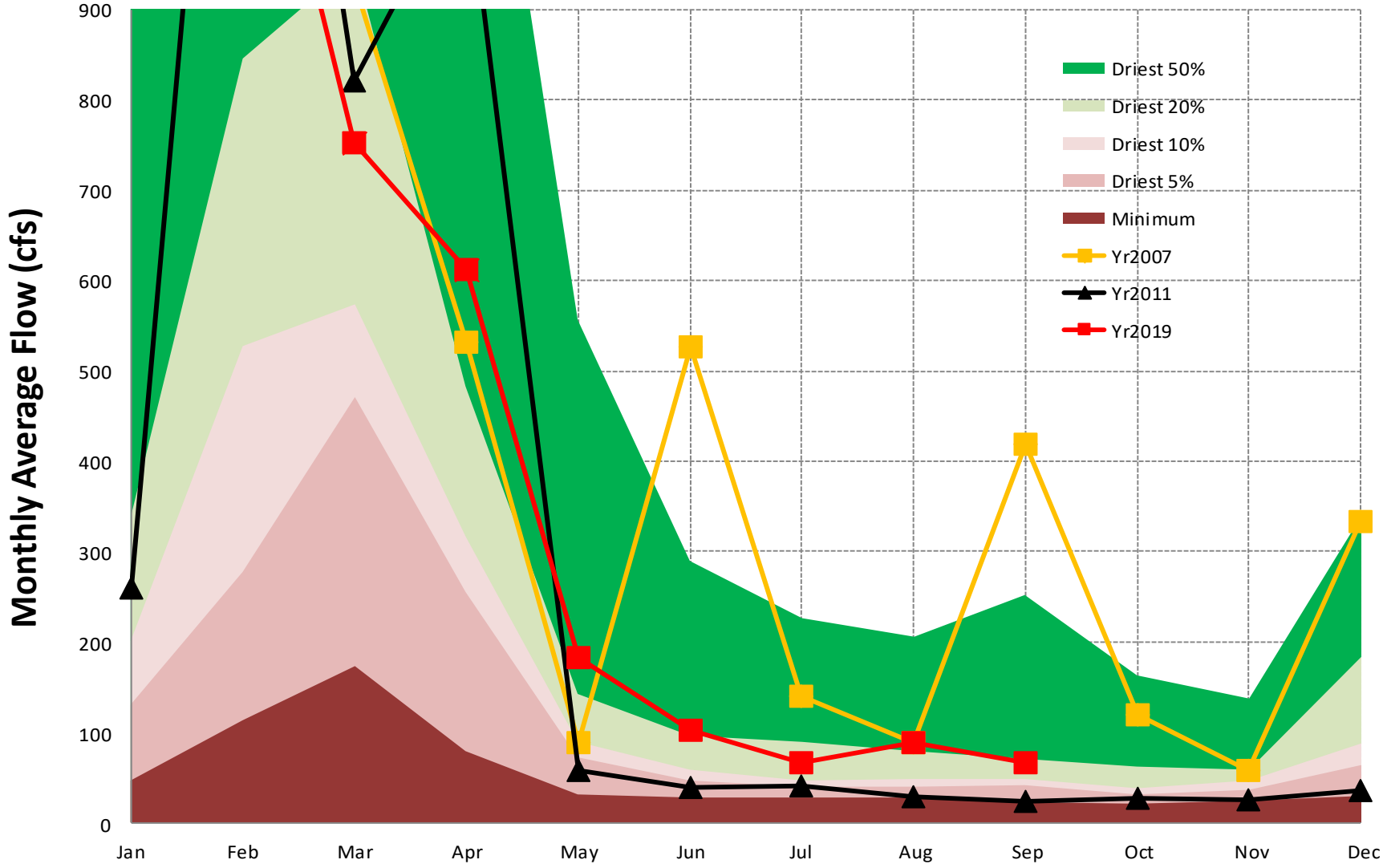
Gage #21. USGS #02225500, Altamaha Basin, OHOOPEE RIVER near REIDSVILLE, GA



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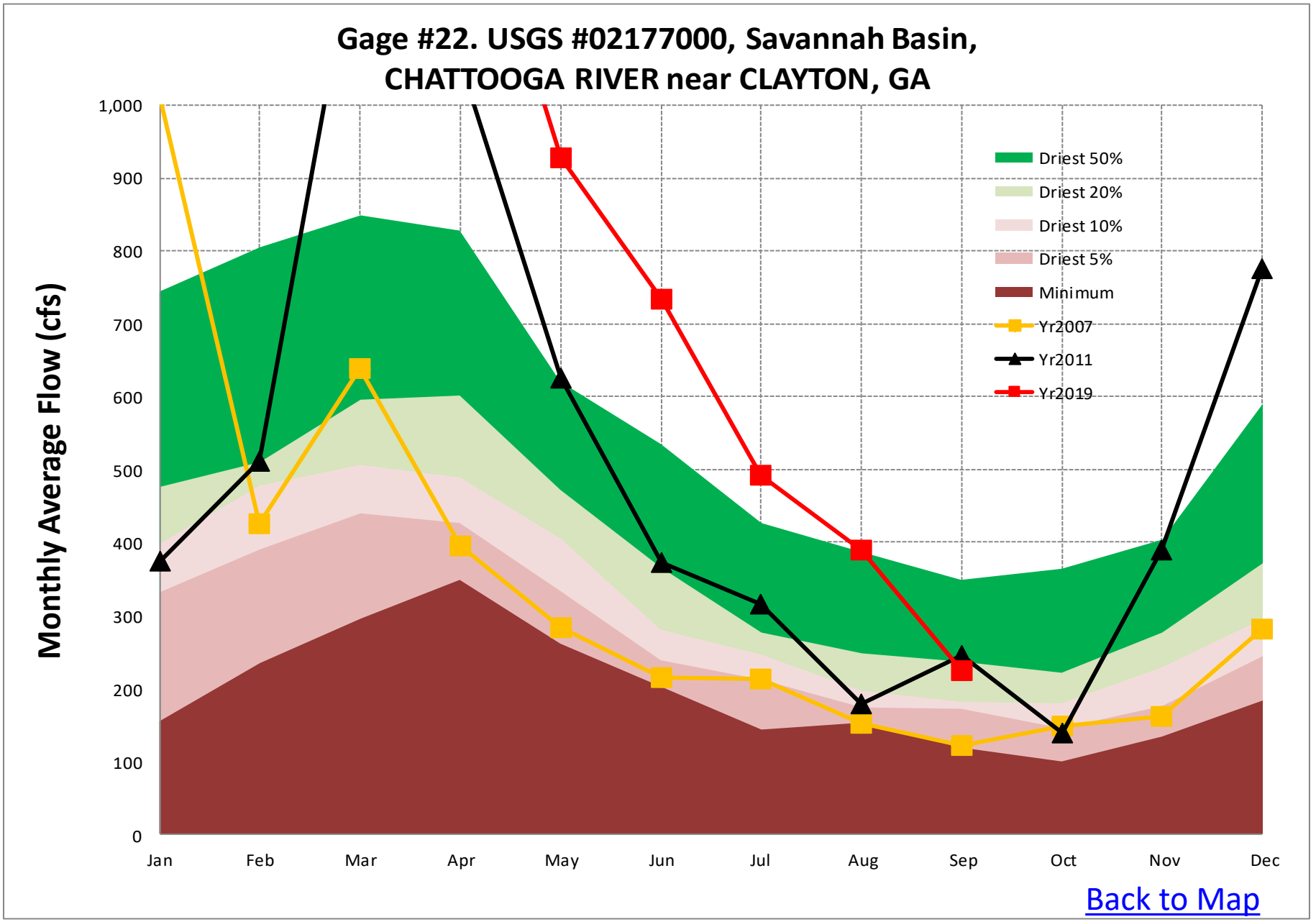
Gage #22. USGS #02177000, Savannah Basin,
CHATTOOGA RIVER near CLAYTON, GA
Monthly Average Flow (cfs)
1,000
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019

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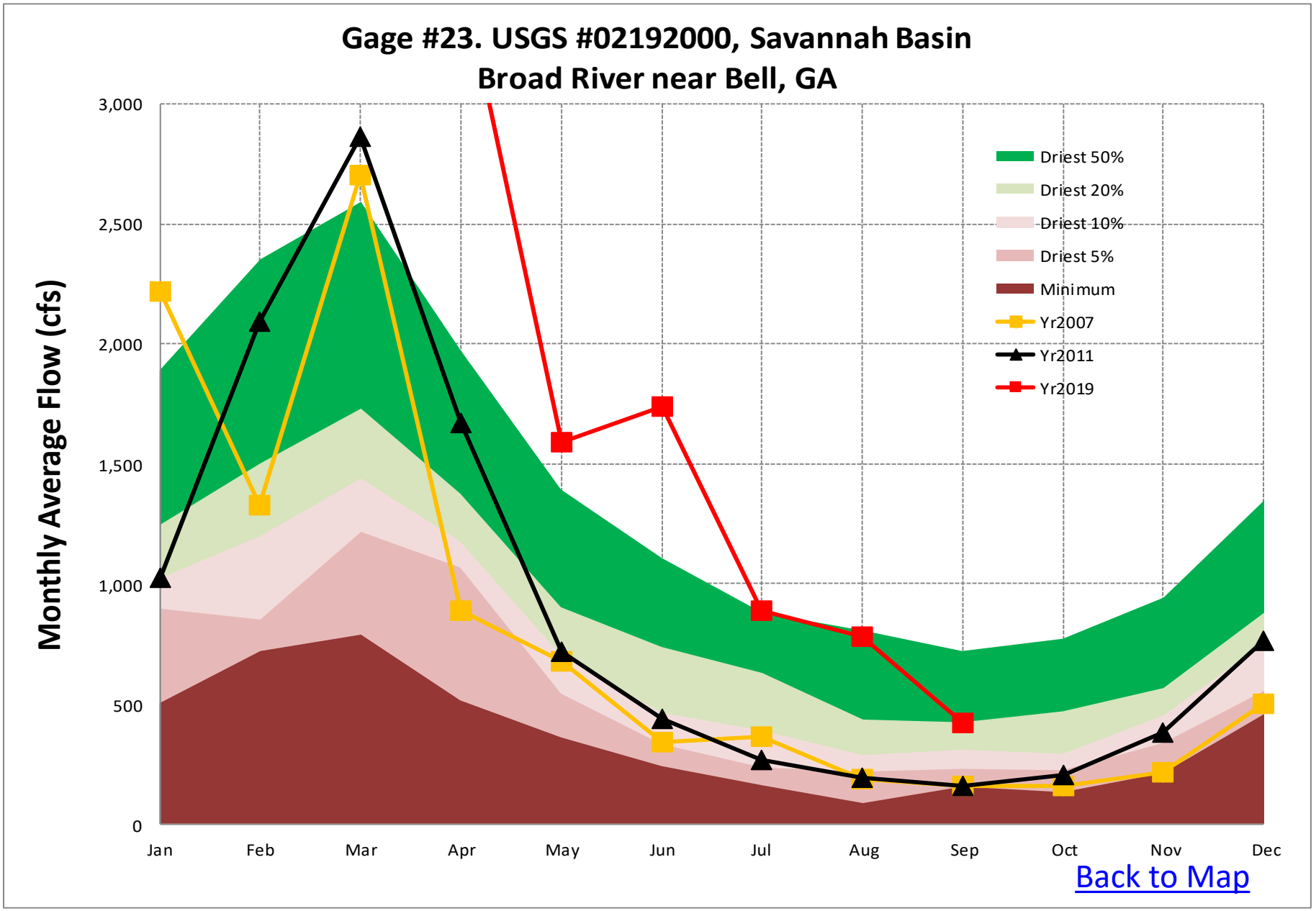
Gage #23. USGS #02192000, Savannah Basin
Broad River near Bell, GA
Monthly Average Flow (cfs)
3,000
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Driest 50%
Driest 20%
Driest 10%
Driest 5%
Minimum
Yr2007
Yr2011
Yr2019

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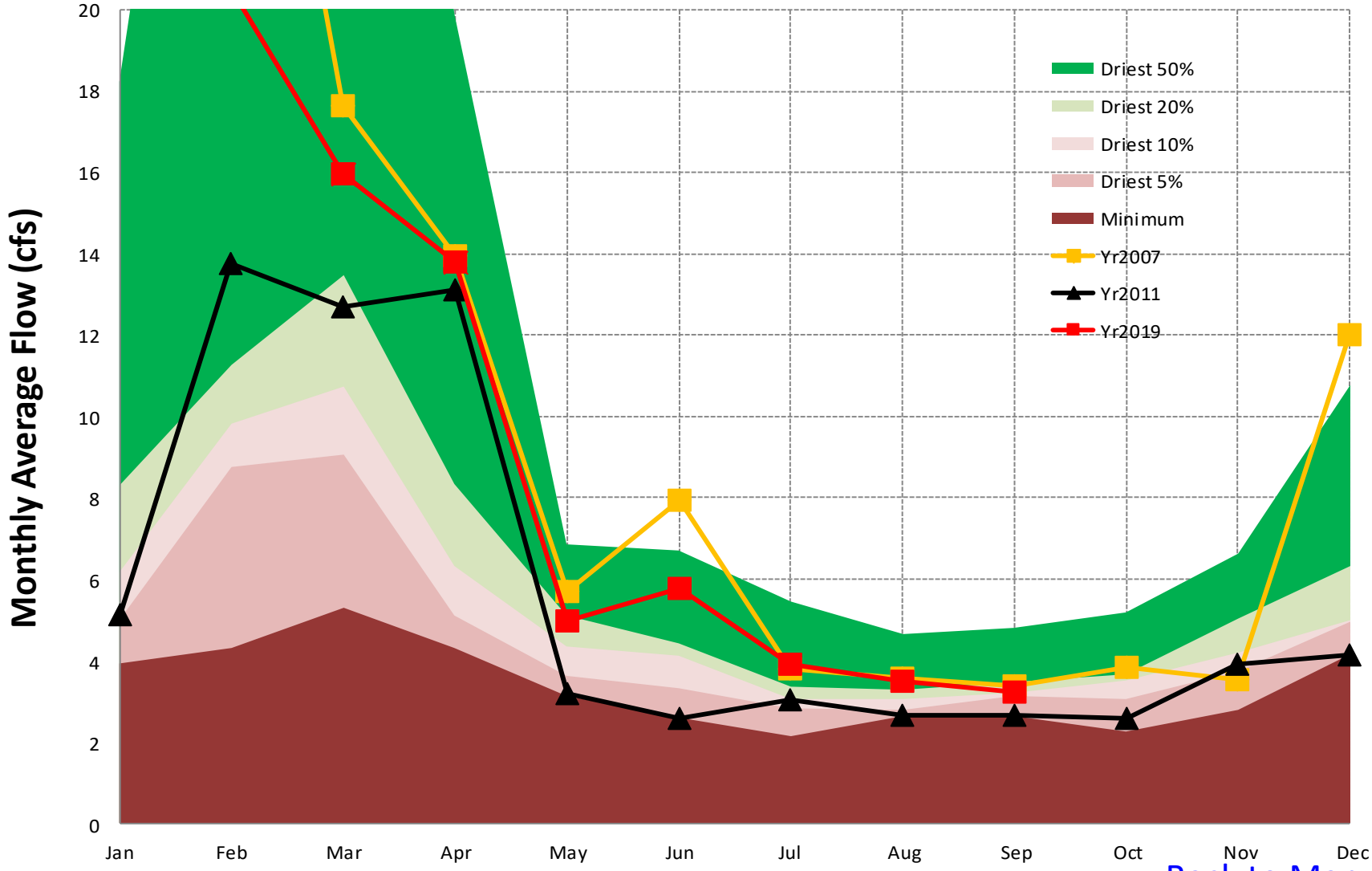
Gage #24. USGS #02198100, Savannah Basin, BEAVERDAM CREEK near SARDIS, GA



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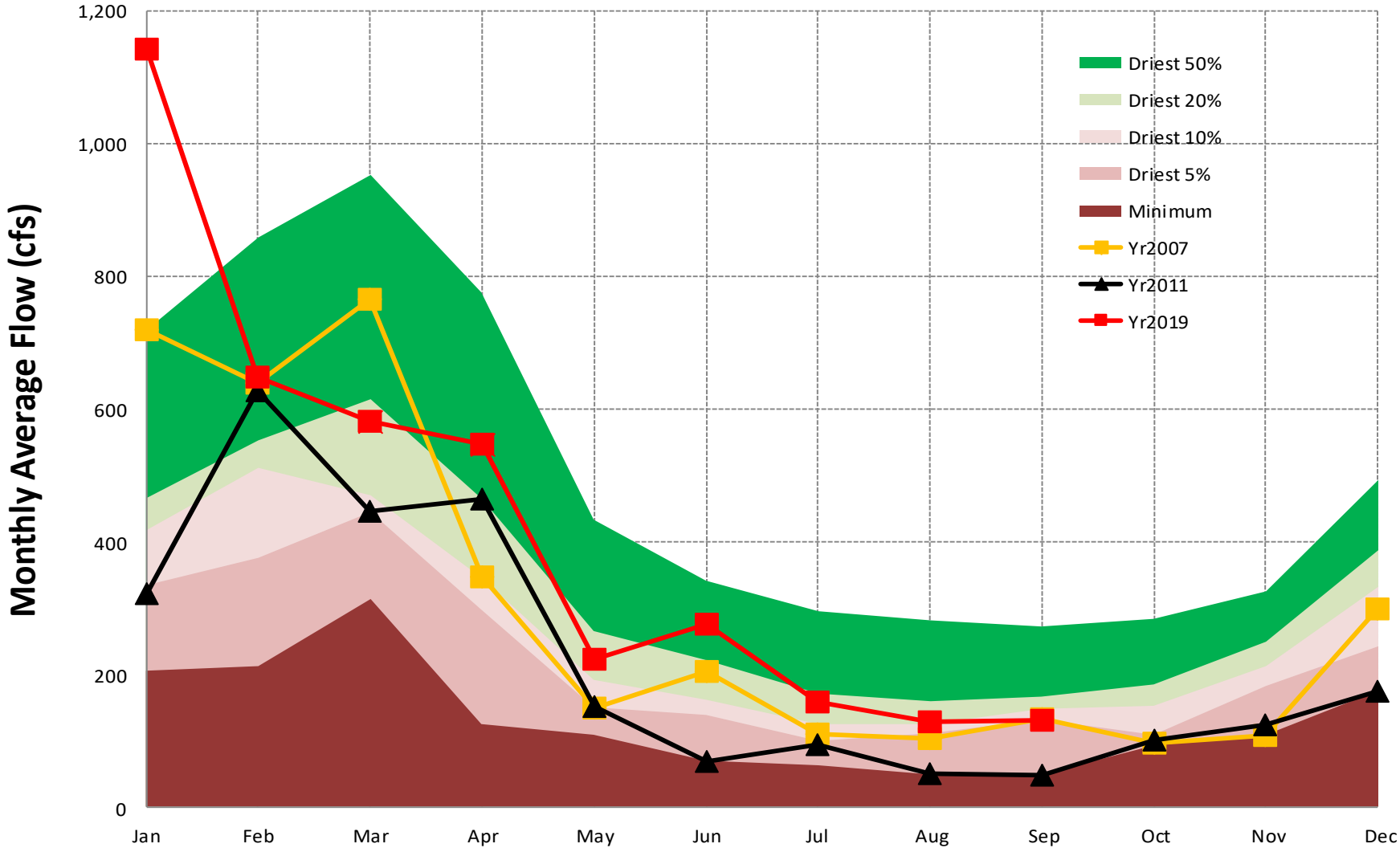
Gage #25. USGS #02198000, Savannah Basin, BRIER CREEK at MILLHAVEN, GA



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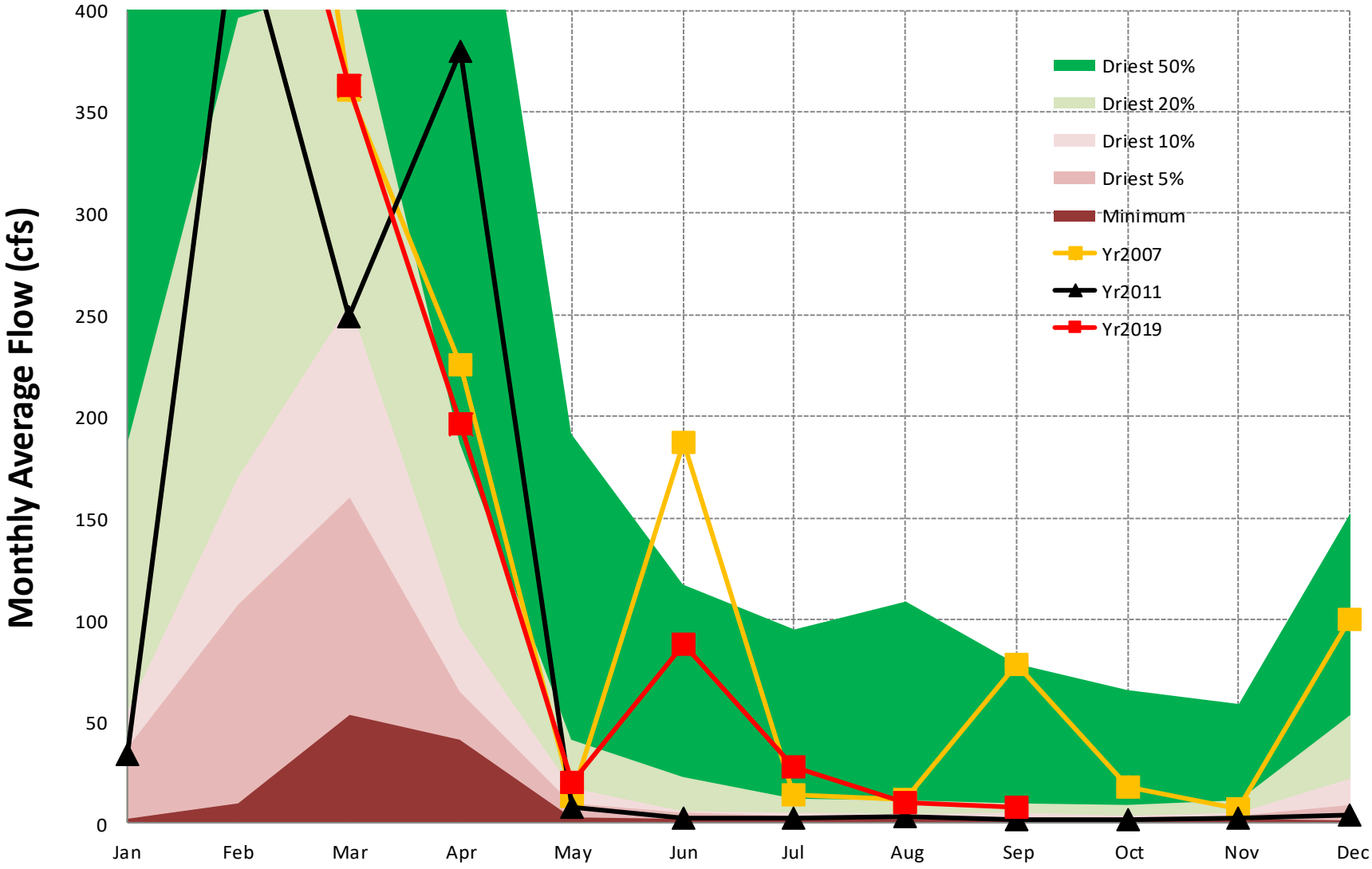
Gage #26. USGS #02203000, Ogeechee Basin, CANOOCHEE RIVER near CLAXTON, GA



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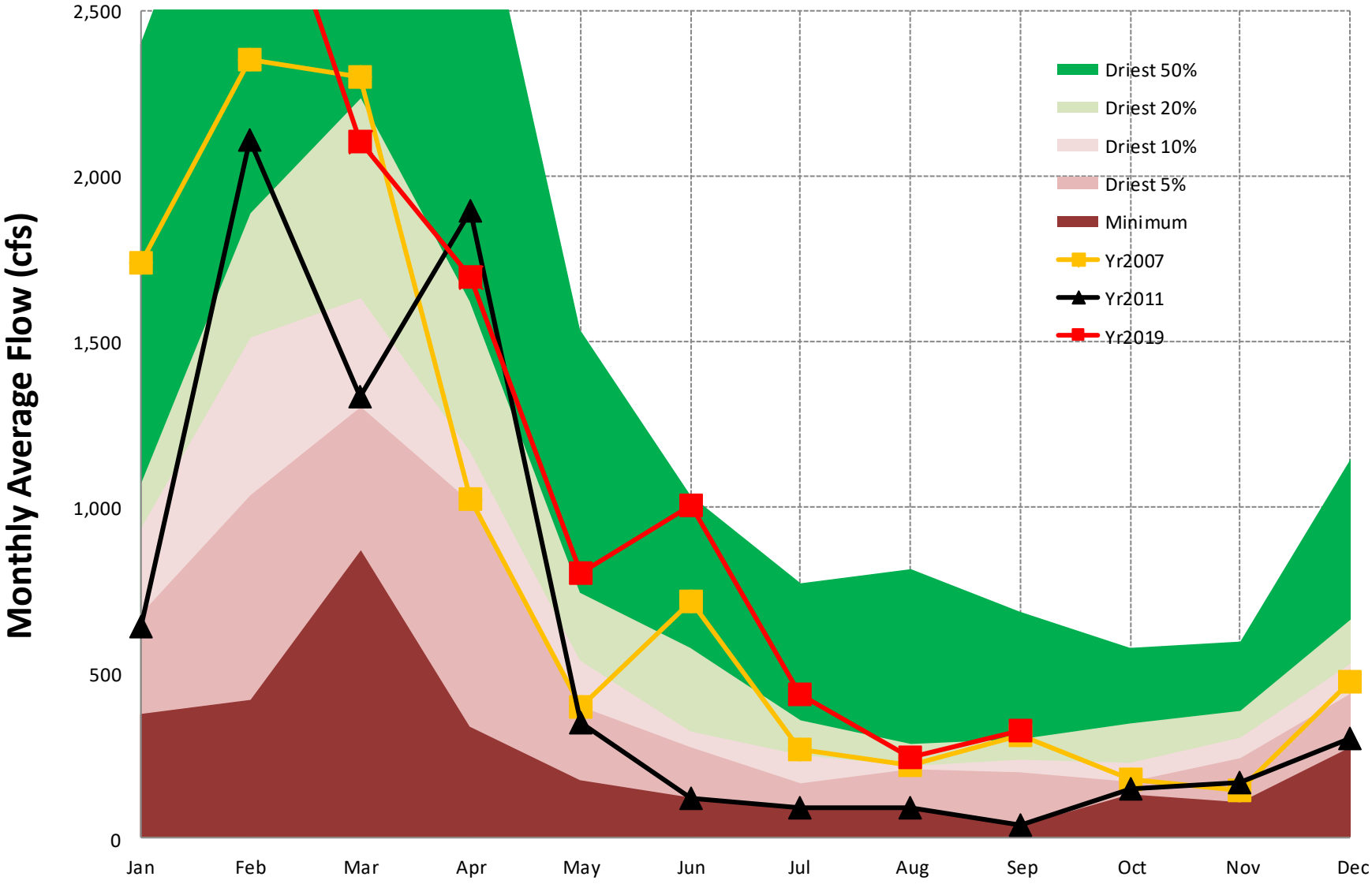
Gage #27. USGS #02202500, Ogeechee Basin, Ogeechee River near Eden, GA



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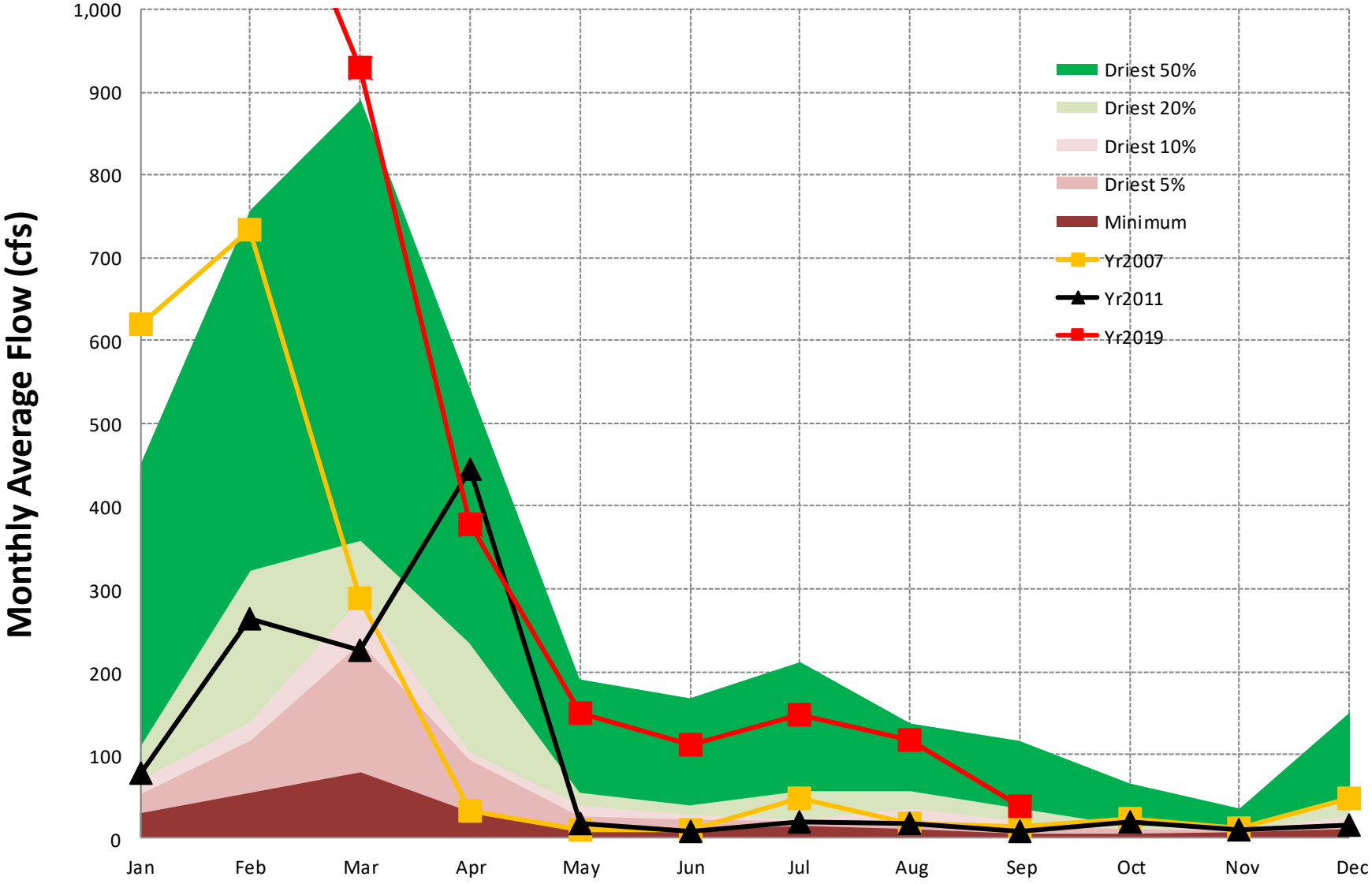
Gage #28. USGS #02327500, Ochlockonee Basin, OCHLOCKONEE RIVER near THOMASVILLE, GA



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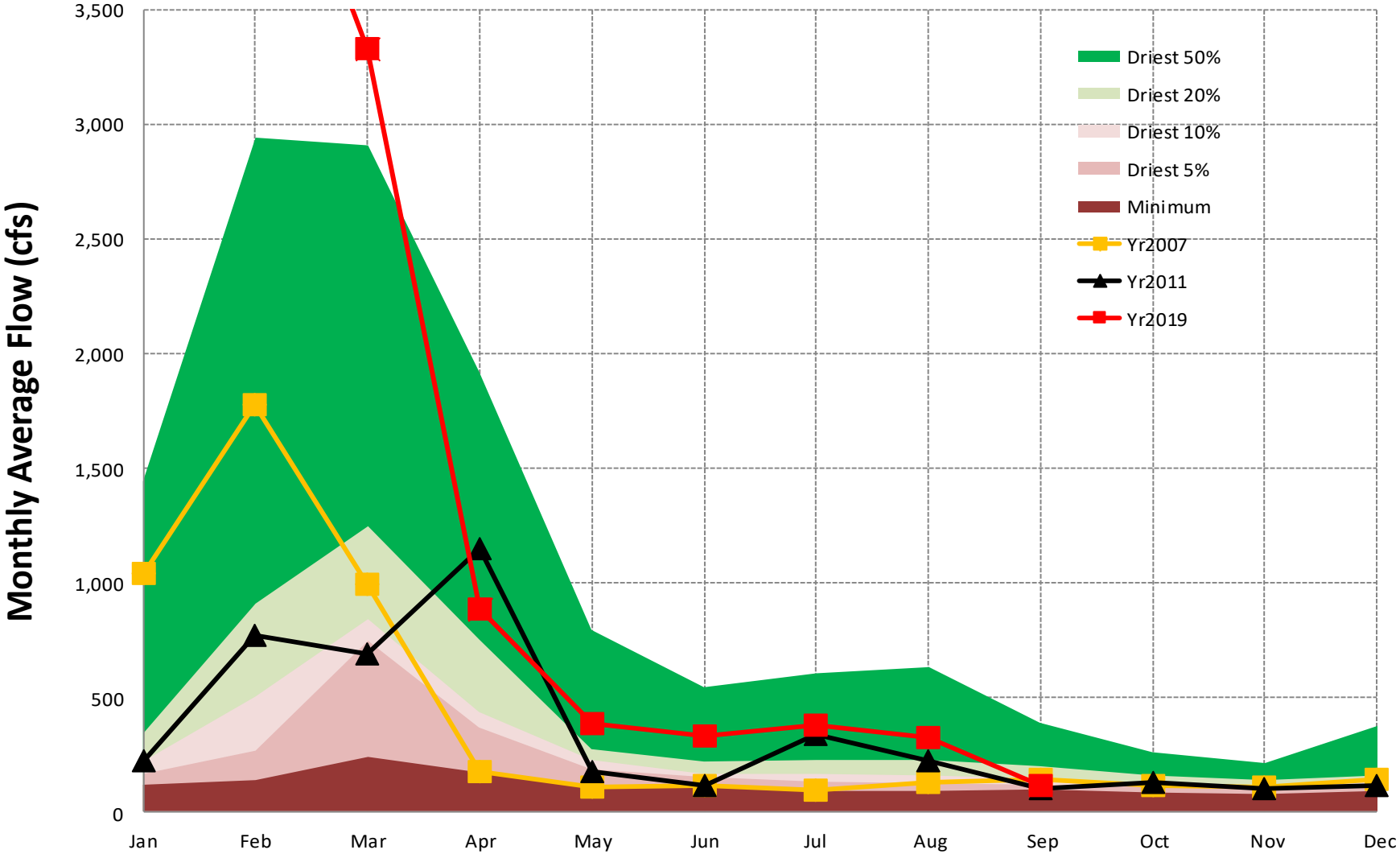
Gage #29. USGS #02319000, Suwanee Basin, WITHLACOOCHEE RIVER near PINETTA, FL



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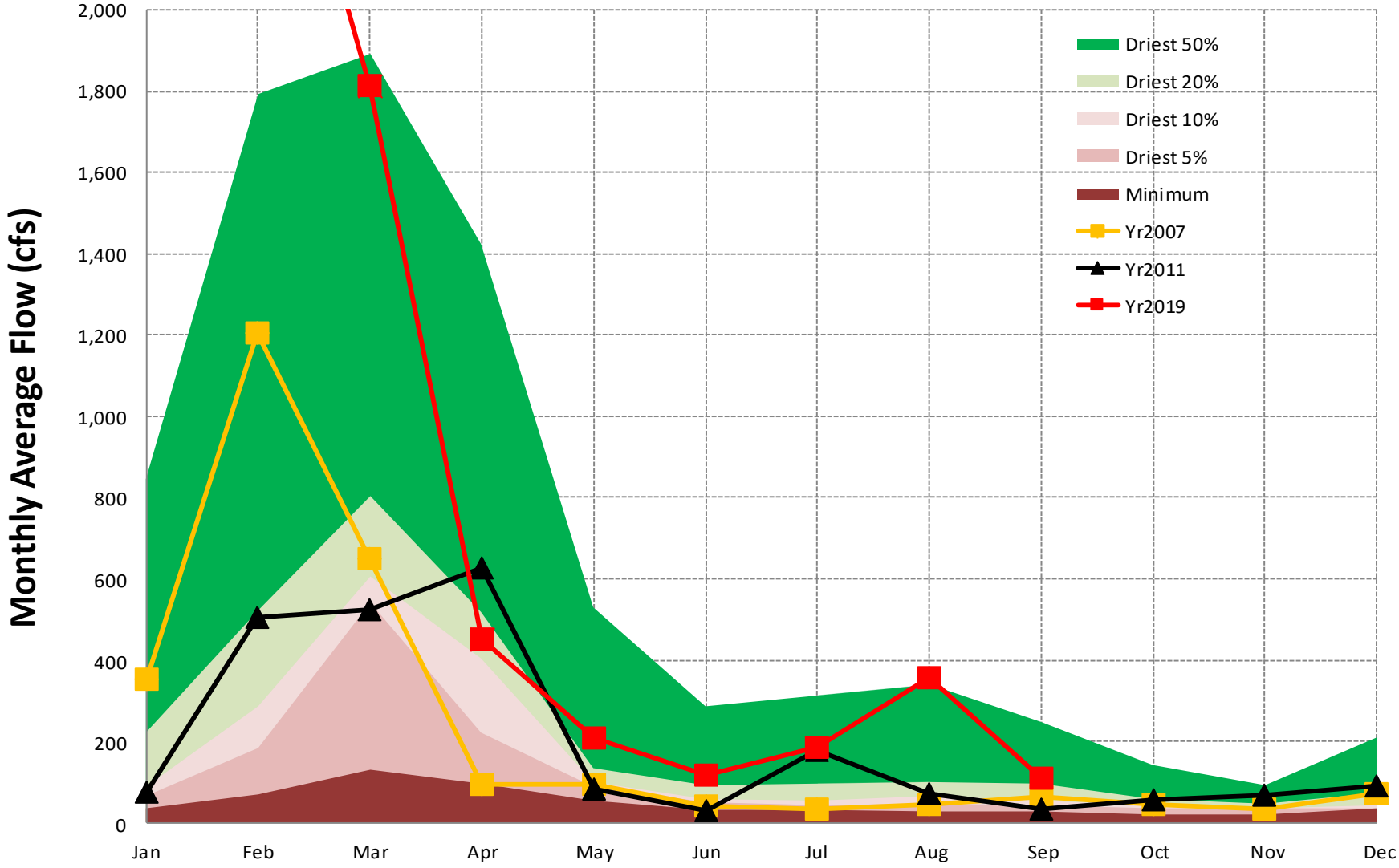
Gage #30. USGS #02317500, Suwanee Basin, Alapaha River at Statenville, GA



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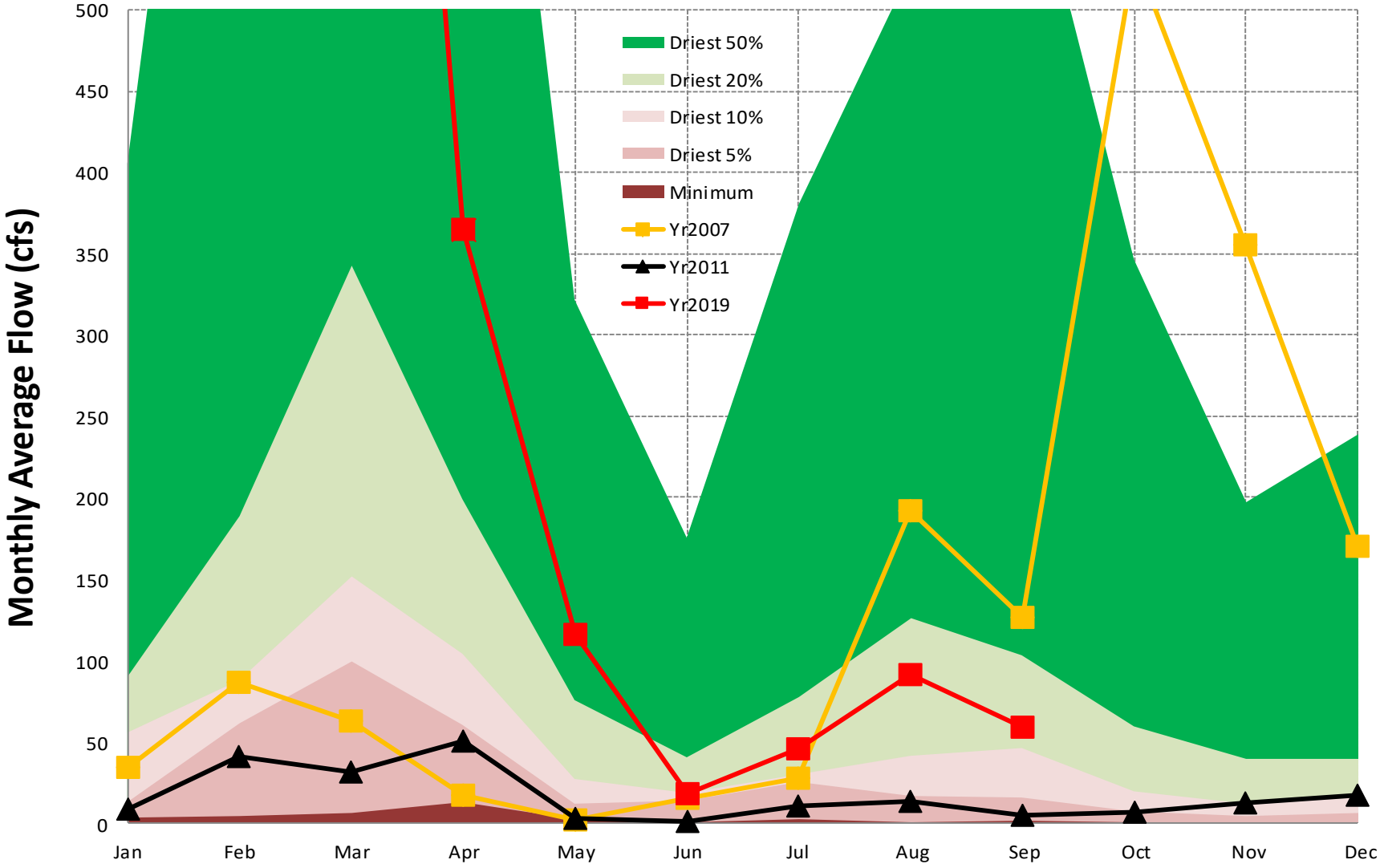
Gage #31. USGS #02314500, Suwanee Basin, SUWANNEE RIVER AT US 441, AT FARGO, GA



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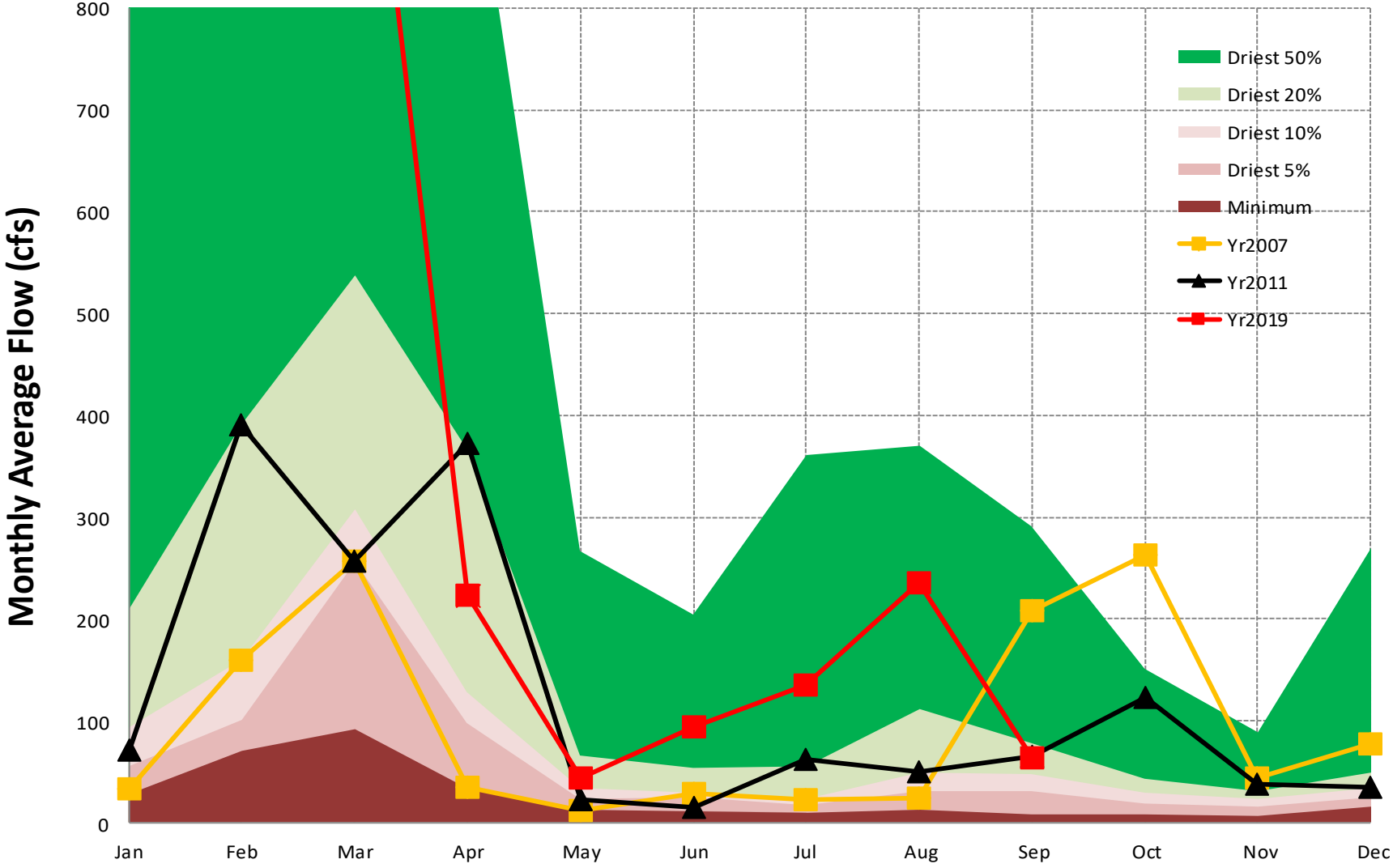
Gage #32. USGS #02226500, Satilla Basin, Satilla River near Waycross, GA



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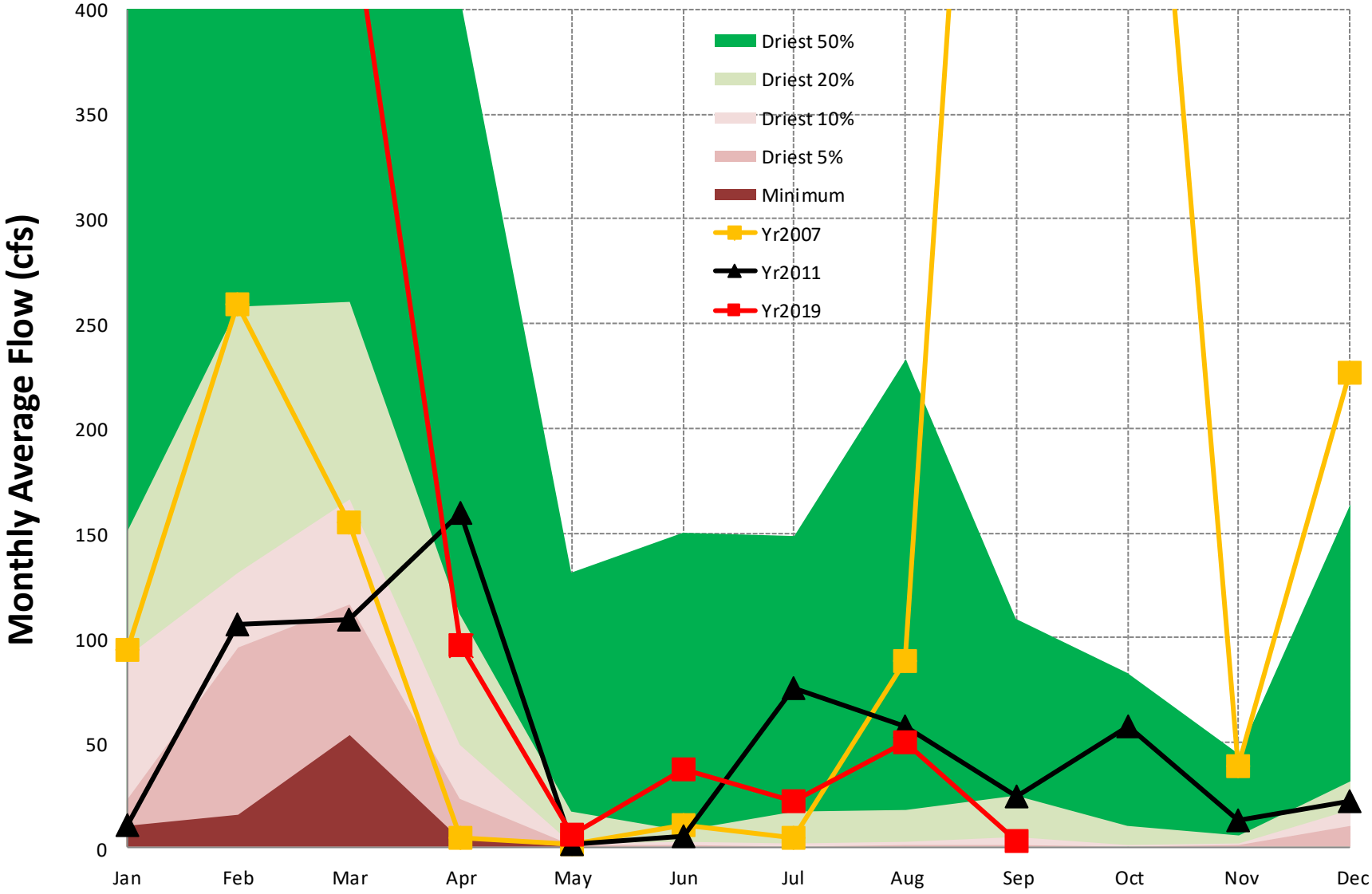
Gage #33. USGS #02227500, Satilla Basin, LITTLE SATILLA RIVER near OFFERMAN, GA



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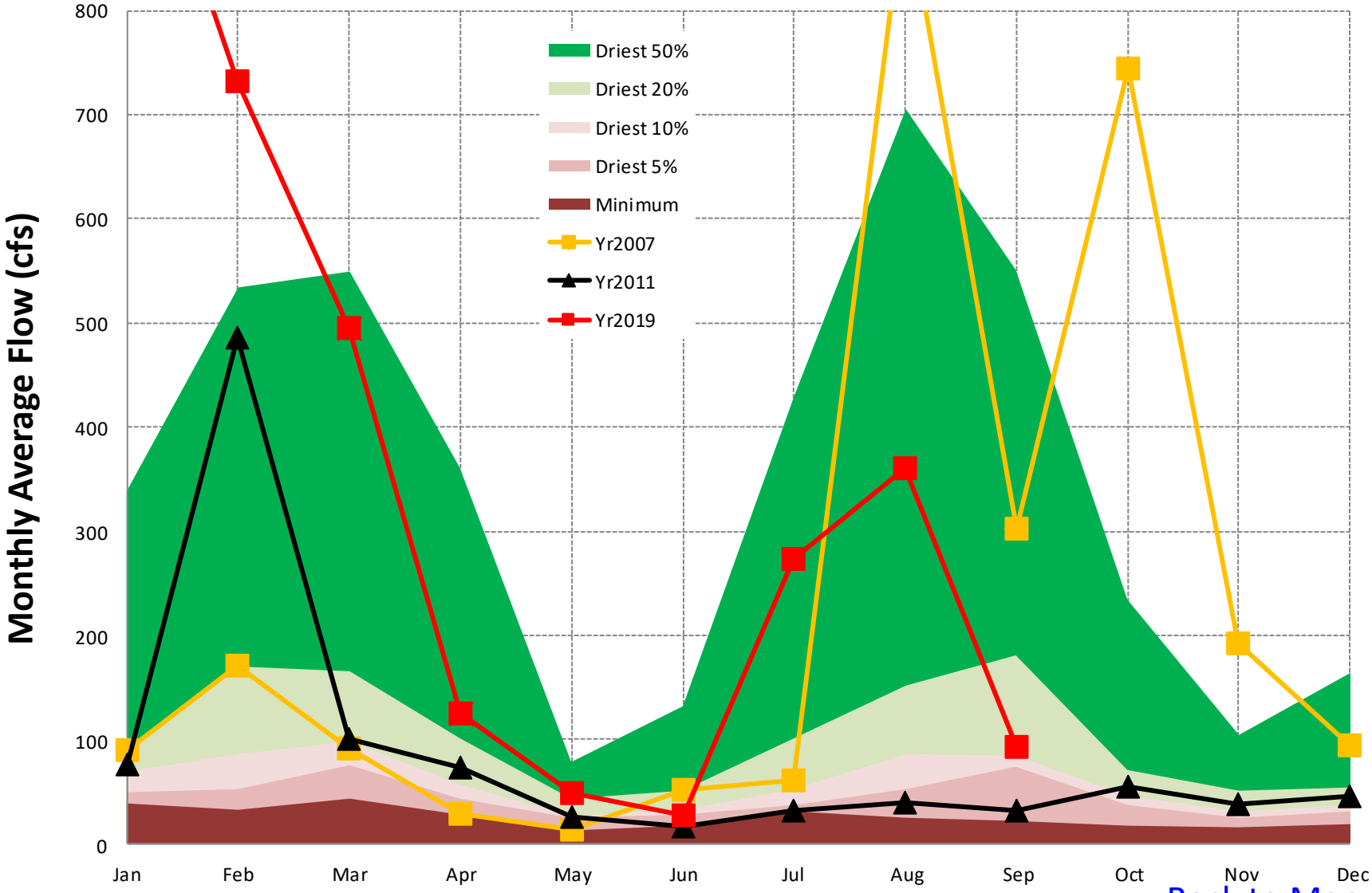
Gage #34. USGS #02231000, St Mary Basin, ST. MARYS RIVER near MACCLENNY, FL



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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

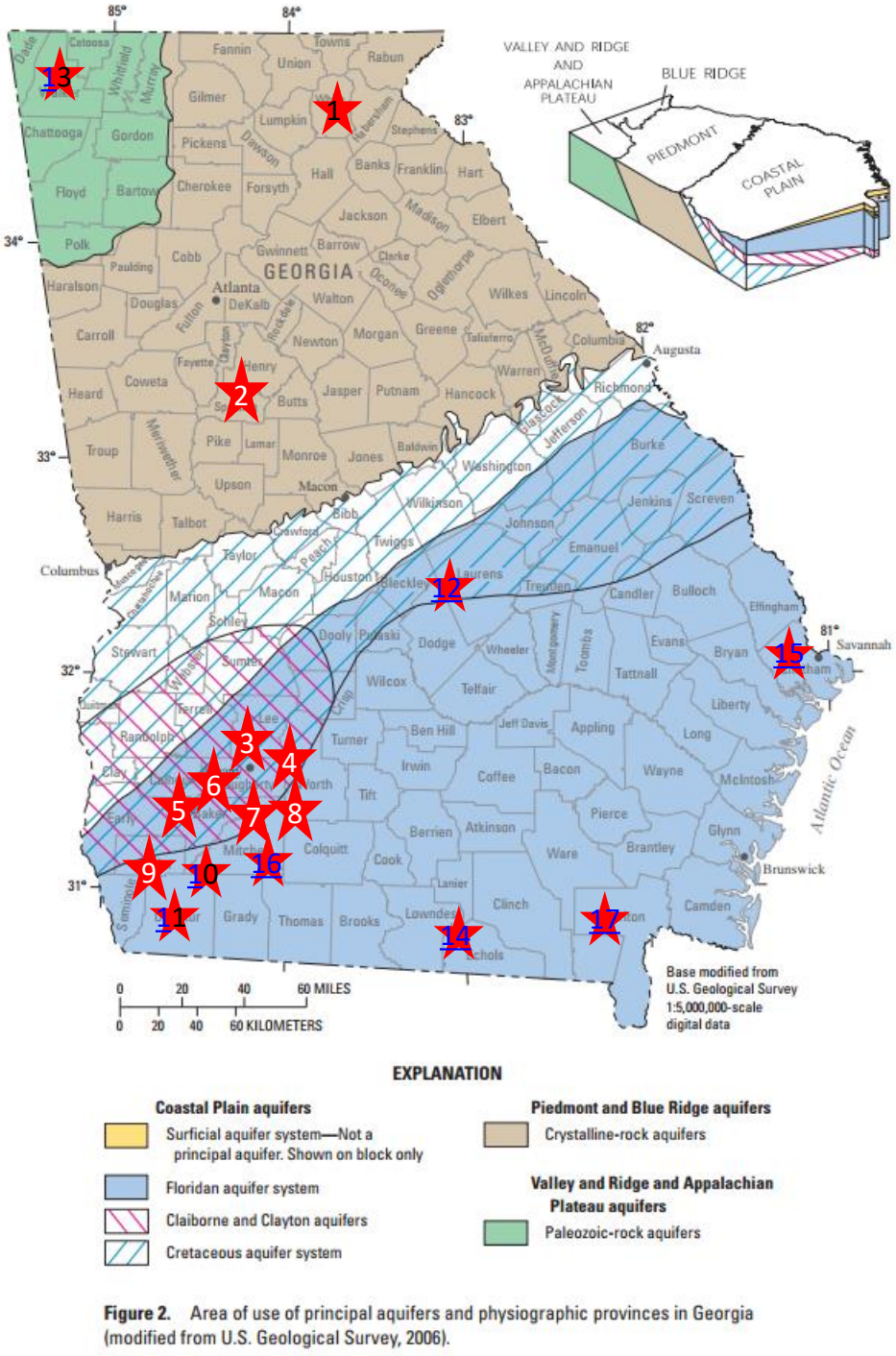


Figure 2. Area of use of principal aquifers and physiographic provinces in Georgia (modified from U.S. Geological Survey, 2006).

Groundwater Level Graphs

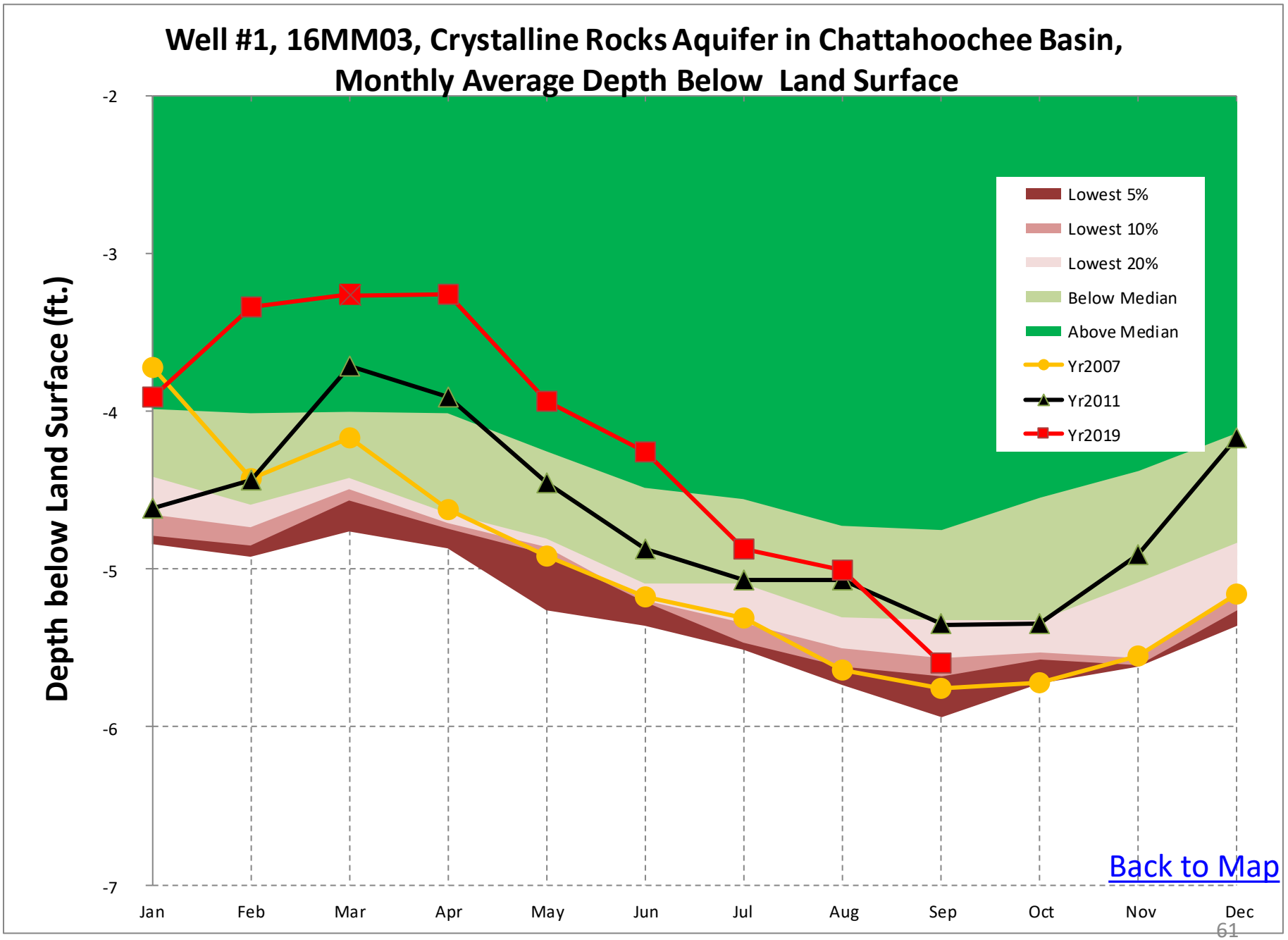
- For each of the 17 groundwater wells, EPD has prepared a graph that shows monthly average groundwater levels from January 2019 through September 2019;
- To help put these levels into perspective, for comparison purposes, each graph also shows:
  - Monthly average levels at that same well for the years 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.

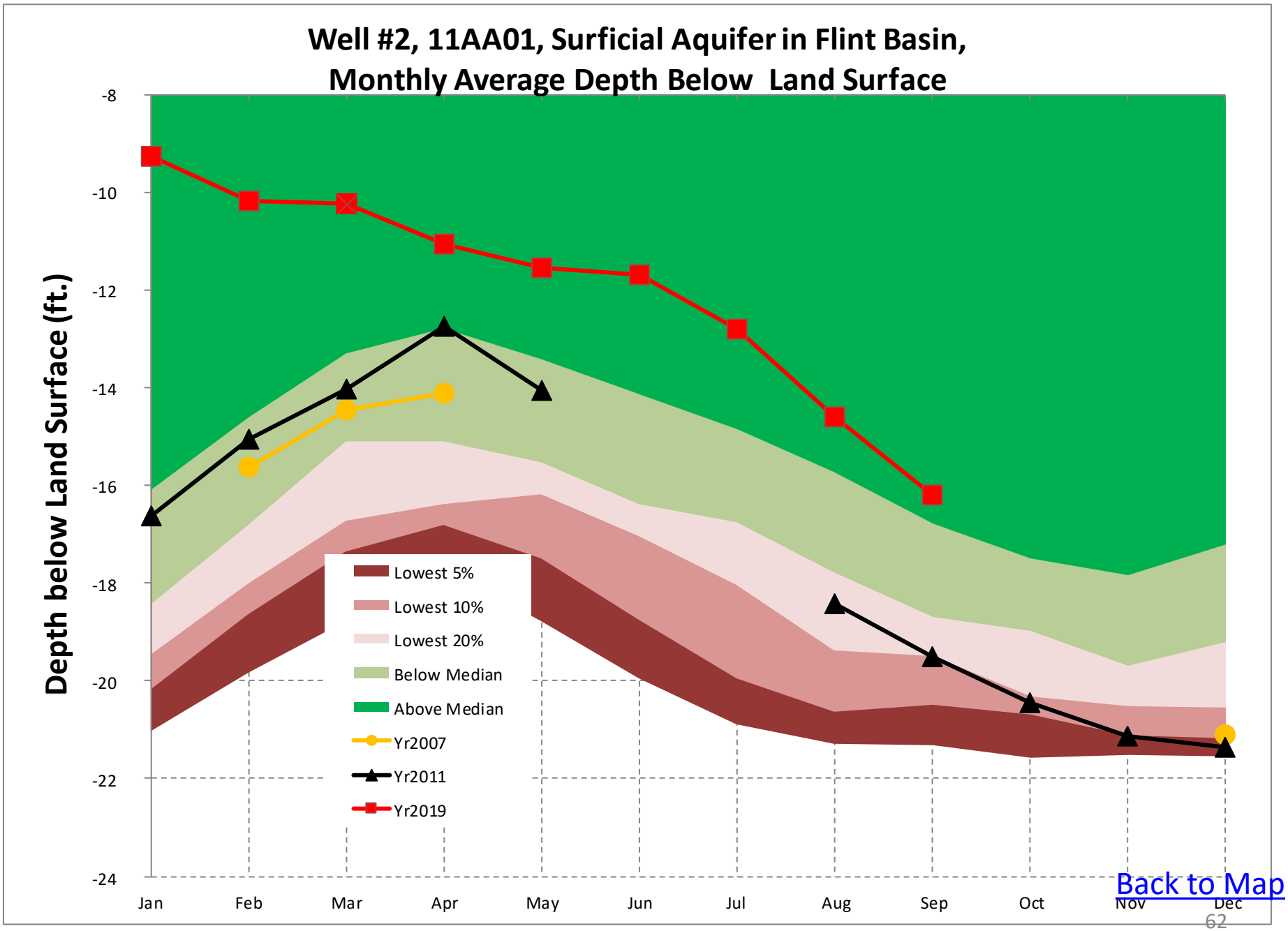
How to Read the Groundwater Level Graphs

Example: **Well #11, 09F520, Flint River Basin**

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

- The average monthly groundwater level for September 2019 was 48.7ft below land surface. The statistical composite of all historical data for this well shows that monthly average groundwater levels in September have historically been lower than September 2019 about 30% of the time; about 70% of the time in September they have been higher.
- The average monthly groundwater level in September 2011 was 51ft below land surface. The statistical composite of all historical data for this well shows that monthly average groundwater levels in September have historically been lower than September 2011 about 5% of the time; about 95% of the time in September they have been higher.
- The average monthly groundwater level in September 2007 was 51.1ft below land surface. The statistical composite of all historical data for this well shows that monthly average groundwater levels in September have historically been lower than September 2007 about 2~5% of the time; about 95~98% of the time in September they have been higher.


Well #1, 16MM03, Crystalline Rocks Aquifer in Chattahoochee Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-2
-3
-4
-5
-6
-7
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019
Back to Map


Well #2, 11AA01, Surficial Aquifer in Flint Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-8
-10
-12
-14
-16
-18
-20
-22
-24
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019

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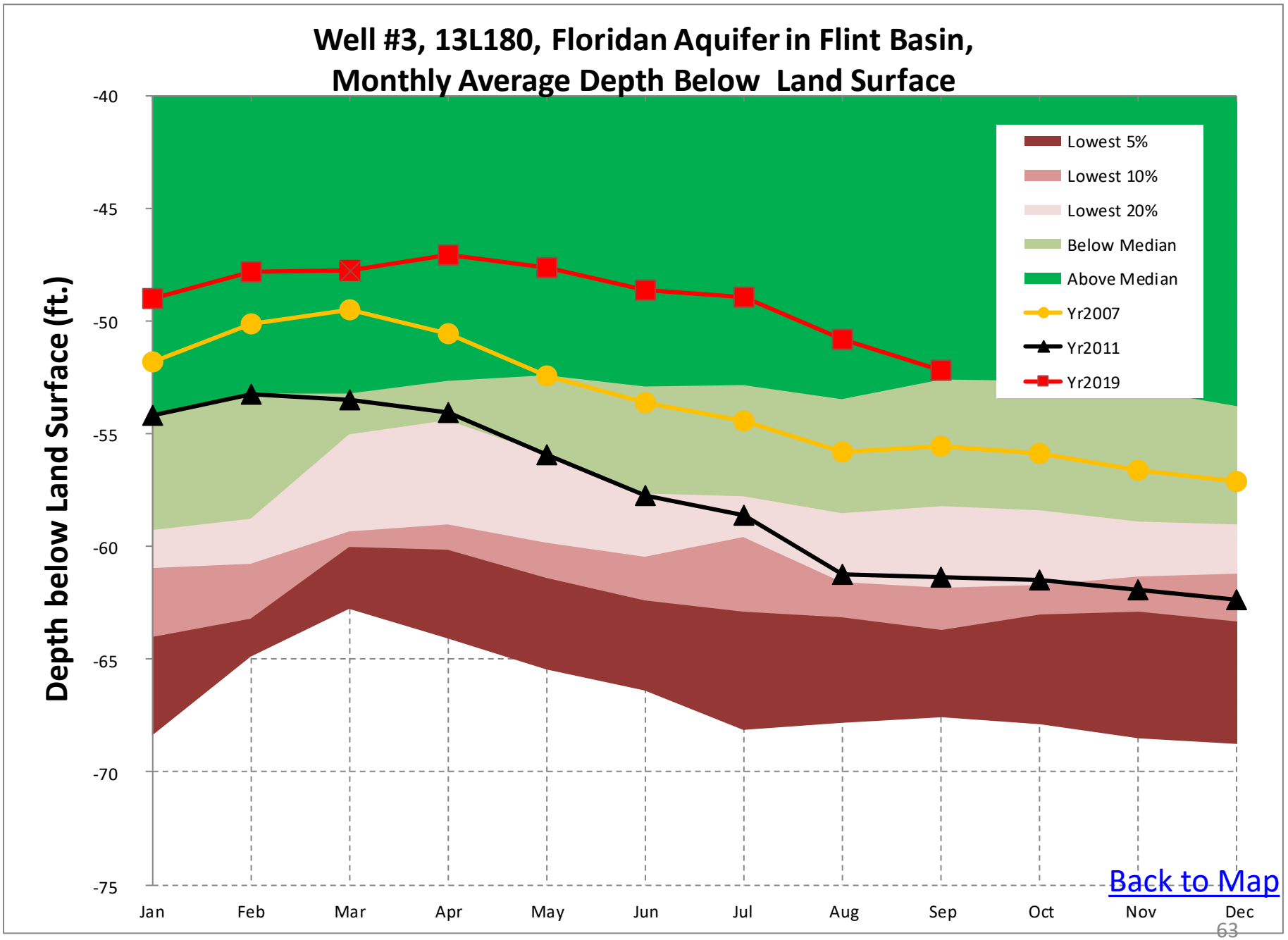
Well #3, 13L180, Floridan Aquifer in Flint Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-40
-45
-50
-55
-60
-65
-70
-75
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019

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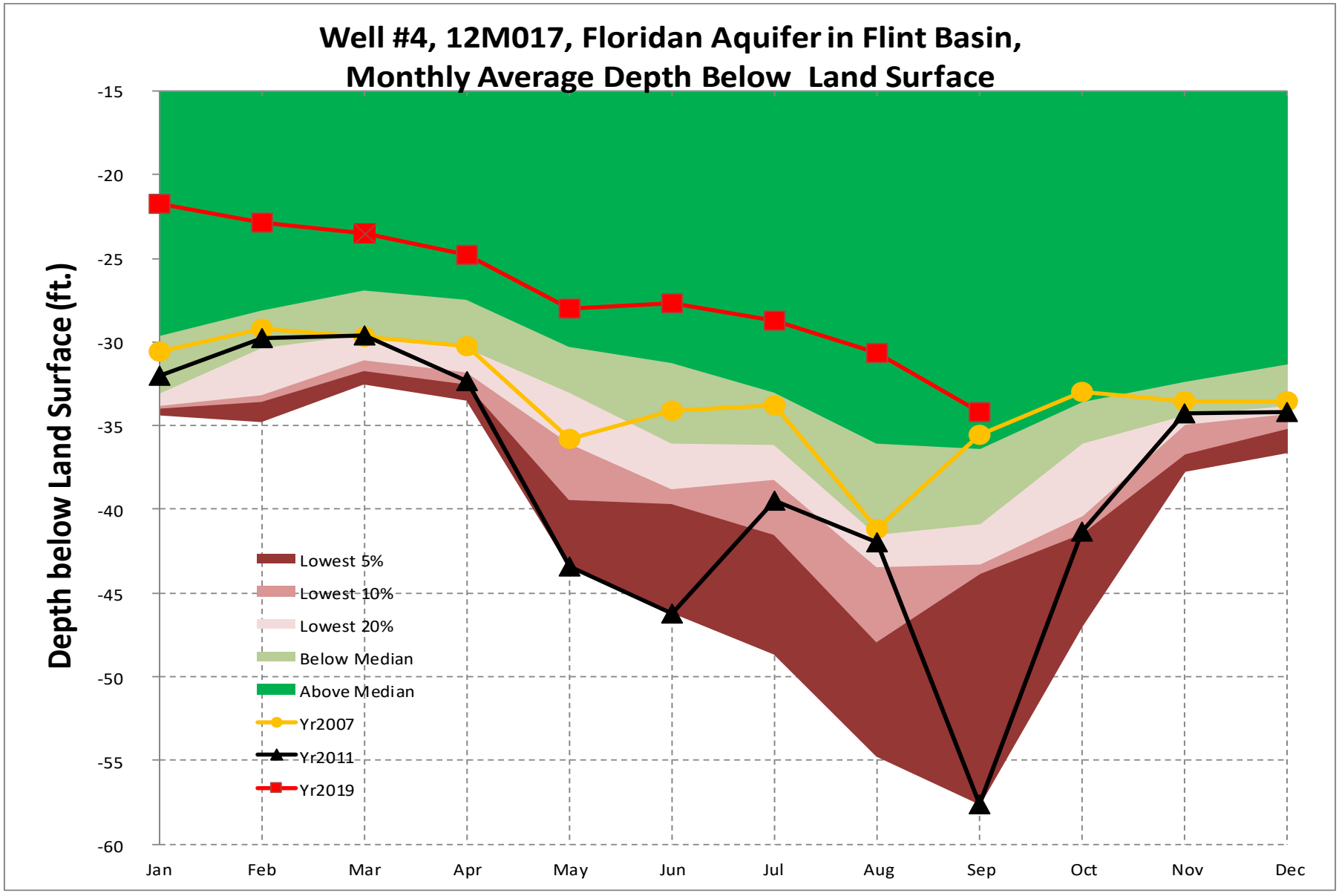
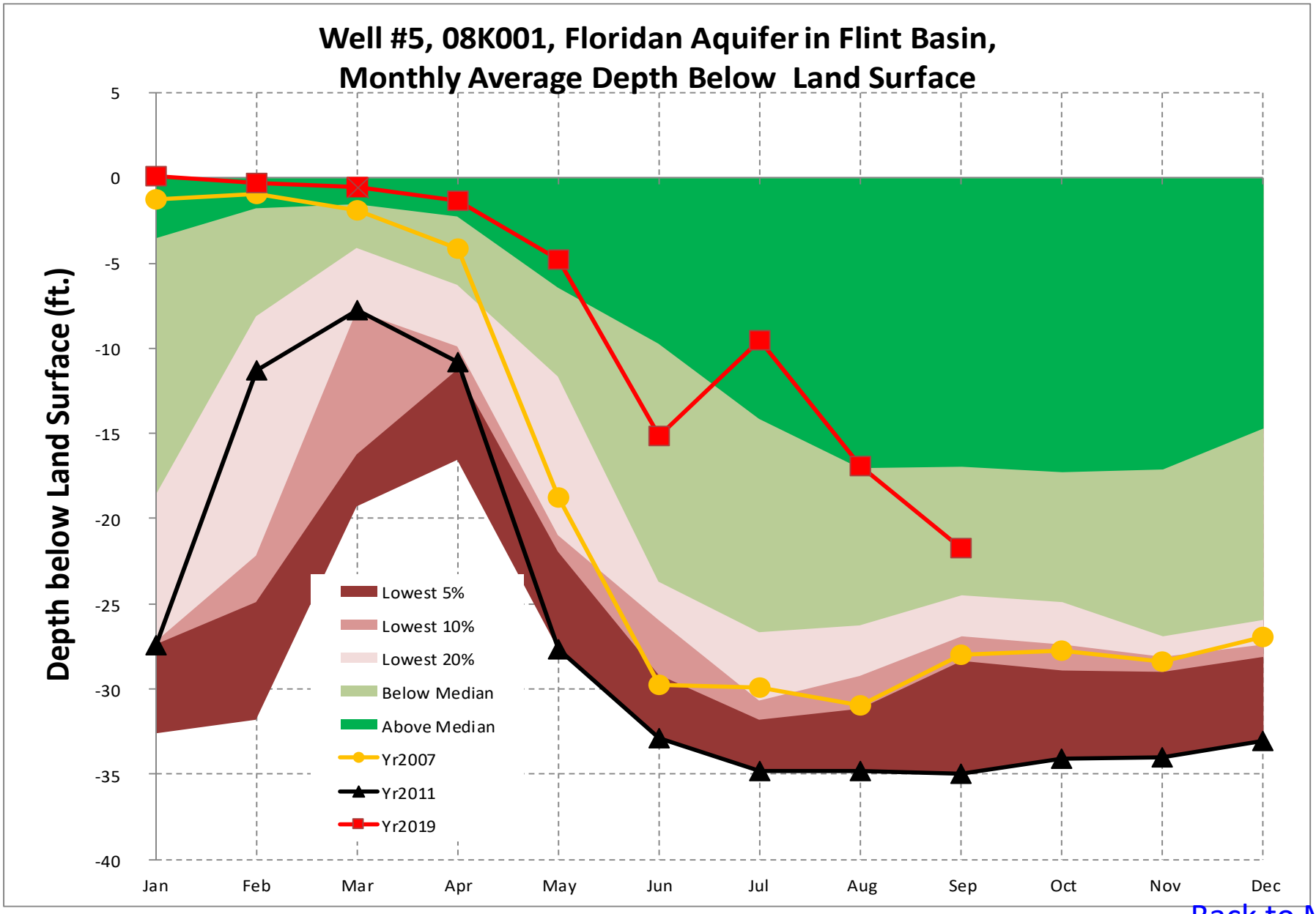

Well #4, 12M017, Floridan Aquifer in Flint Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019

Back to Map


Well #5, 08K001, Floridan Aquifer in Flint Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
5
0
-5
-10
-15
-20
-25
-30
-35
-40
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019

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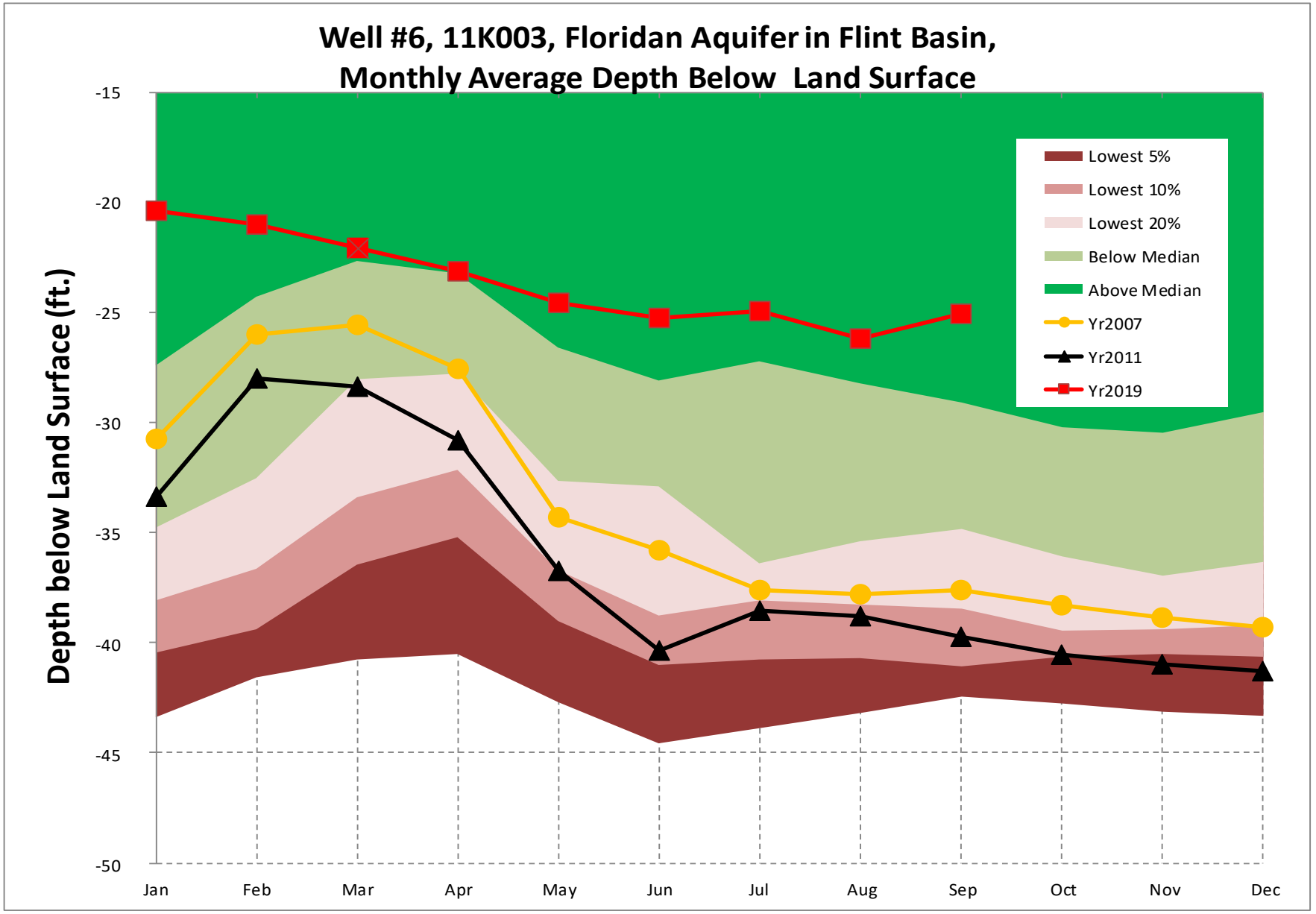
Well #6, 11K003, Floridan Aquifer in Flint Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-15
-20
-25
-30
-35
-40
-45
-50
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019

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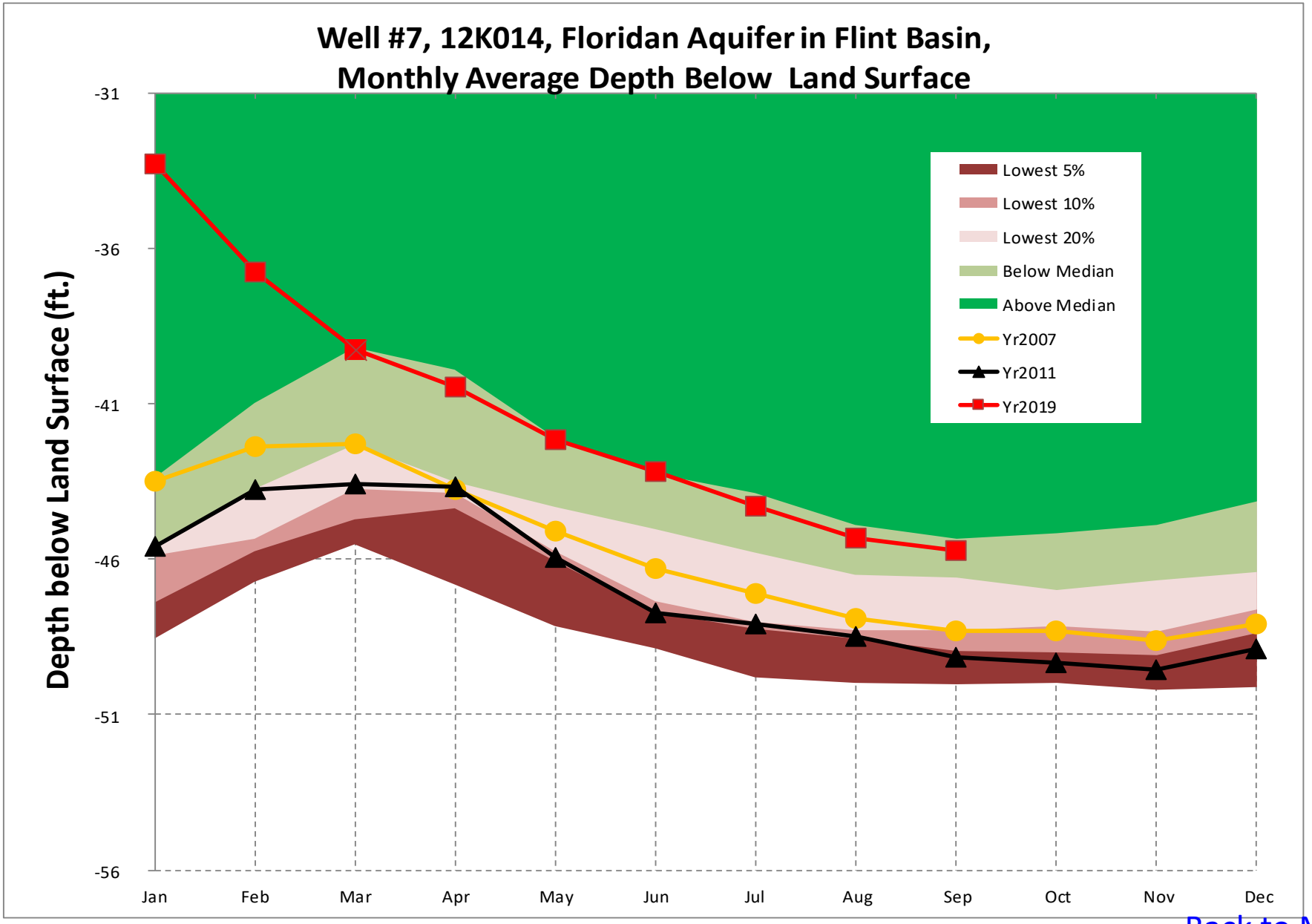
Well #7, 12K014, Floridan Aquifer in Flint Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-31
-36
-41
-46
-51
-56
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019

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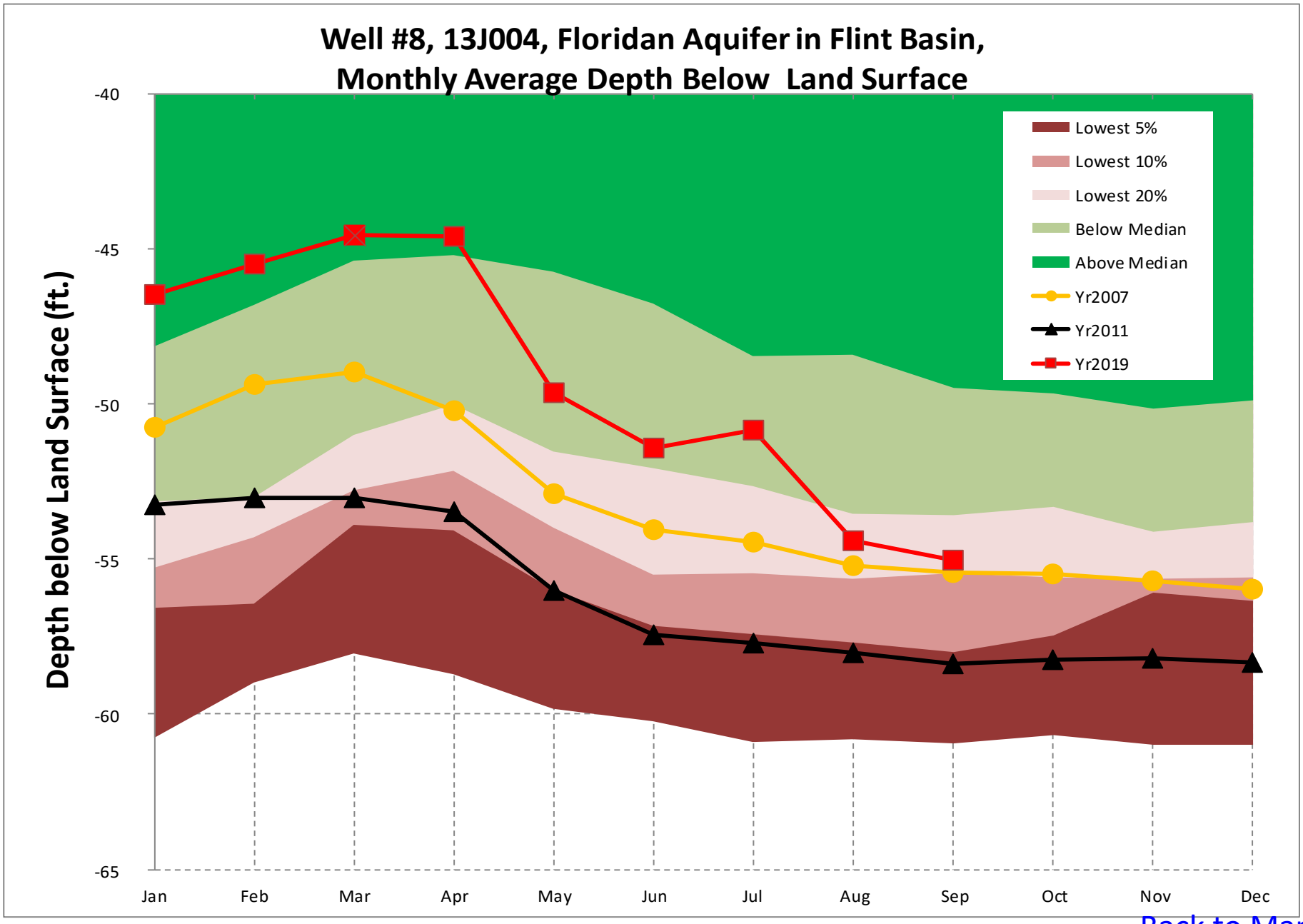
Well #8, 13J004, Floridan Aquifer in Flint Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-40
-45
-50
-55
-60
-65
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019

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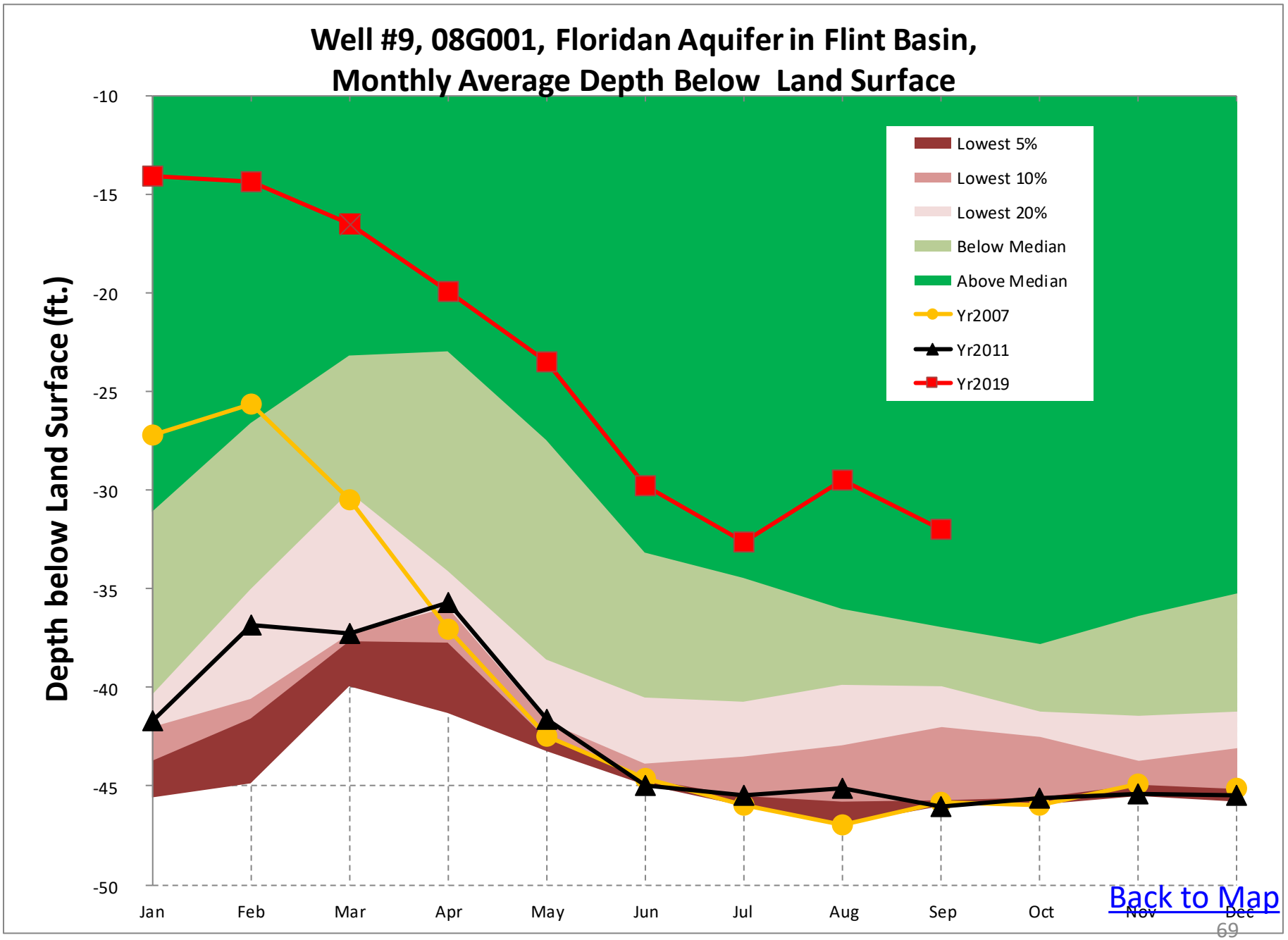
Well #9, 08G001, Floridan Aquifer in Flint Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-10
-15
-20
-25
-30
-35
-40
-45
-50
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019

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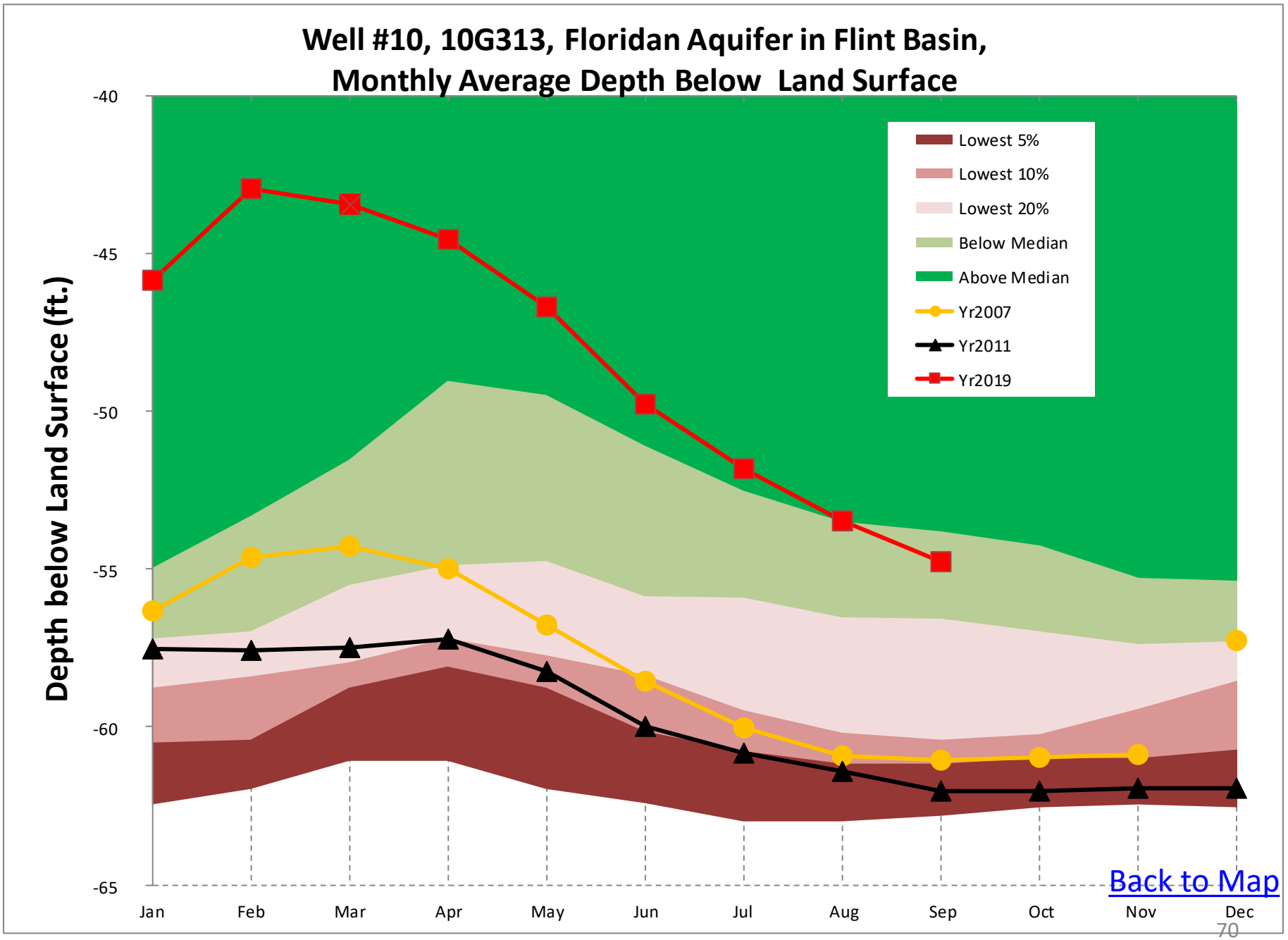
Well #10, 10G313, Floridan Aquifer in Flint Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-40
-45
-50
-55
-60
-65
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019

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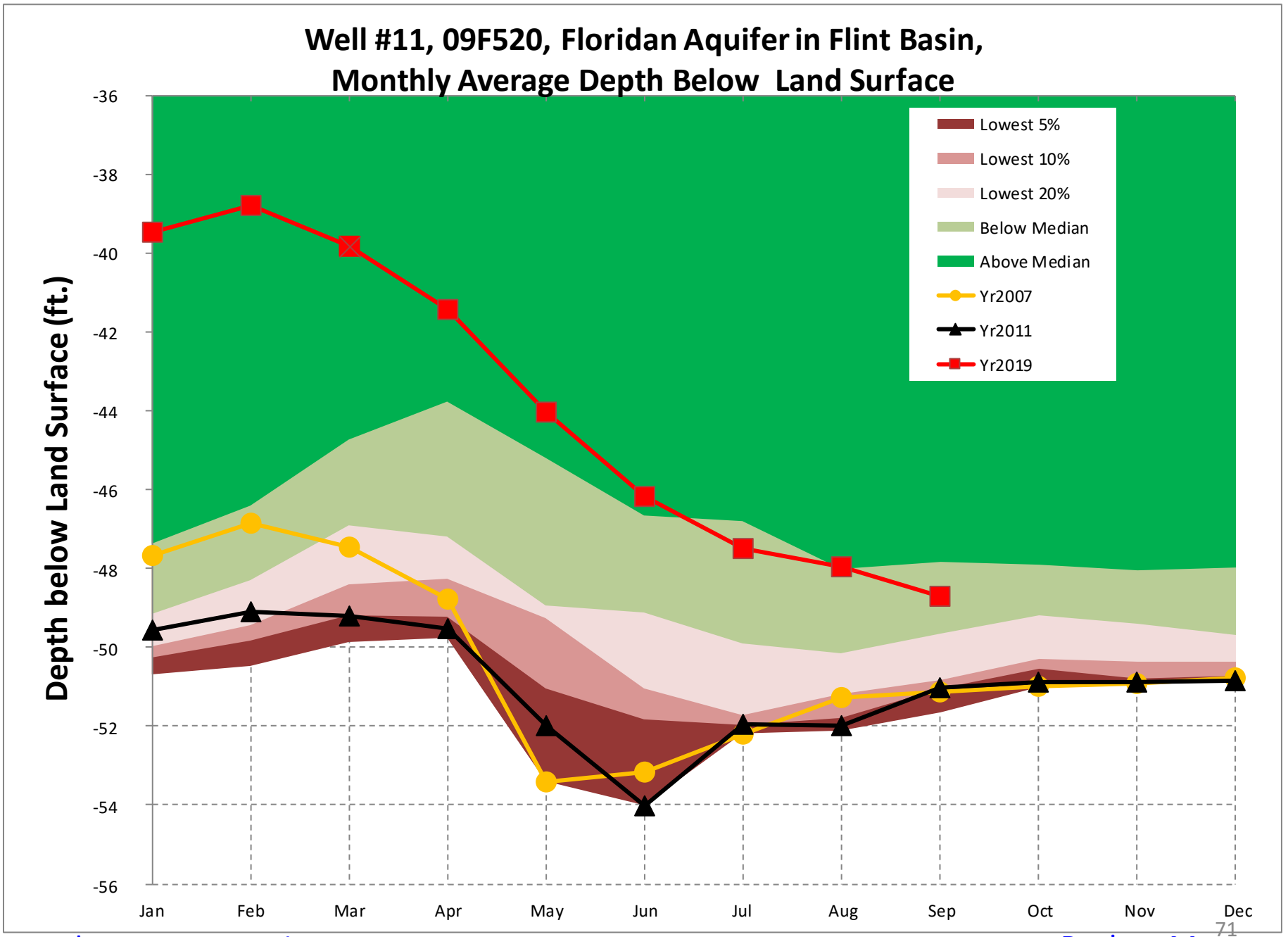

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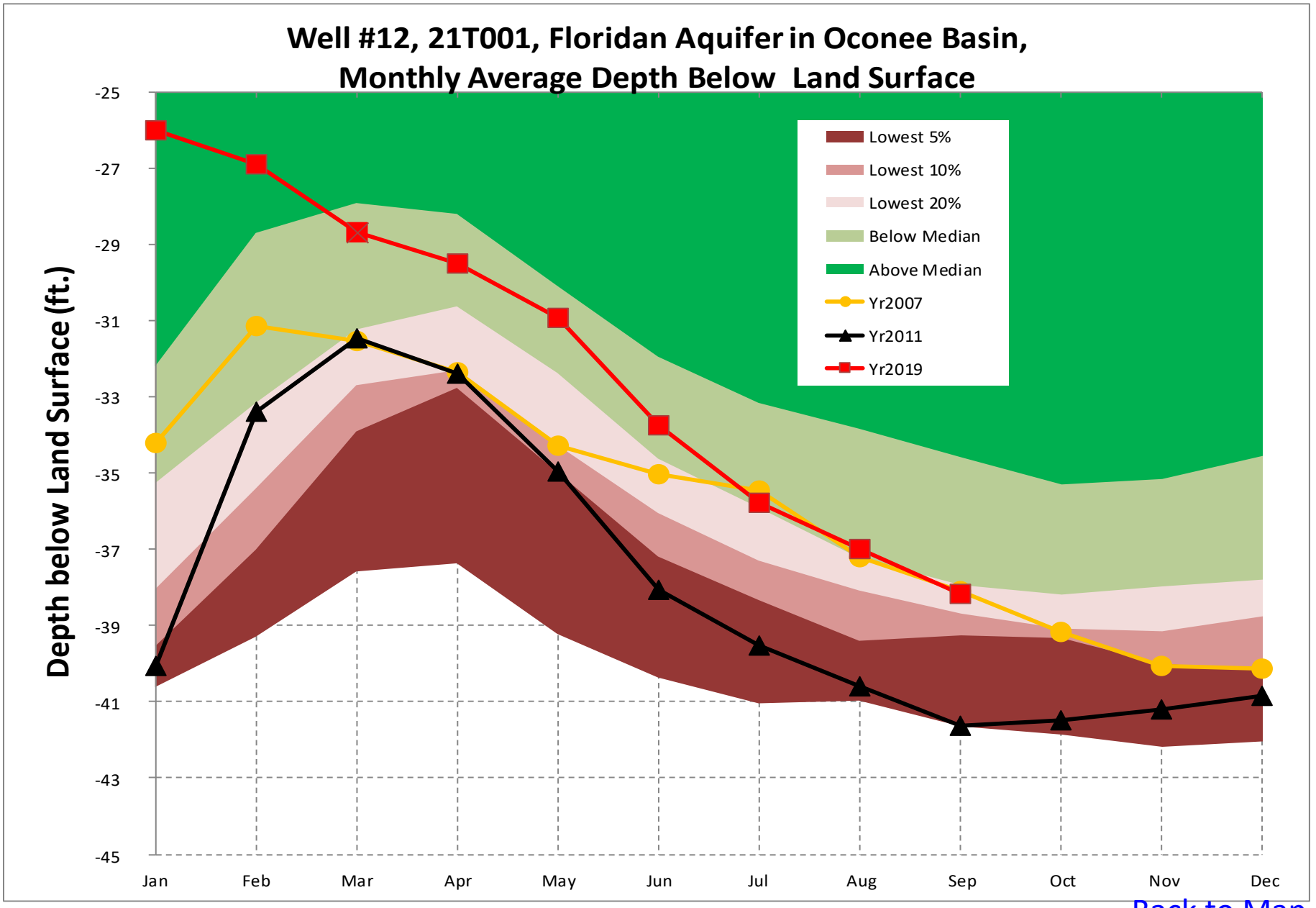
Well #12, 21T001, Floridan Aquifer in Oconee Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-25
-27
-29
-31
-33
-35
-37
-39
-41
-43
-45
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019

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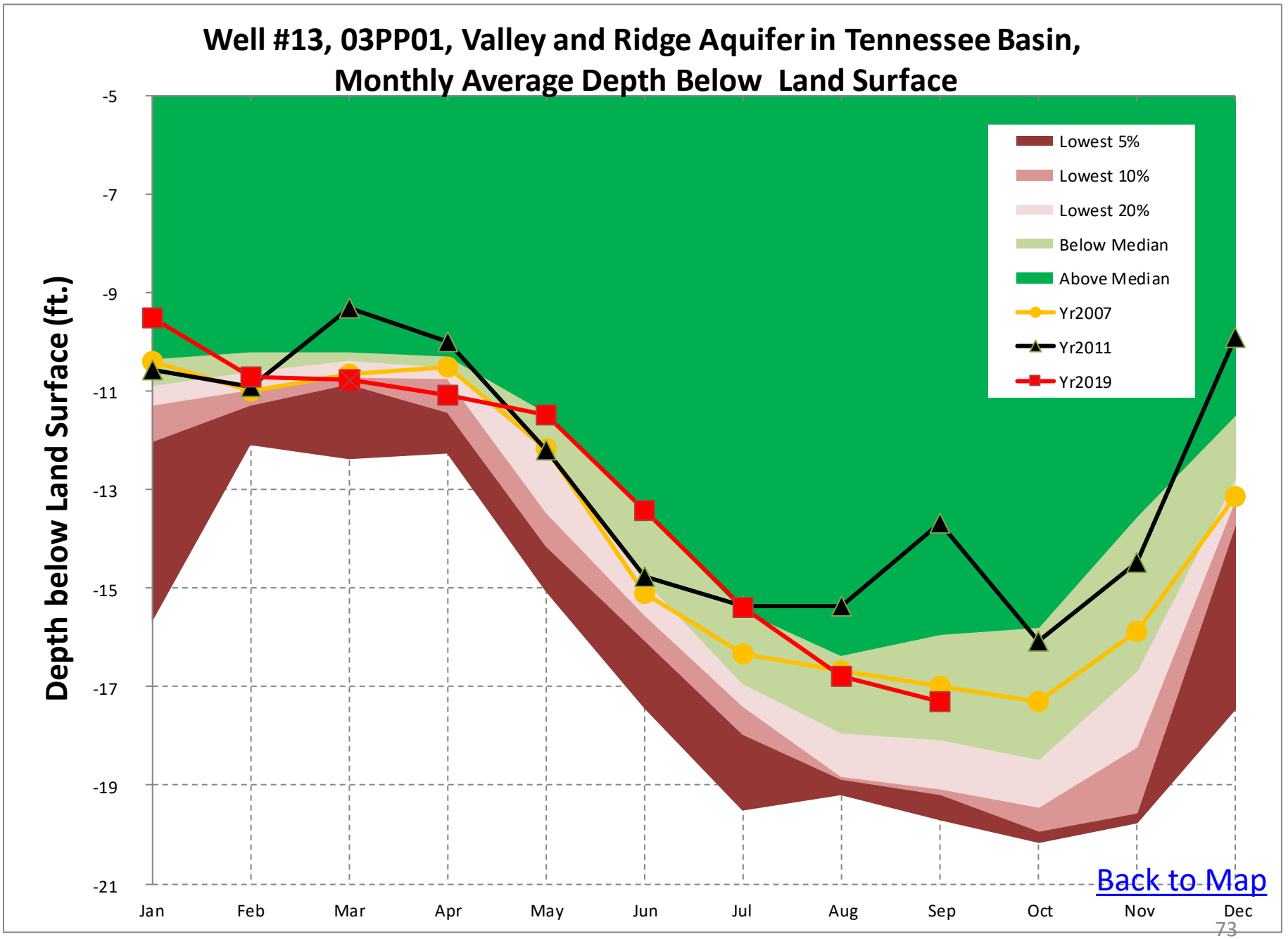
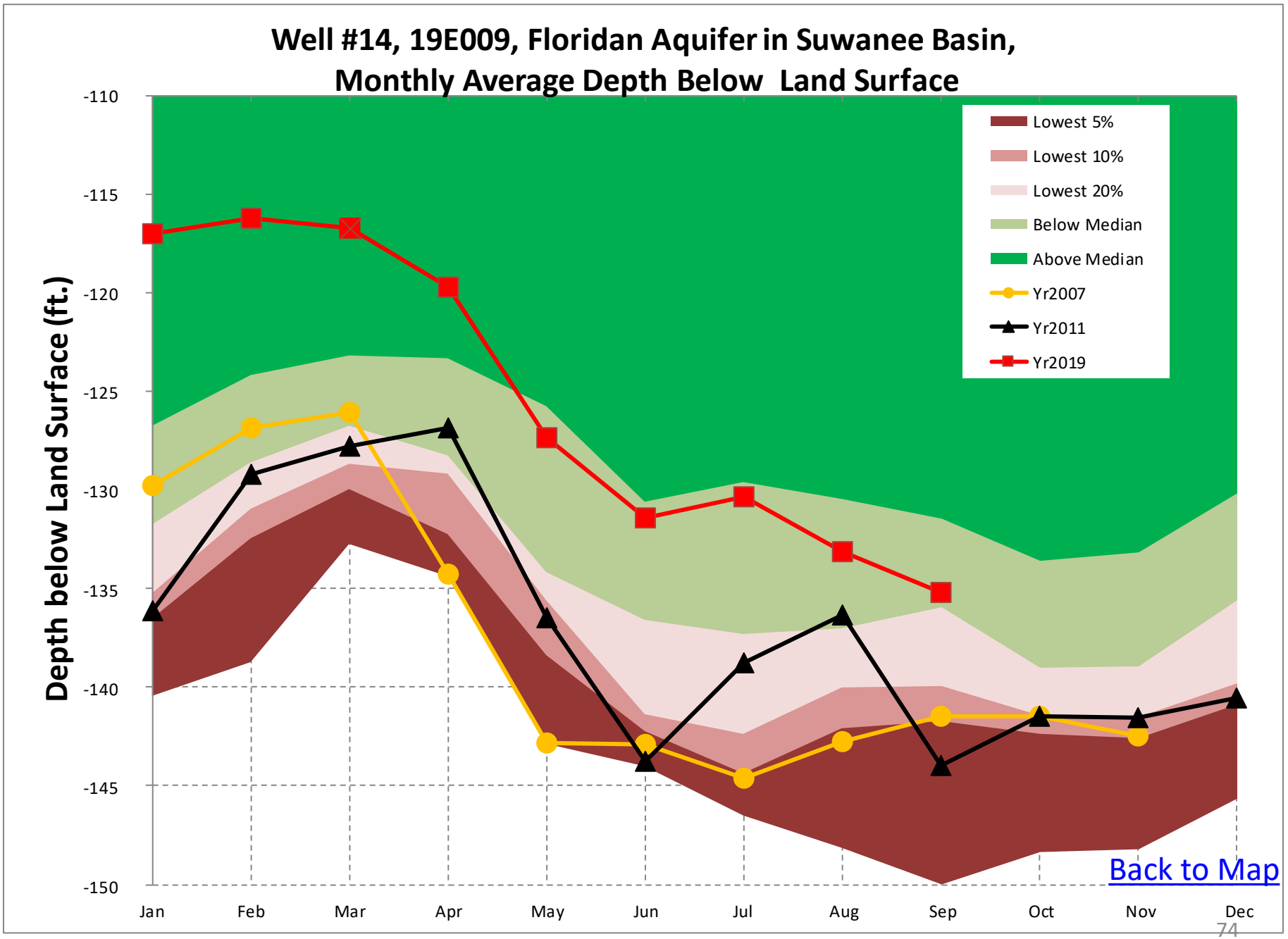
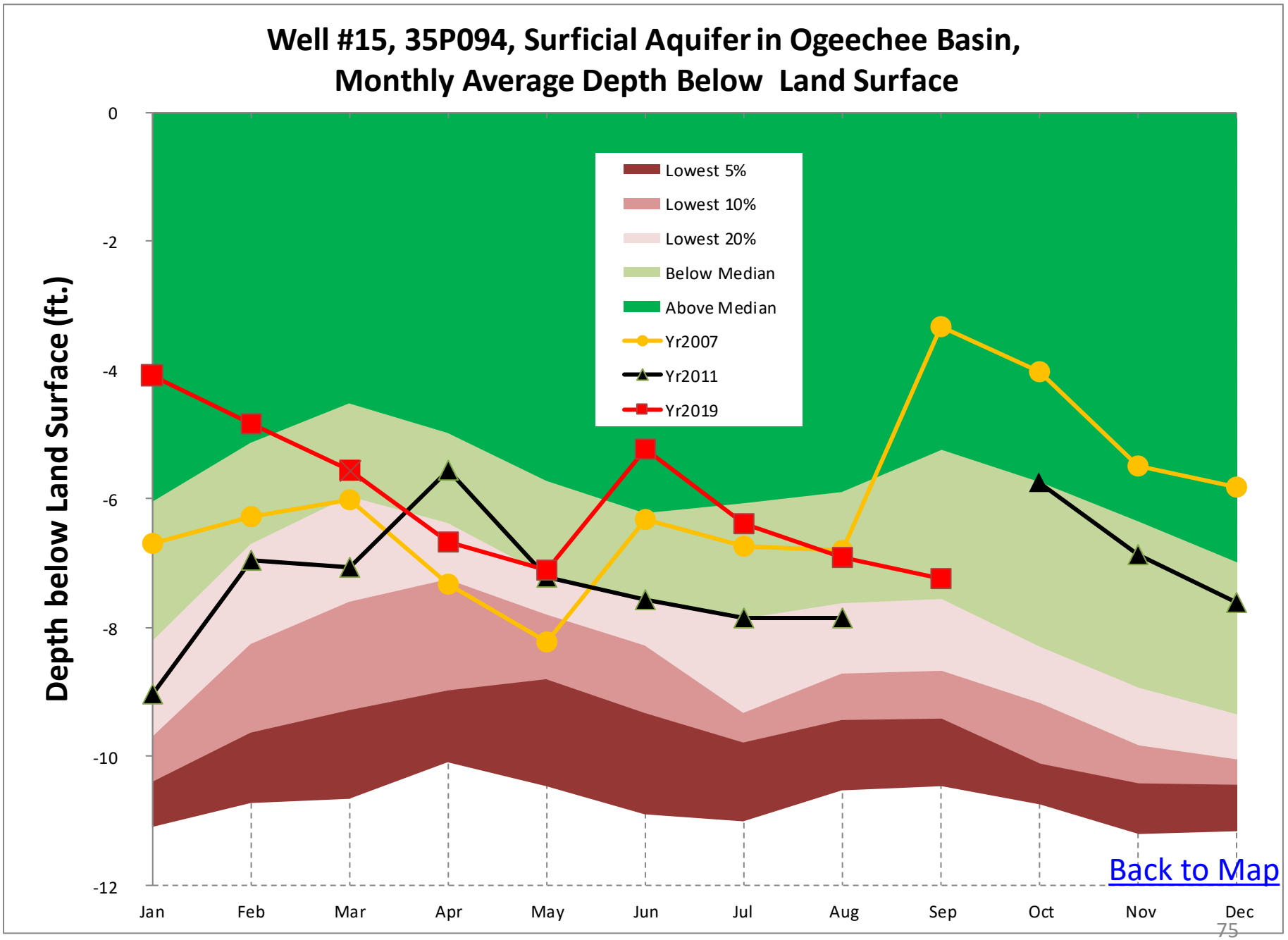
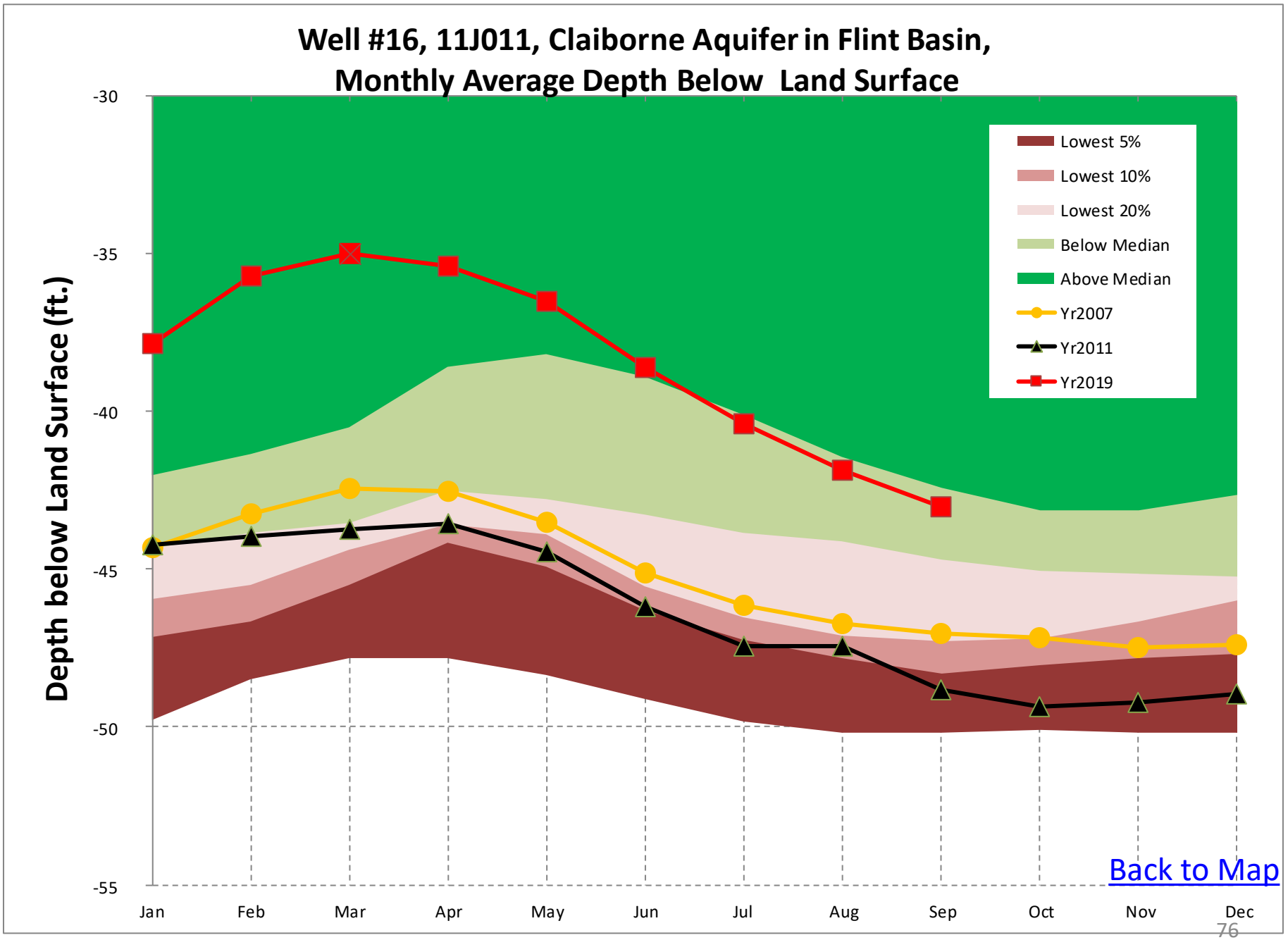
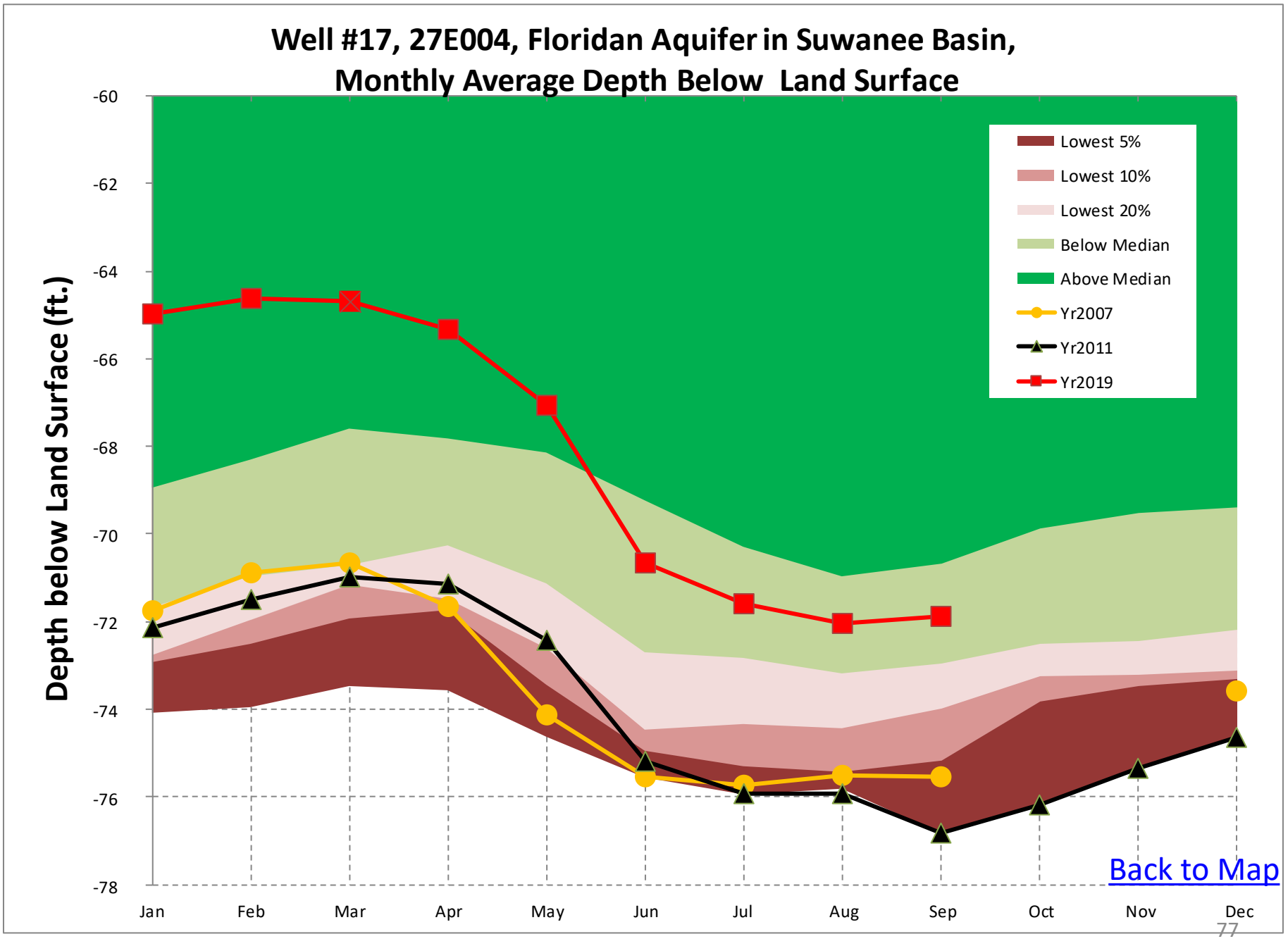

Well #13, 03PP01, Valley and Ridge Aquifer in Tennessee Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-5
-7
-9
-11
-13
-15
-17
-19
-21
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019
Back to Map


Well #14, 19E009, Floridan Aquifer in Suwanee Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-110
-115
-120
-125
-130
-135
-140
-145
-150
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019
Back to Map


Well #15, 35P094, Surficial Aquifer in Ogeechee Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
0
-2
-4
-6
-8
-10
-12
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019
Back to Map


Well #16, 11J011, Claiborne Aquifer in Flint Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-30
-35
-40
-45
-50
-55
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019

Back to Map


Well #17, 27E004, Floridan Aquifer in Suwanee Basin,
Monthly Average Depth Below Land Surface
Depth below Land Surface (ft.)
-60
-62
-64
-66
-68
-70
-72
-74
-76
-78
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Lowest 5%
Lowest 10%
Lowest 20%
Below Median
Above Median
Yr2007
Yr2011
Yr2019
Back to Map

Reservoir Levels

Data Source:
US Army Corps of Engineers

Coosa Basin
1. Carters
2. Allatoona

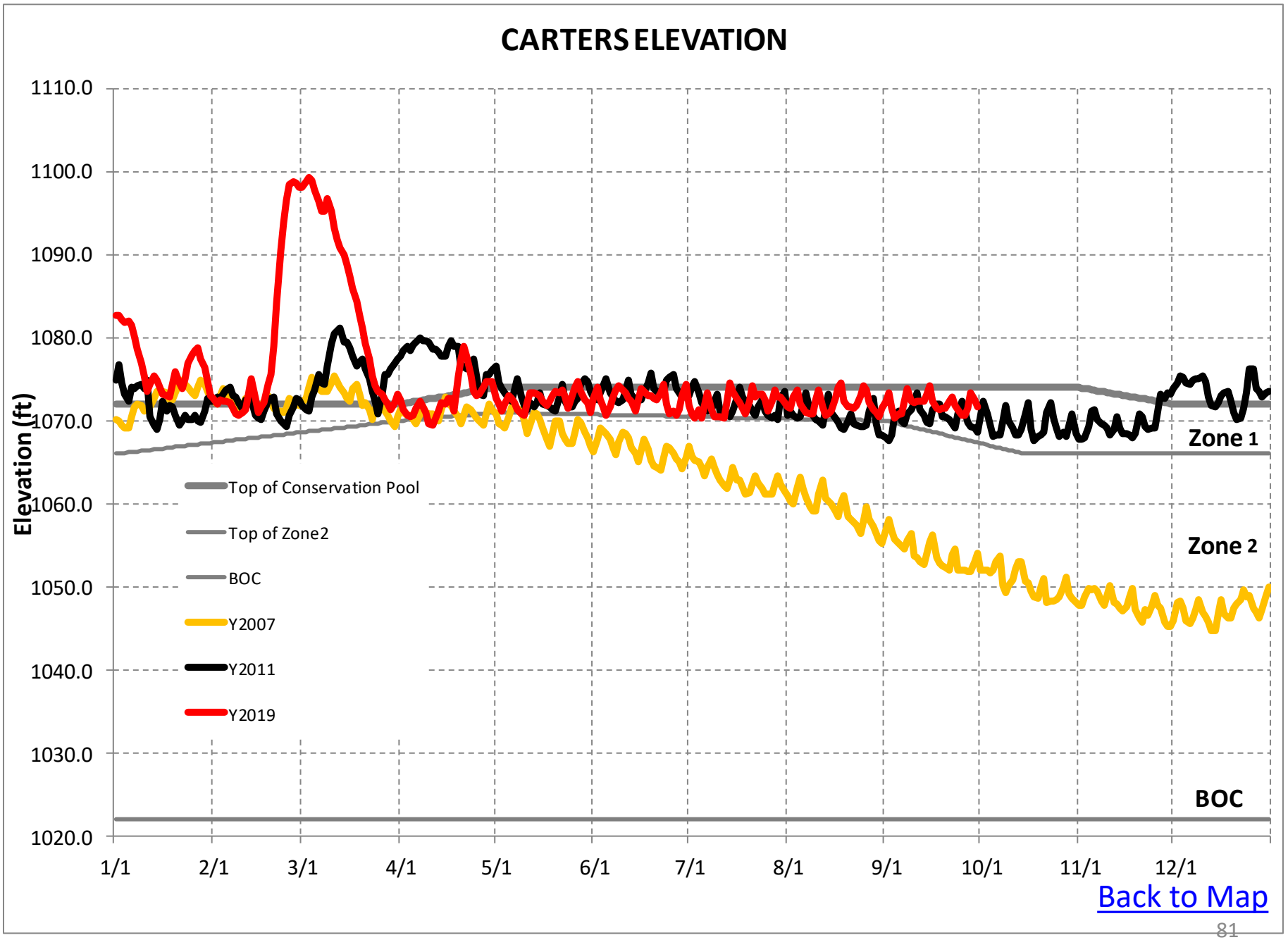
Chattahoochee Basin
3. Lanier
4. West Point
5. W.F. George

Savannah Basin
6. Hartwell
7. Thurmond

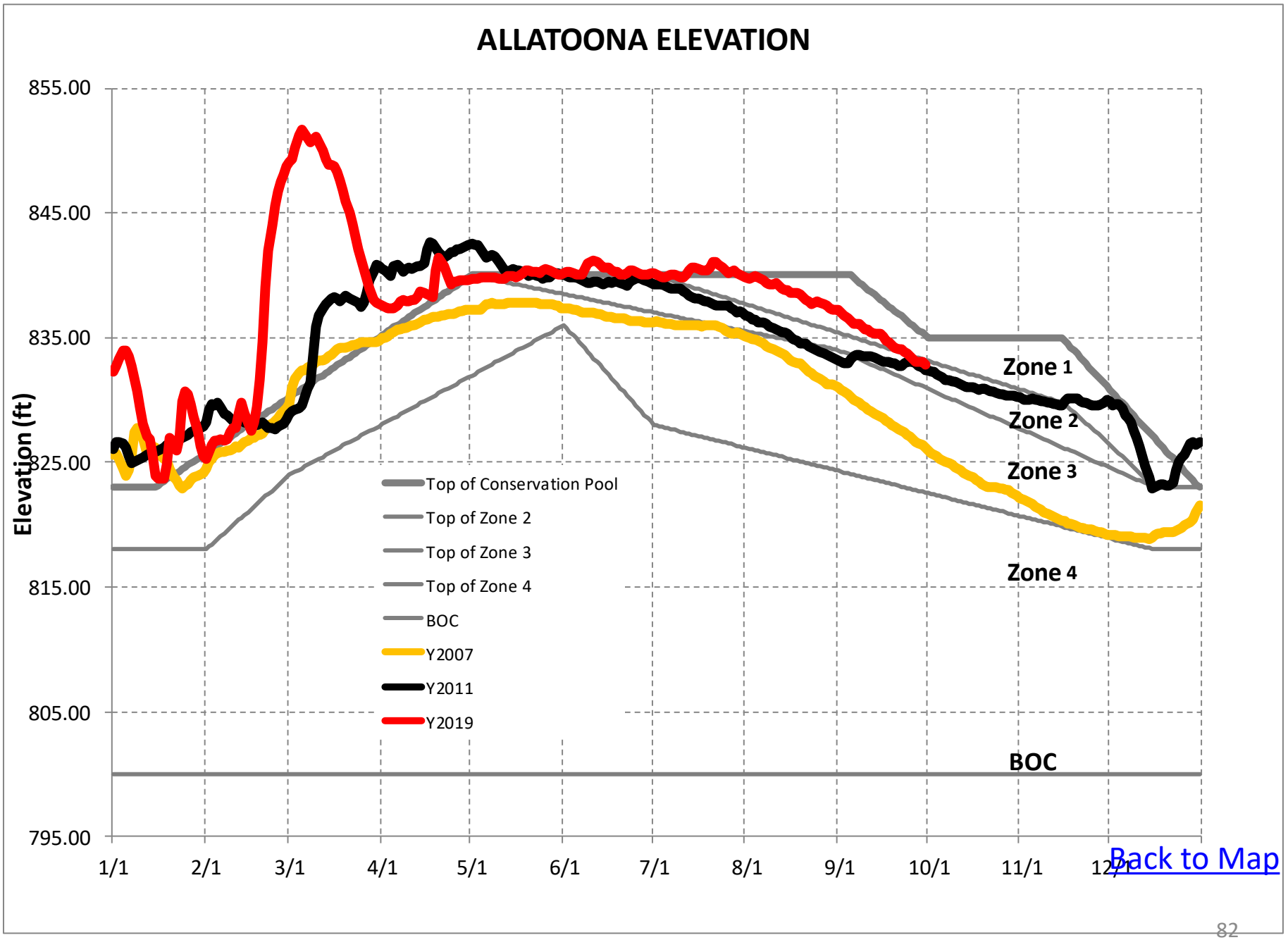
EPD monitors the water levels of seven reservoirs to assess drought conditions.

Reservoir Elevation Graphs

- The following graphs show the reservoir elevation curves for January 2019 through September 2019.
- 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 2019 reservoir elevations into perspective, elevations for 2007 and 2011 are also shown.


CARTERS ELEVATION
Elevation (ft)
1110.0
1100.0
1090.0
1080.0
1070.0
1060.0
1050.0
1040.0
1030.0
1020.0
1/1
2/1
3/1
4/1
5/1
6/1
7/1
8/1
9/1
10/1
11/1
12/1
Top of Conservation Pool
Top of Zone2
BOC
Y2007
Y2011
Y2019
Zone 1
Zone 2
BOC

Back to Map


ALLATOONA ELEVATION
855.00
845.00
835.00
825.00
815.00
805.00
795.00
Elevation (ft)
1/1
2/1
3/1
4/1
5/1
6/1
7/1
8/1
9/1
10/1
11/1
12/1
Top of Conservation Pool
Top of Zone 2
Top of Zone 3
Top of Zone 4
BOC
Y2007
Y2011
Y2019
Zone 1
Zone 2
Zone 3
Zone 4
BOC

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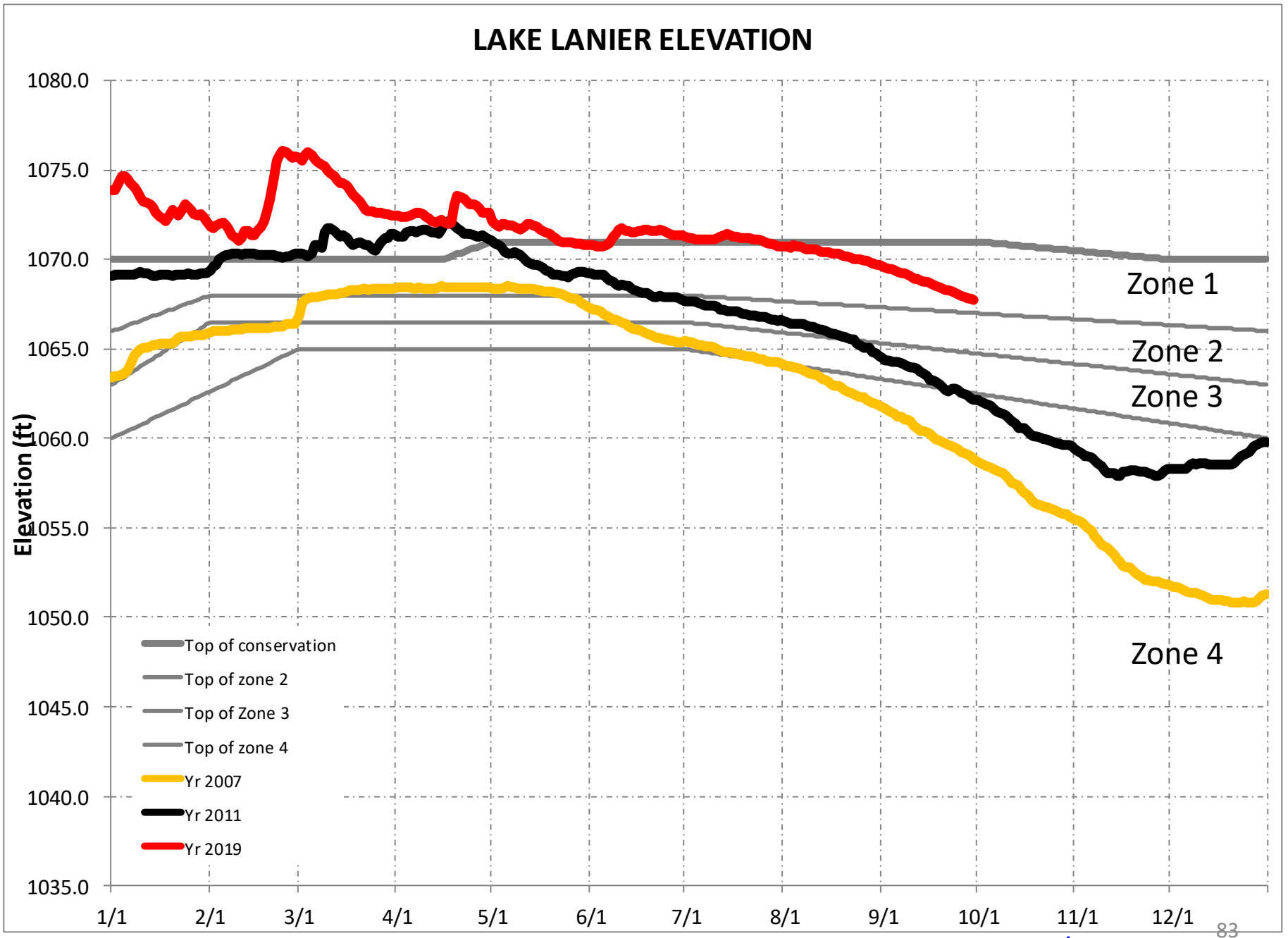
LAKE LANIER ELEVATION
Elevation (ft)
1080.0
1075.0
1070.0
1065.0
1060.0
1055.0
1050.0
1045.0
1040.0
1035.0
1/1
2/1
3/1
4/1
5/1
6/1
7/1
8/1
9/1
10/1
11/1
12/1
Zone 1
Zone 2
Zone 3
Zone 4
Top of conservation
Top of zone 2
Top of Zone 3
Top of zone 4
Yr 2007
Yr 2011
Yr 2019

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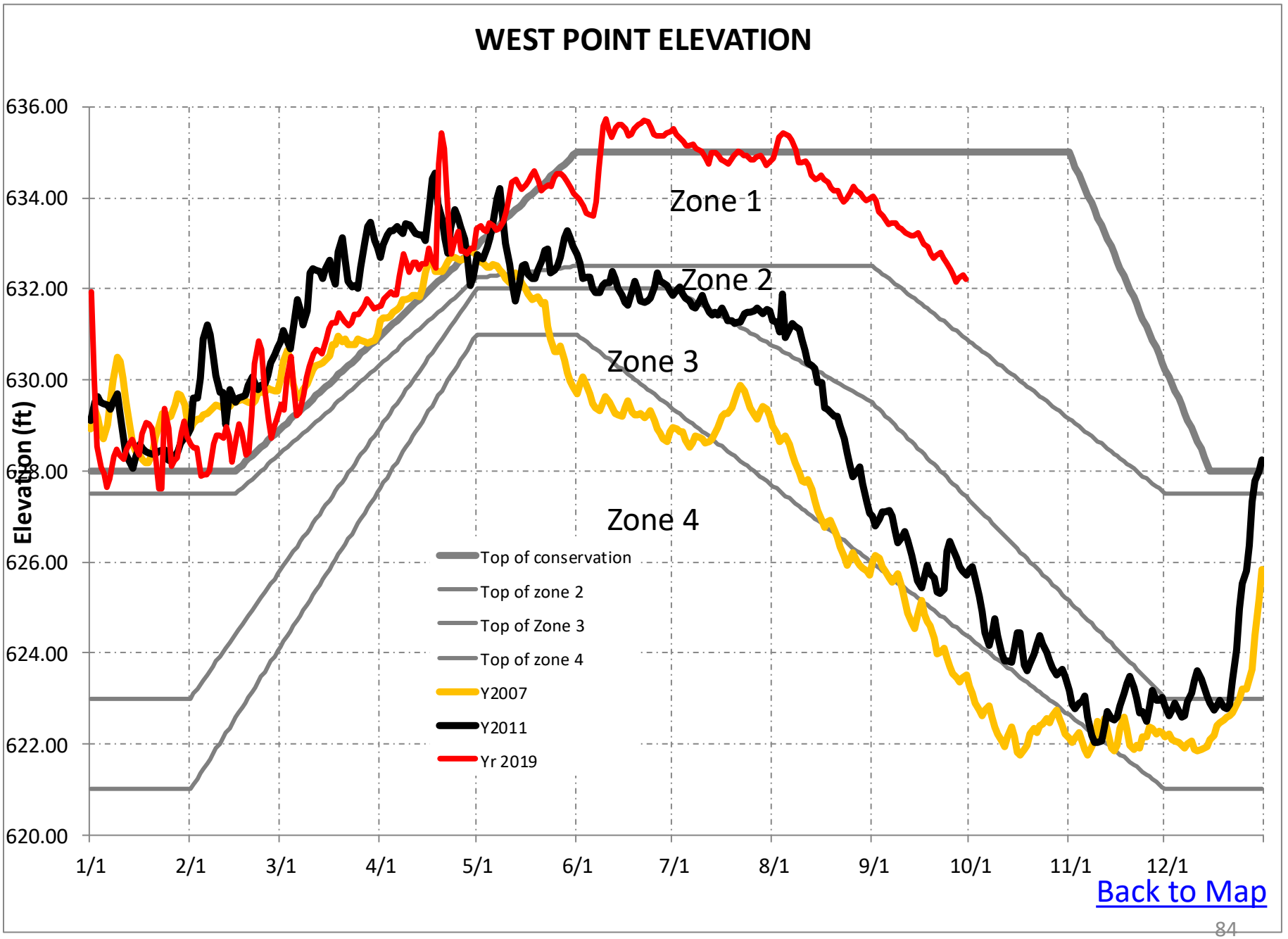
WEST POINT ELEVATION
636.00
634.00
632.00
630.00
628.00
626.00
624.00
622.00
620.00
Elevation (ft)
1/1
2/1
3/1
4/1
5/1
6/1
7/1
8/1
9/1
10/1
11/1
12/1
Zone 1
Zone 2
Zone 3
Zone 4
Top of conservation
Top of zone 2
Top of Zone 3
Top of zone 4
Y2007
Y2011
Yr 2019

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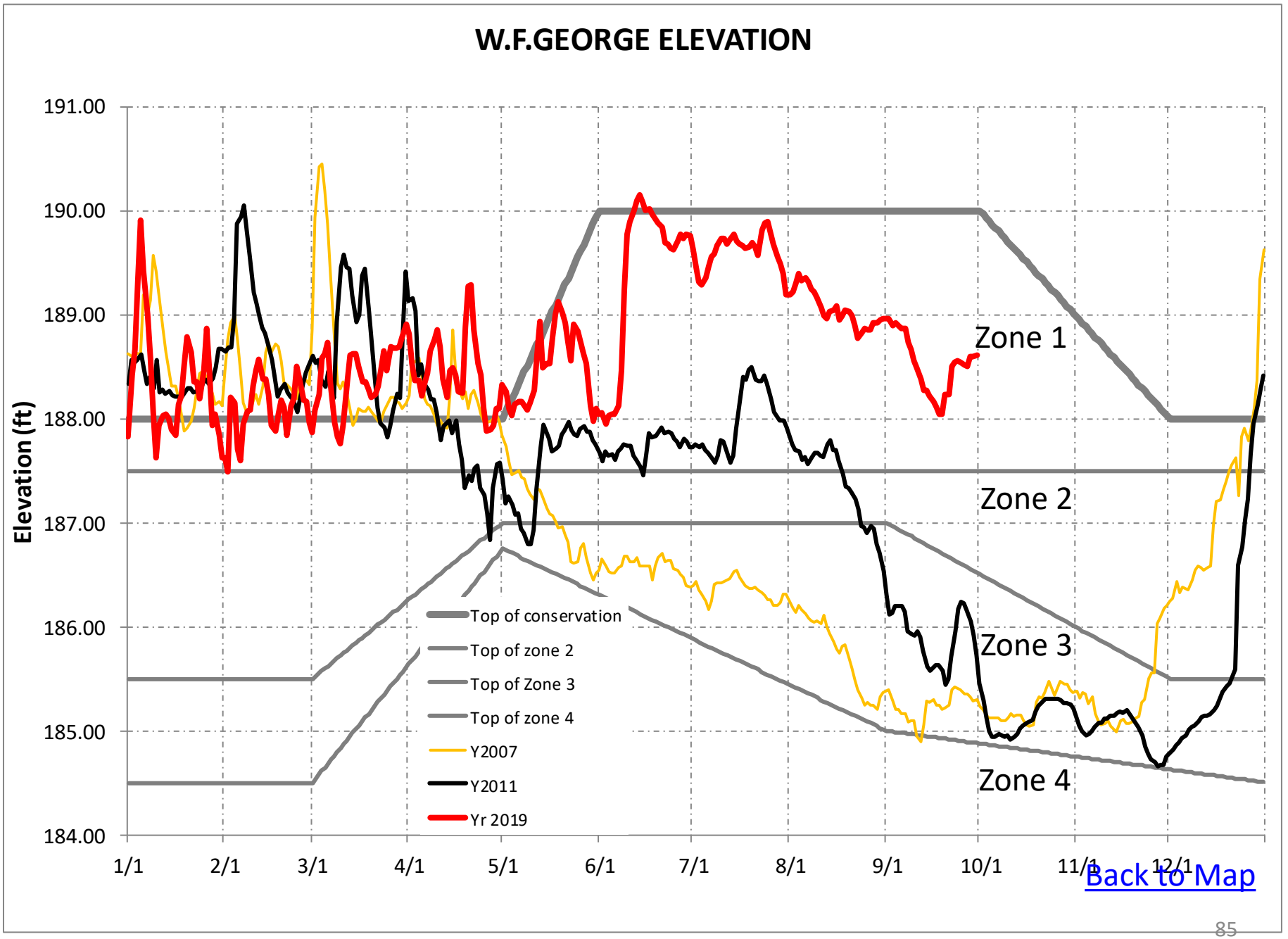
W.F.GEORGE ELEVATION
191.00
190.00
189.00
188.00
187.00
186.00
185.00
184.00
Elevation (ft)
1/1
2/1
3/1
4/1
5/1
6/1
7/1
8/1
9/1
10/1
11/1
12/1
Zone 1
Zone 2
Zone 3
Zone 4
Top of conservation
Top of zone 2
Top of Zone 3
Top of zone 4
Y2007
Y2011
Yr 2019

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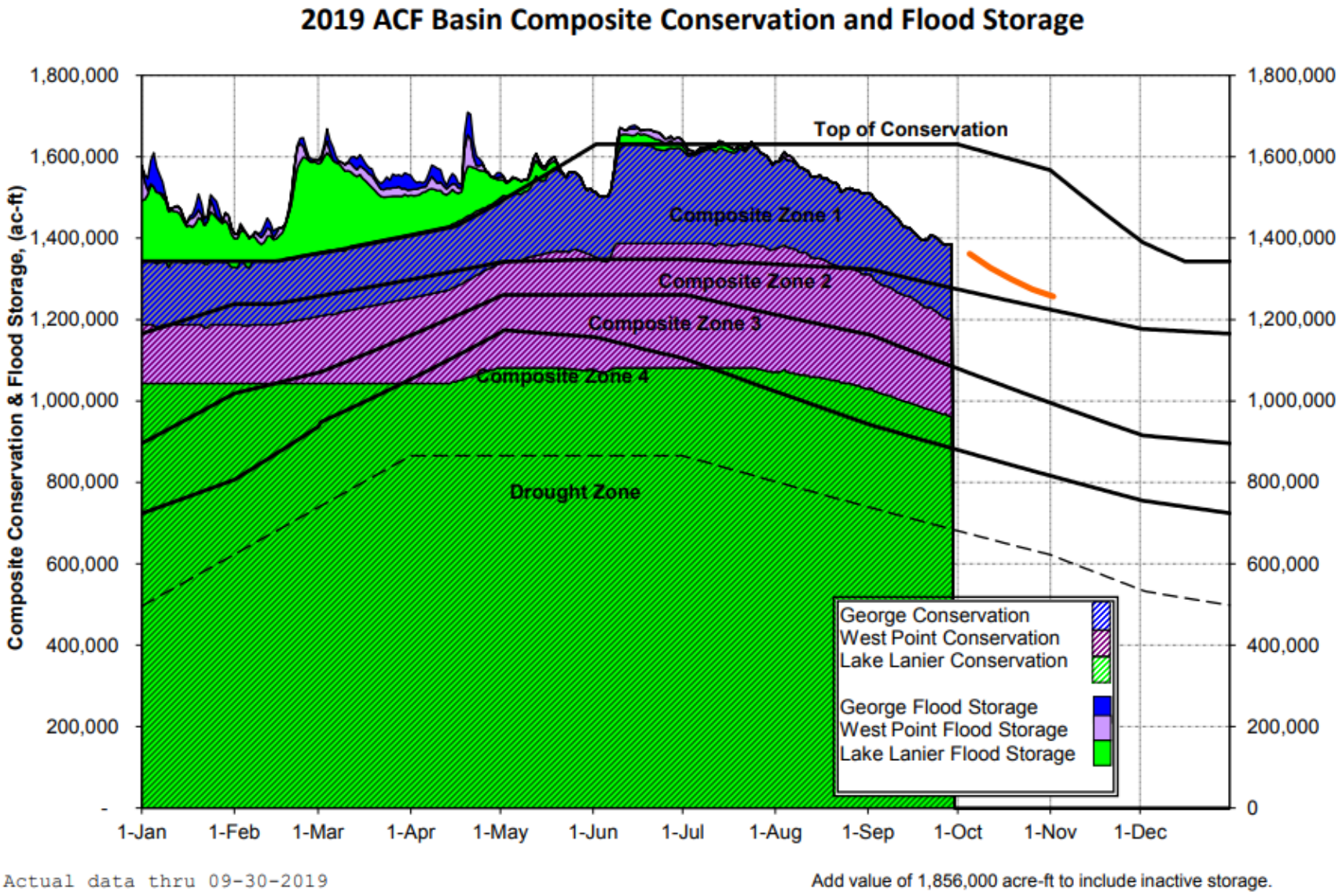
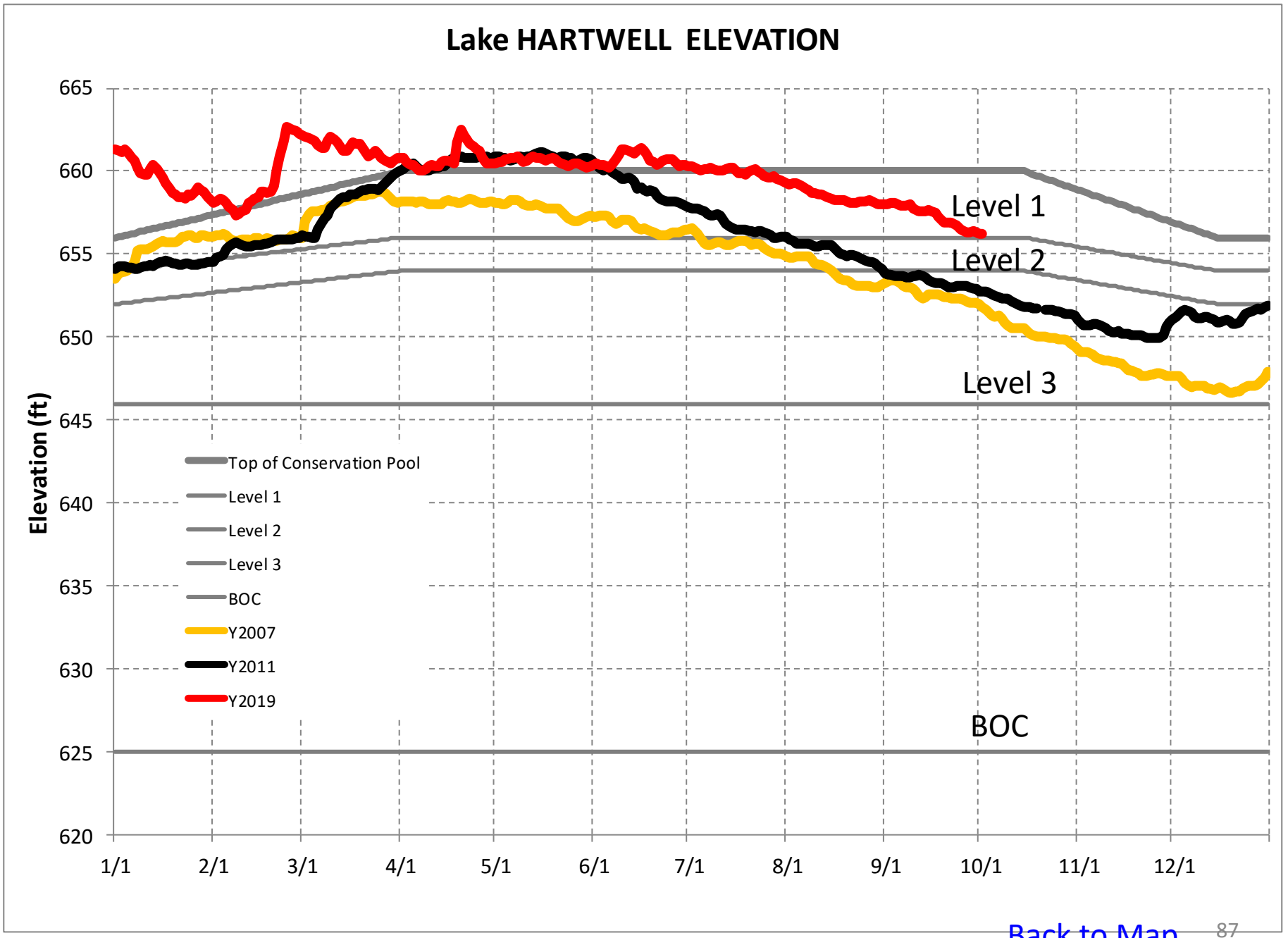


Compiled by USACE.


Lake HARTWELL ELEVATION
Elevation (ft)
665
660
655
650
645
640
635
630
625
620
1/1
2/1
3/1
4/1
5/1
6/1
7/1
8/1
9/1
10/1
11/1
12/1
Level 1
Level 2
Level 3
BOC
Top of Conservation Pool
Level 1
Level 2
Level 3
BOC
Y2007
Y2011
Y2019

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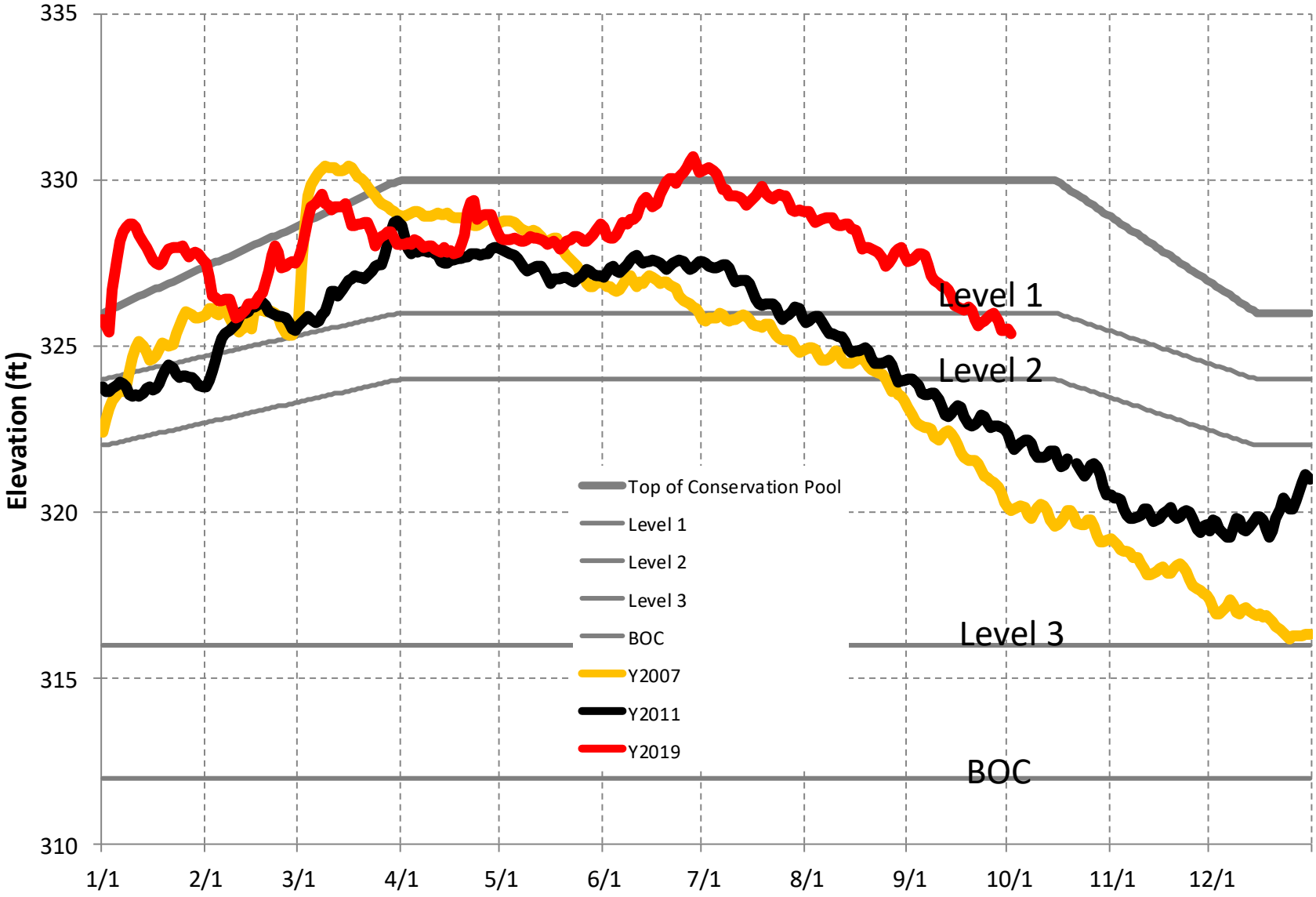
LAKE CLARK HILL (THURMOND) ELEVATION



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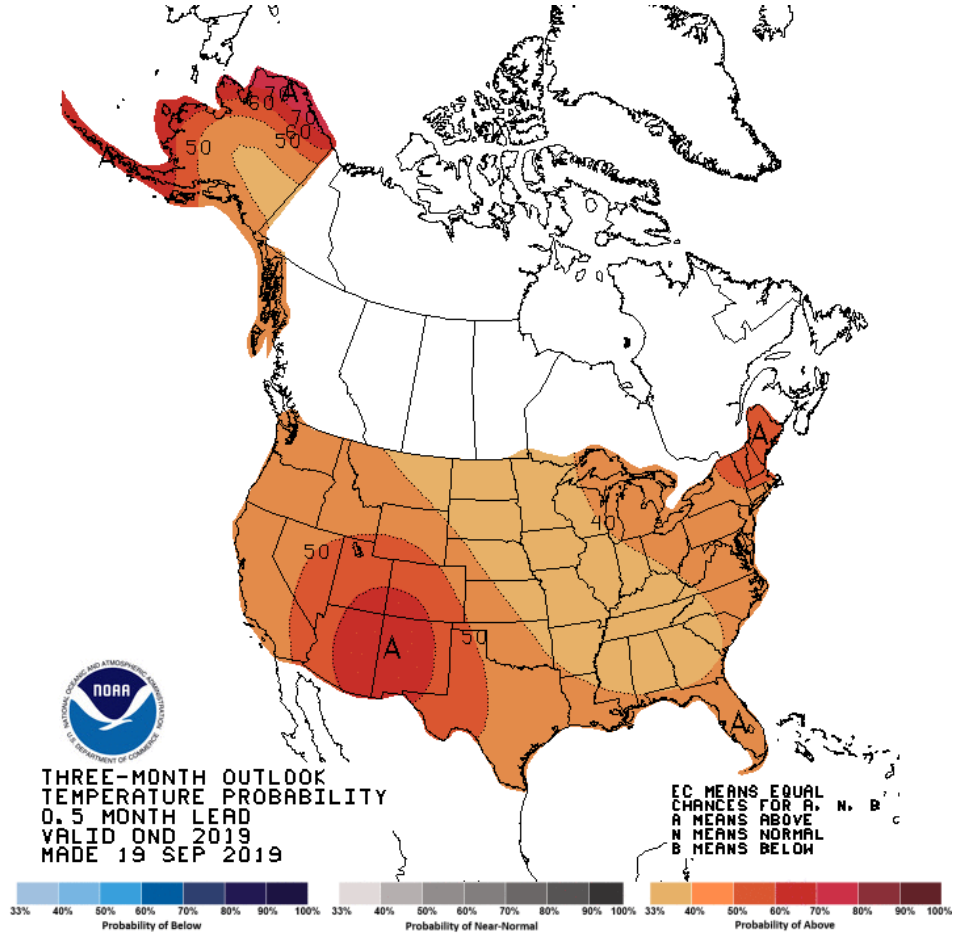
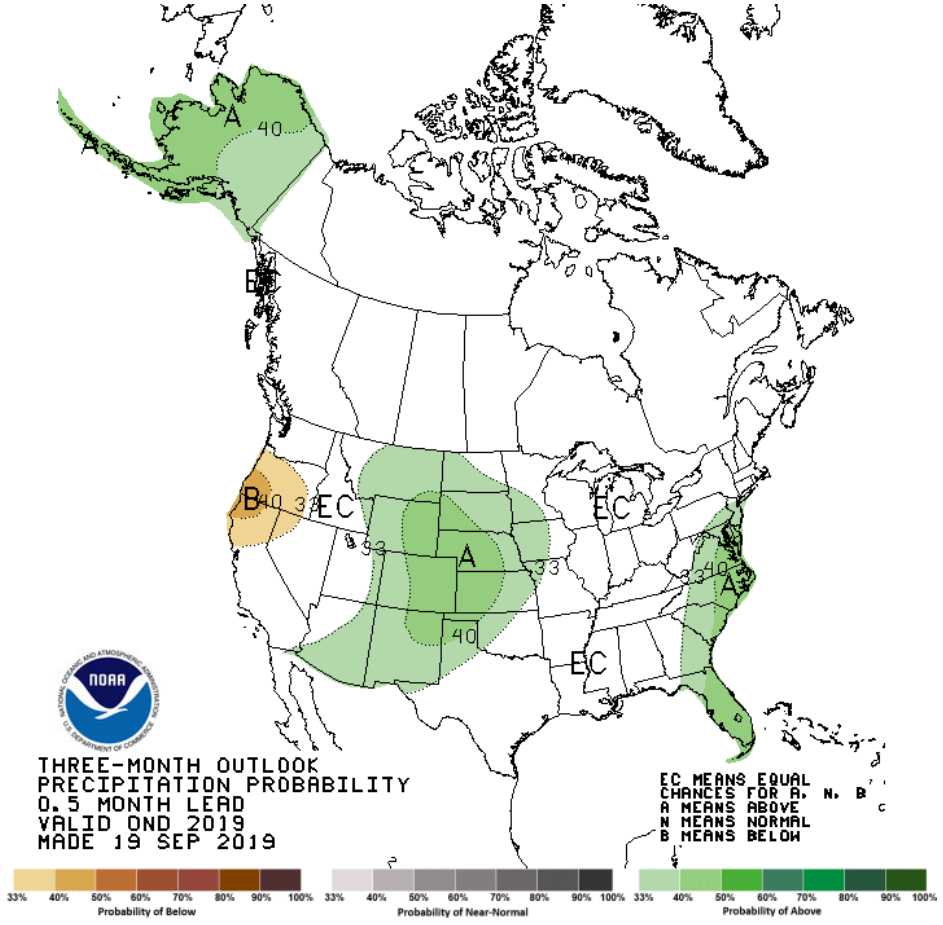
Climate Prediction Center 3-month Temperature and Precipitation Probability Outlook and Seasonal Drought Outlook

Data Source:
http://www.cpc.ncep.noaa.gov/

Temperature Outlook



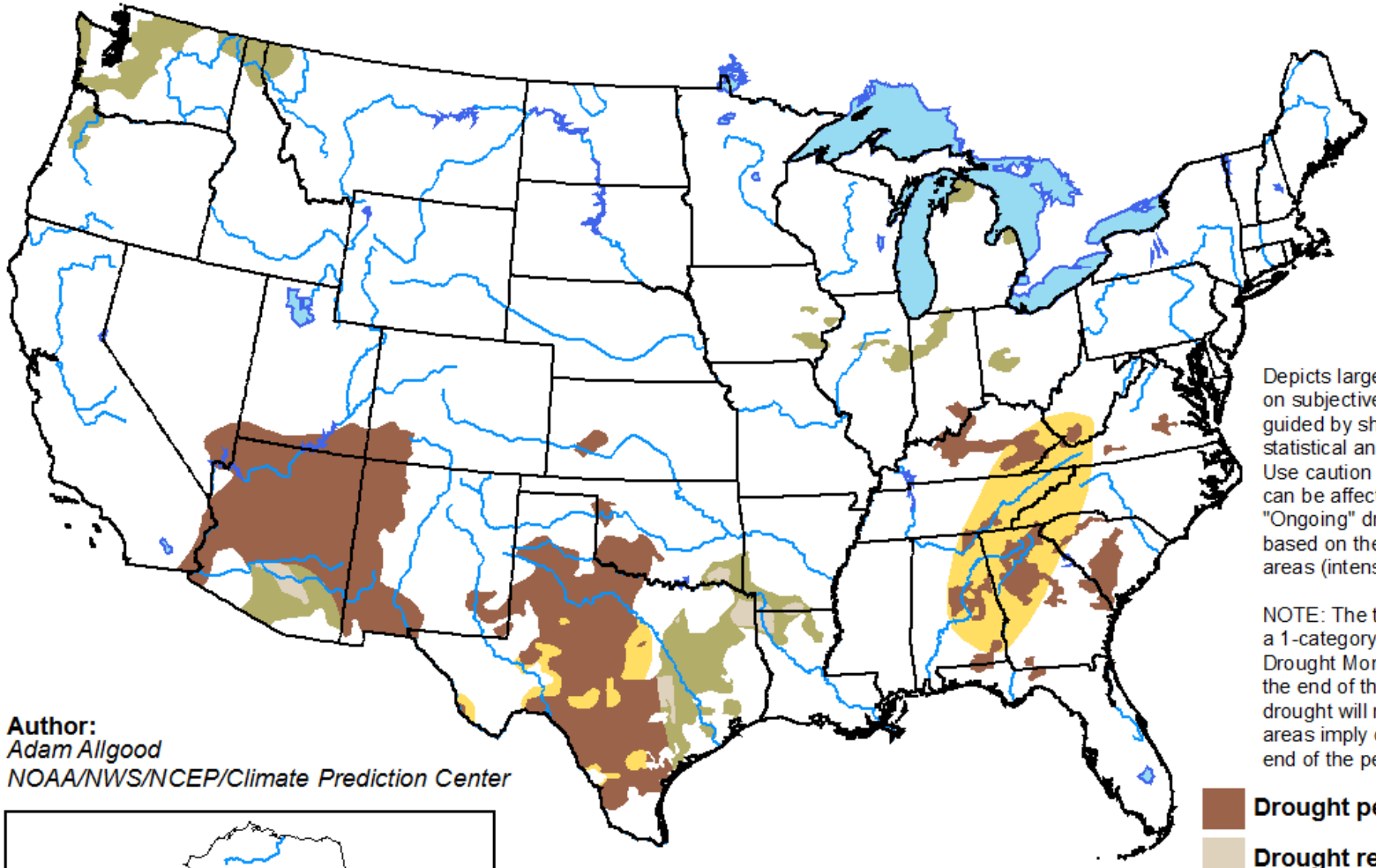
Precipitation Outlook



U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for September 19 - December 31, 2019
Released September 19



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).

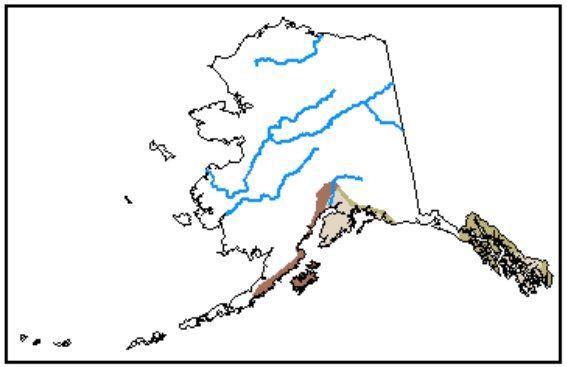
Drought persists

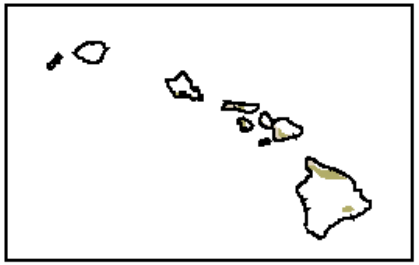
Drought remains but improves

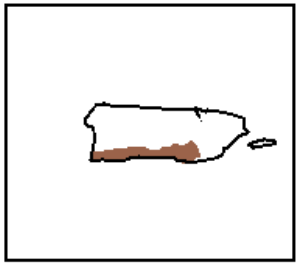
Drought removal likely

Drought development likely

Author:
Adam Allgood
NOAA/NWS/NCEP/Climate Prediction Center







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