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M E M O R A N D U M

TO: John Mitnik, Chief, Operations, Engineering and Construction Bureau
Paul Linton, Chief, Operations Section

FROM: SFWMD Staff Environmental Advisory Team

DATE: February 20, 2018

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Deep-layered high pressure will persist over the area bringing below average rainfall prospects for the next several days. A small surge of moisture moving across the southern portion of the peninsula is expected to exit to the northwest later today. A few light showers will persist mainly south and east today and then drier conditions will spread over the area tonight and Wednesday. Additional pulses of moisture are forecast to move across the area which should result in some scattered light showers focused east Thursday through Saturday.

Kissimmee

Tuesday morning stages were 57.2 feet NGVD (0.8 feet below schedule) in East Lake Toho, 54.2 feet NGVD (0.8 feet below schedule) in Toho, and 50.5 feet NGVD (1.0 feet below schedule) in Kissimmee-Cypress-Hatchineha; headwater stages were 46.5 feet NGVD at S65A and 25.9 feet NGVD at S65D. Mean recession rates for the last week in East Lake Toho, Toho and Kissimmee-Cypress-Hatchineha were 0.16, 0.22 and 0.10 feet per week, respectively (preferred maximum rate is 0.2 feet per week). Tuesday morning discharges were: 1,054 cfs at S65, 843 cfs at S65A, and 1,154 cfs at S65E. Dissolved oxygen concentration in the Kissimmee River averaged 6.2 milligrams per liter (mg/L) for the week. Kissimmee River mean floodplain depth on Sunday was 0.28 feet.

Lake Okeechobee

Lake Okeechobee stage is 15.04 feet NGVD having decreased 0.14 feet over the past week and 0.29 feet over the last month. Following Hurricane Irma, stages exceeded 16.0 feet NGVD for 72 days, the longest period since late 2004, which was 73 days. Stages also exceeded 15.5 feet NGVD for 105 days, the longest period since late 2004. The submerged aquatic and emergent vegetation coverage in the nearshore areas of the Lake are expected to decline over the coming months and possibly years due to the high water and turbidity from resuspended Lake sediment. The average turbidity and surface water total phosphorus concentrations across the pelagic stations in mid-January were the highest recorded since February 2005, after Hurricanes Frances and Jeanne passed near the Lake in late 2004. The higher Lake stages and high surface water total phosphorus concentrations could lead to algal blooms as turbidity declines and water temperatures rise later in the spring.

Estuaries

Total inflow to the St. Lucie Estuary averaged 196 cfs over the past week with no flow coming from Lake Okeechobee. Salinity remained about the same throughout the estuary. The seven-day average salinity at the US1 Bridge is in the good range for adult oysters. Average weekly dissolved oxygen levels at HR1 station in the North Fork were 5.56 mg/L near the surface and 3.57 mg/L near the bottom. The highest weekly ranges of chlorophyll *a* were between 4.47 – 12.75 µg/L in the middle estuary.

Total inflow to the Caloosahatchee Estuary averaged 701 cfs over the past week with 459 cfs coming from the Lake. Salinity remained the same throughout the estuary. The 30-day moving average surface salinity is 3.2 at Val I-75 and 9.0 at Ft. Myers. The 30-day moving average salinity at Val I-75 is forecast to be 4.6 in two weeks with no flow through S-79. Salinity conditions between Val I-75 and Ft. Myers are good for tape grass. Salinity conditions are in the good range for adult oysters at Shell Point and at Cape Coral. Chlorophyll a concentrations were low near Ft. Myers (5.89 – 13.12 µg/L) and Shell Point (1.55 – 3.89 µg/L) over the last week. Dissolved oxygen levels at Ft. Myers were 5.26 – 7.80 mg/L and at Shell Point 5.40 – 9.62 mg/L. Given the current estuarine conditions, there are no ecological benefits associated with freshwater releases from Lake Okeechobee.

Stormwater Treatment Areas

Over the past week, the STAs/FEBs received approximately 8,800 acre-feet of Lake releases. The total amount of Lake releases sent to the STAs/FEBs in WY2018 (since May 1, 2017) is approximately 66,500 acre-feet. Most STA cells are at or near target depths, except many of the STA-5/6 cells which are below target. Operational restrictions are in place for vegetation rehabilitation in STA-1E and STA-2. This week, if 2008 LORS recommends Lake releases to the WCAs and the conditions allow, releases will be sent to STA-1E Eastern Flow-way, and STA-2 Flow-ways 1 and 4.

Everglades

For the second consecutive week, water depths and recession rates across most of the Everglades are creating mostly fair foraging conditions for wading birds. At this point in the season, there is little need for manipulation of recession rate or depths, with the exception being northeastern WCA-3A. Maintaining open water conditions around the important Alley North wading bird nesting colony is important to protect nests from terrestrial predators. Slowing recession rates to the optimal rate for foraging wading birds, between 0.05 feet and 0.09 feet per week, would have ecological benefits. Water levels continue to decrease in Taylor Slough but are still 1 to 15 inches above the historical average for this time of year. Salinity changes for the last week were small with the largest change being an increase of 1.7 psu in the central nearshore region. Compared to historical averages, salinities range from 3 psu below to 2 psu above average.

Supporting Information

KESSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.02 inches of rainfall in the past week and the Lower Basin received no rainfall (SFWMD Daily Rainfall Report 2/19/2018).

Upper Kissimmee Basin

Stages and departures in the Kissimmee Chain of Lakes (KCOL) are shown in Table 1.

Table 1. Average discharge (cfs) for the preceding seven days, one-day stage (feet NGVD), and departures from KCOL flood regulation (R) or temporary schedules (T, A, or S). Provisional, real-time data are from SFWMD. Report Date: 2/20/2018

Water Body	Structure	7-day Average Discharge (cfs) ¹	Stage Monitoring Site ²	Lake Stage (feet)	Schedule Type ³	Schedule Stage (feet)	Daily Departure (feet)						
							2/18/18	2/11/18	2/4/18	1/28/18	1/21/18	1/14/18	1/7/18
Lakes Hart and Mary Jane	S62	35	LKMJ	60.9	R	61.0	-0.1	0.1	0.0	0.0	0.0	0.1	0.0
Lakes Myrtle, Preston, and Joel	S57	11	S57	61.1	R	61.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0
Alligator Chain	S60	0	ALLI	63.9	R	64.0	-0.1	0.0	-0.1	-0.1	-0.1	0.0	-0.1
Lake Gentry	S63	0	LKGT	61.5	R	61.5	0.0	0.0	0.1	0.1	0.0	0.1	0.0
East Lake Toho	S59	196	TOHOE	57.3	R	58.0	-0.7	-0.6	-0.4	-0.3	-0.1	0.1	0.0
Lake Toho	S61	561	TOHOW, S61	54.2	R	55.0	-0.8	-0.6	-0.4	-0.3	-0.2	0.0	0.1
Lakes Kissimmee, Cypress, and Hatchineha	S65	1,000	KUB011, LKIS5B	50.6	R	51.6	-1.0	-1.3	-1.7	-1.8	-1.8	-1.7	-1.7

¹ Seven-day average of weighted daily means through midnight.

² Names of in-lake monitoring sites and structures used to determine lake stage; if more than one site is listed, an average is reported.

³ T = temporary schedule, R = USACE flood control schedule, S = temporary snail kite schedule, A = projected ascension line, N/A = not applicable or data not available. DATA ARE PROVISIONAL

Lower Kissimmee Basin

Discharges at Lower Basin structures are shown in Table 2. SFWDAT depth maps for the Phase I restoration area are shown in Figure 8. Kissimmee River floodplain stages at selected stations are shown in Figure 9.

Table 2. One-day and seven-day averages of discharge at S-65x structures, of dissolved oxygen concentration in the Phase I area river channel, and water depth in the Phase I area floodplain. Data are provisional real-time data from SFWMD.

Report Date: 2/20/2018

Metric	Location	1-Day Average		Average for the Preceding 7-Days ¹								
		2/18/2018	2/18/18	2/11/18	2/4/18	1/28/18	1/21/18	1/14/18	1/7/18	12/31/17	12/24/17	12/17/17
Discharge (cfs)	S-65	1,062	1,000	810	785	583	572	567	540	517	553	540
Discharge (cfs)	S-65A	848	796	647	625	468	506	446	452	443	446	441
Discharge (cfs)	S-65D ²	848	1,018	940	857	656	692	764	696	718	770	796
Stage (feet NGVD)	S-65D ²	25.90	25.87	25.80	25.82	25.76	25.72	25.85	25.74	25.77	25.82	25.77
Discharge (cfs)	S-65E ²	848	1,059	978	899	712	730	837	751	777	857	865
Discharge (cfs)	S-67	391	389	350	346	241	97	404	396	399	322	0
DO (mg/L) ³	Phase I river channel	5.8	6.2	7.8	8.7	9.7	9.5	8.8	7.7	6.5	7.1	6.6
Mean depth (feet) ⁴	Phase I floodplain	0.28	0.27	0.27	0.26	0.19	0.21	0.24	0.22	0.23	0.27	0.31

¹ Seven-day average of weighted daily means through Sunday midnight.

² S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2; S-65D stage averages stage at S65D and S65DX1; S65E discharge combines S65E and S65EX1.

³ DO is the average for sondes at PC62 and PC33.

⁴ 1-day spatial average from South Florida Water Depth Assessment Tool (SFWDAT).

DATA ARE PROVISIONAL; N/A indicates that data were not available.

KCOL Hydrographs (through Sunday midnight)

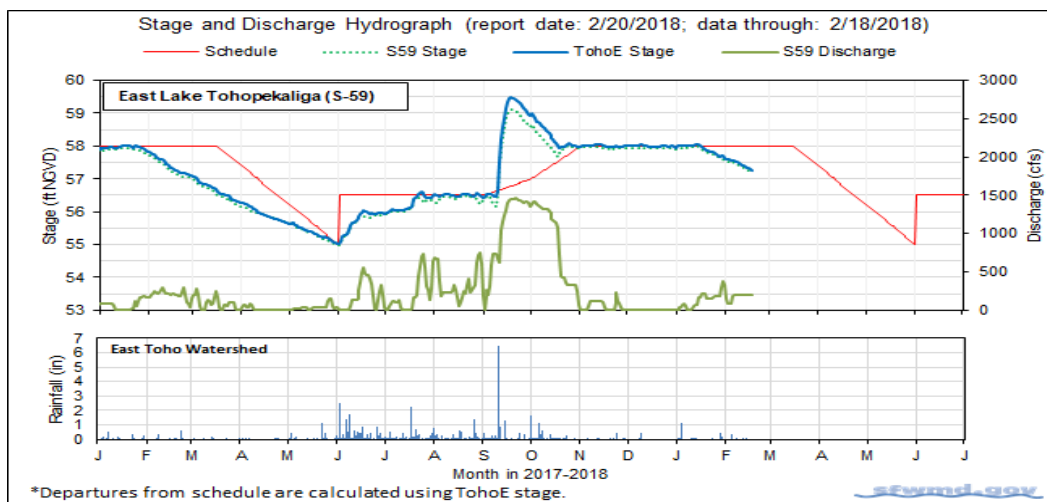


Figure 1.

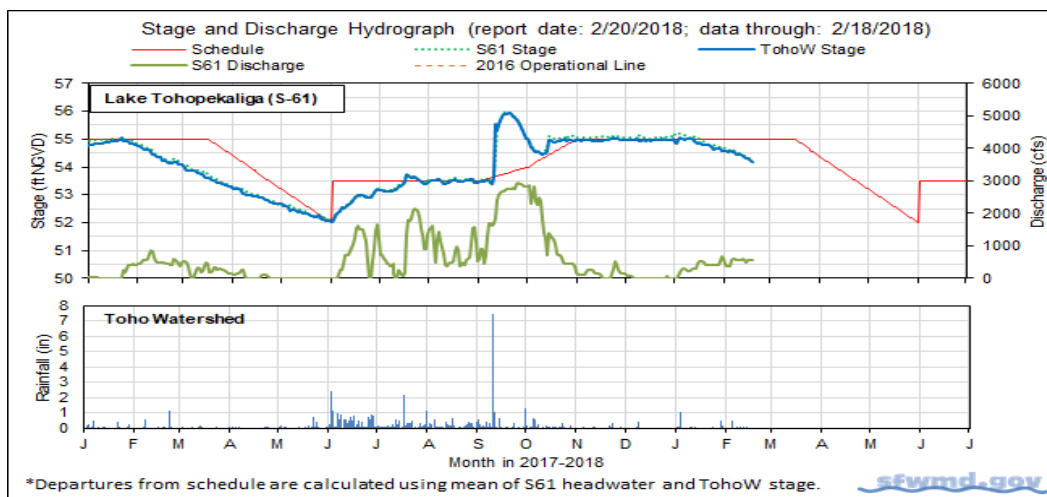


Figure 2.

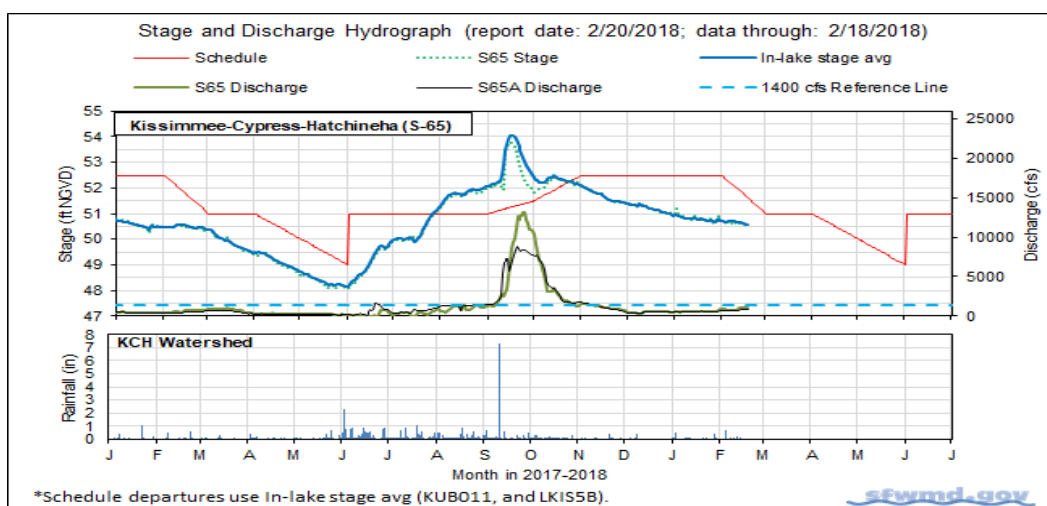


Figure 3.

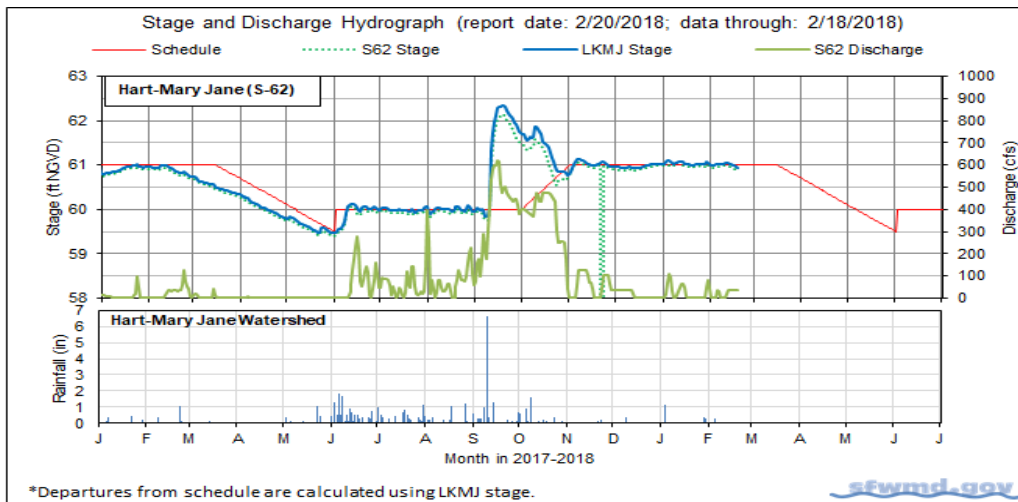


Figure 4.

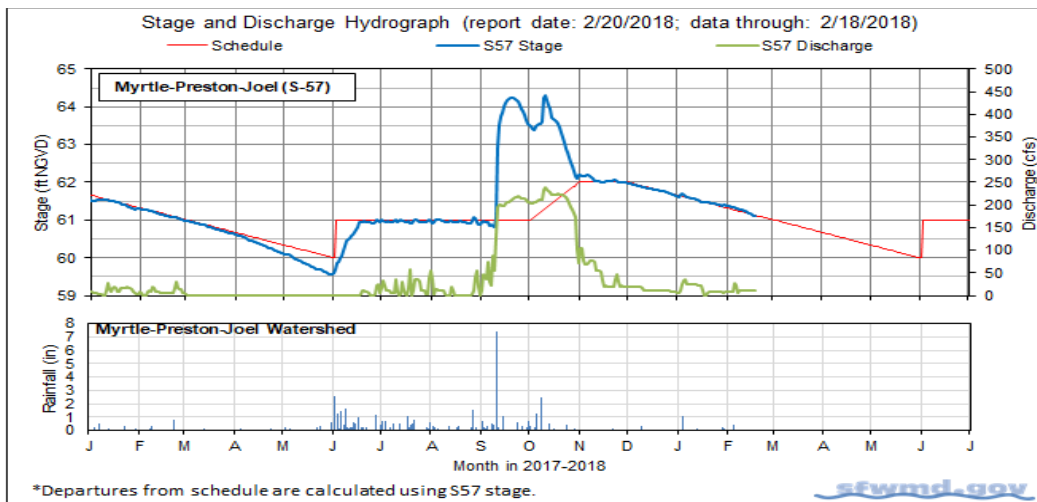


Figure 5.

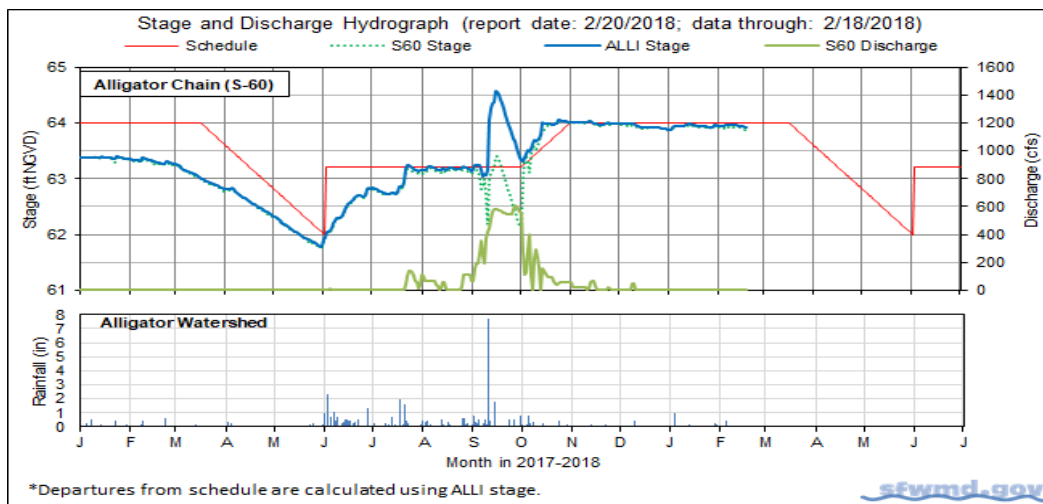


Figure 6.

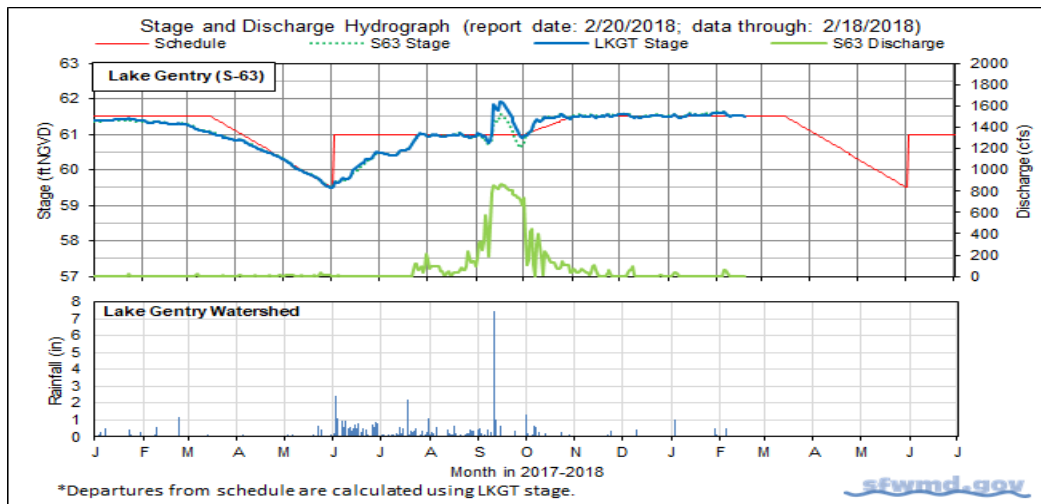


Figure 7.

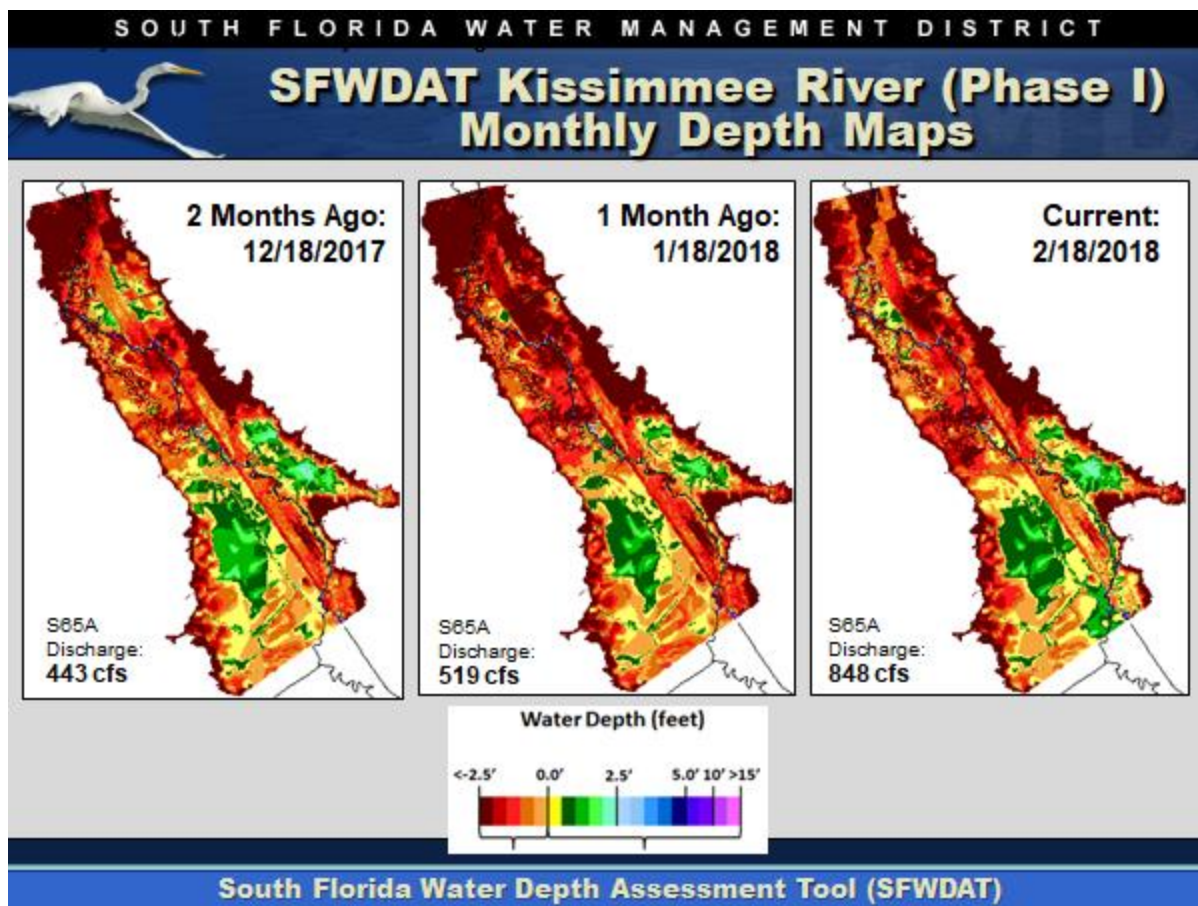


Figure 8. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to January 16, 2012.

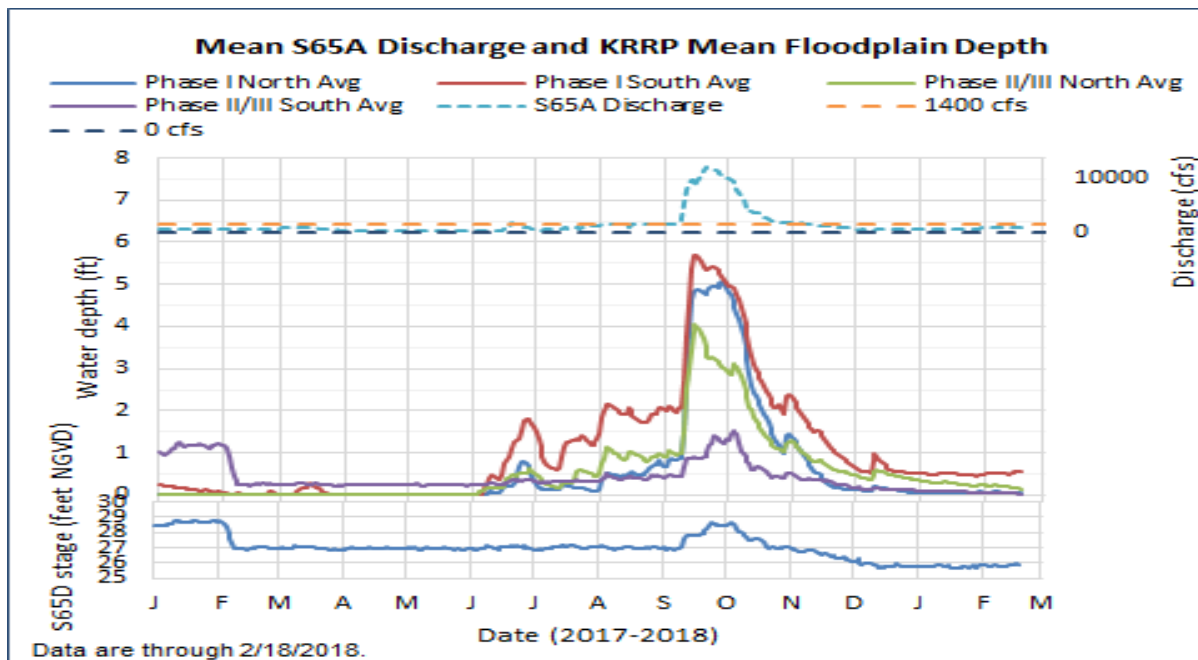
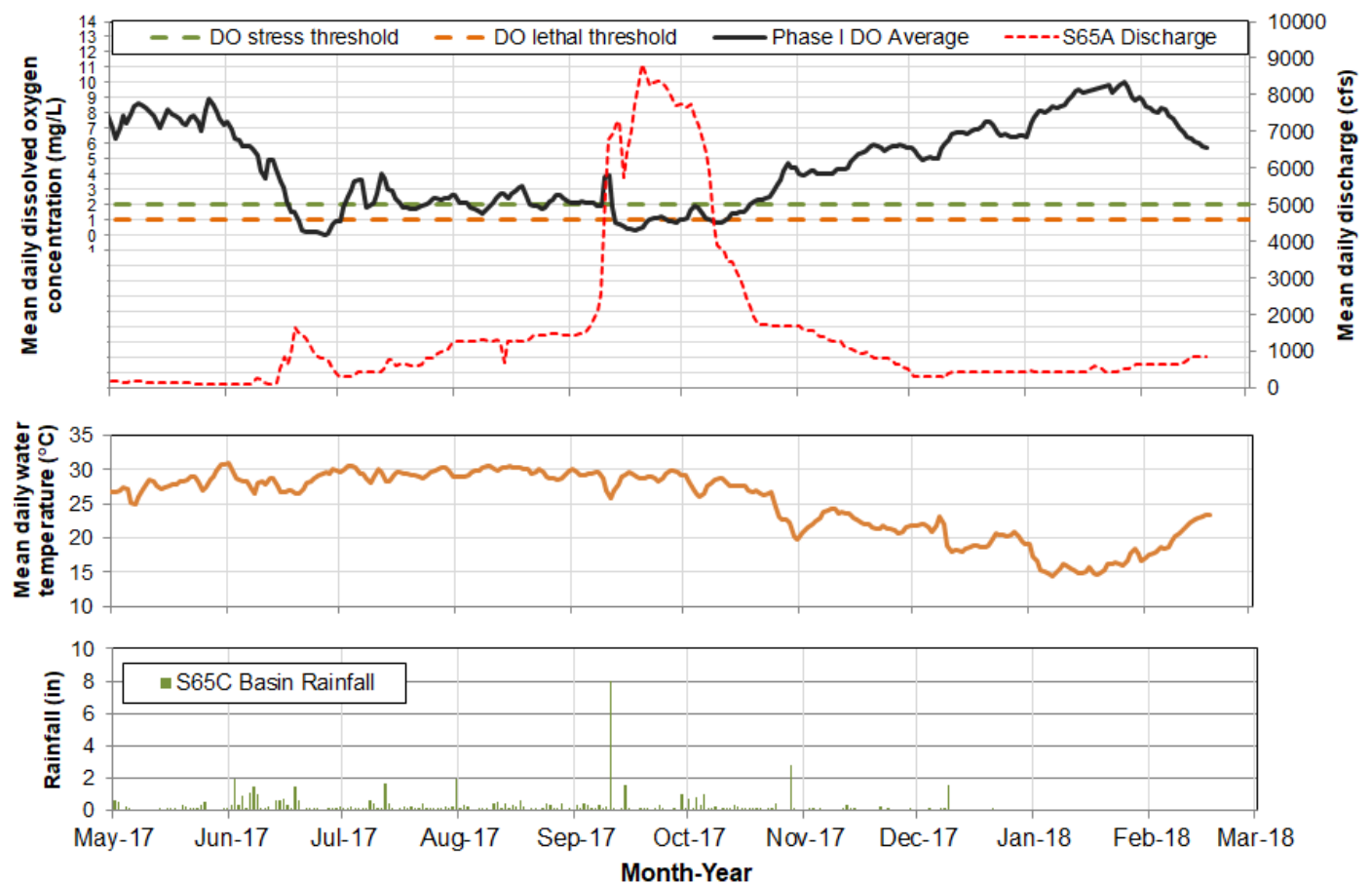


Figure 9. Mean water depth in the northern Phase I, southern Phase I, northern Phase II/III, and southern Phase II/III areas in relation to the S65A discharge and S65D headwater stage.



Report Date: 2/20/2018; data are through: 2/18/2018.

Figure 10. Mean daily dissolved oxygen, discharge, temperature and rainfall in the Phase I river channel.

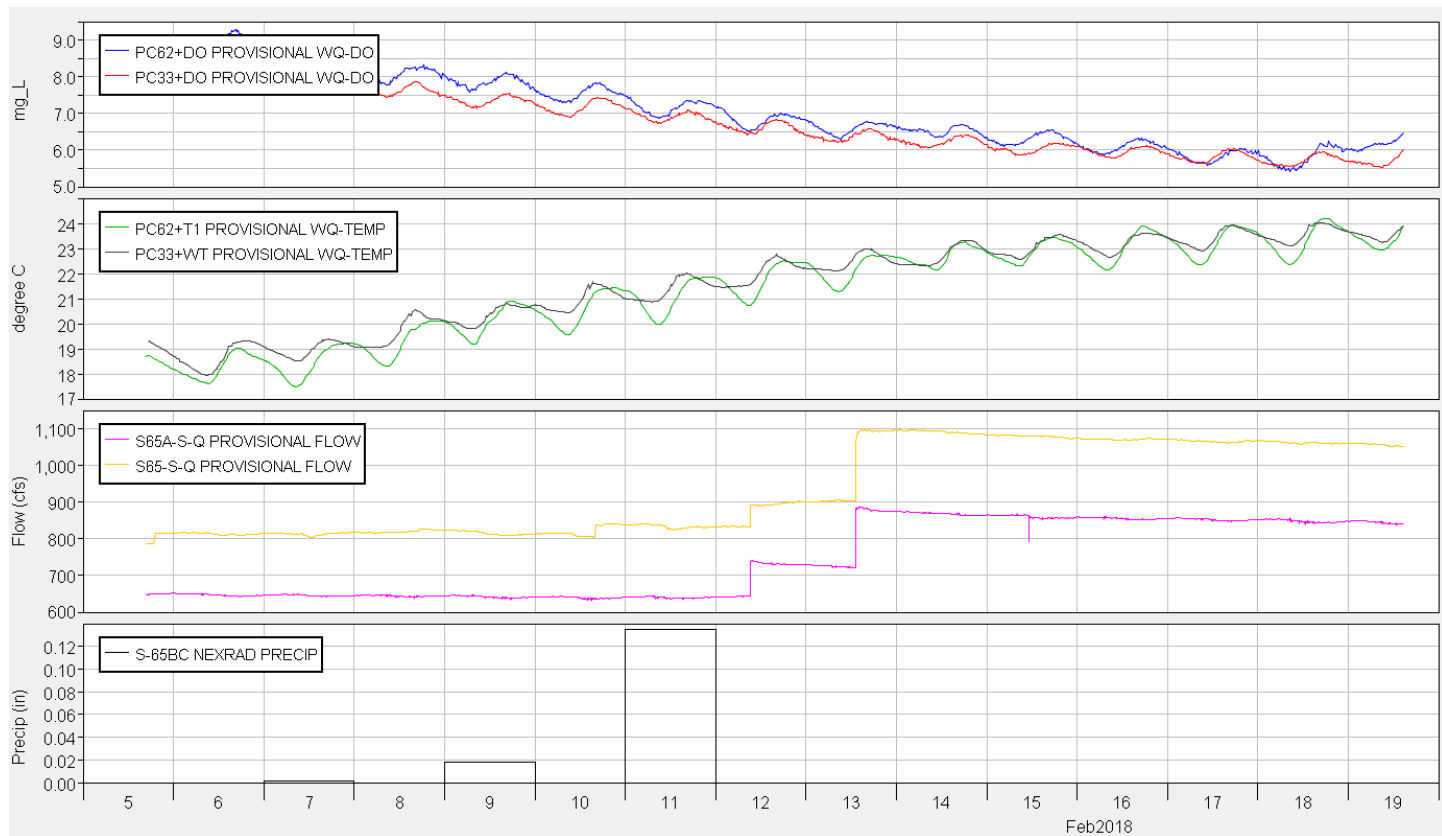


Figure 11. Phase I river channel dissolved oxygen and water temperature (measured at 15 minute intervals) and Pool BC daily rainfall.

Water Management Recommendations

Kissimmee Basin Adaptive Recommendations and Operational Actions

Date	Recommendation	Purpose	Outcome	Source
2/20/2018	No new recommendations.		N/A	
2/13/2018	No new recommendations.		N/A	
2/6/2018	No new recommendations.		N/A	
1/30/2018	No new recommendations.		N/A	
1/23/2018	No new recommendations.		N/A	
1/16/2018	No new recommendations.		N/A	
1/9/2018	No new recommendations.		N/A	
12/19/2017	Begin discharge of 400 cfs from S67 into Istokpoga Canal.	Increase navigability by scouring channel and reducing sandbar at canal mouth.	Implemented	KB Ops/SFWMD Water Mgt
12/19/2017	Begin a stage recession on January 1 in Lakes Kissimmee-Cypress-Hatchineha starting at stage on January 1 to reach low pool on May 31. Recession rate not to exceed 0.2 ft/week as possible. Subject to SFWMD planned operations hierarchy.	Achieve fish and wildlife benefits by slowing lake stage recession rates relative to the regulation schedule recession rates.	-	KB Ops/SFWMD Water Mgt
12/19/2017	Begin stage recessions on January 15 in Lakes East Toho and Toho starting at stage on January 15, to reach low pools on May 31. Recession rate not to exceed 0.2 ft/week if possible. Subject to SFWMD planned operations hierarchy.	Achieve fish and wildlife benefits by slowing lake stage recession rates relative to the regulation schedule recession rates.	-	KB Ops/SFWMD Water Mgt
12/12/2017	No new recommendations.		N/A	
12/5/2017	No new recommendations.		N/A	
11/28/2017	No new recommendations.		N/A	
11/21/2017	No new recommendations.		N/A	
11/13/2017	No new recommendations.		N/A	
11/1/2017	No new recommendations.		N/A	
10/24/2017	No new recommendations.		N/A	
10/17/2017	No new recommendations.		N/A	
10/10/2017	No new recommendations.		N/A	
10/3/2017	No new recommendations.		N/A	
9/25/2017	No new recommendations.		N/A	
9/19/2017	No new recommendations.		N/A	
9/5/2017	No new recommendations.		N/A	
8/29/2017	No new recommendations.		N/A	
8/22/2017	No new recommendations.		N/A	
8/15/2017	No new recommendations.		N/A	
8/4/2017	Increase S65A discharge by 150 cfs to about 1400 cfs.	Reduce rate of stage rise in KCH.		SFWMD Water Mgt, KB Ops
8/1/2017	No new recommendations.		N/A	

S65/S65A Limits on Rate of Change in Discharge

Discharge Rate of Change Limits for S65/S65A (revised 11/16/16).	
Q (cfs)	Maximum rate of increase or decrease (cfs/day)
300-650	75
650-1700	150
1700-3000	300
>3000	1000

Figure 12. Limits on rate of discharge change at S65/S65A starting with the 2016-2017 Dry Season.

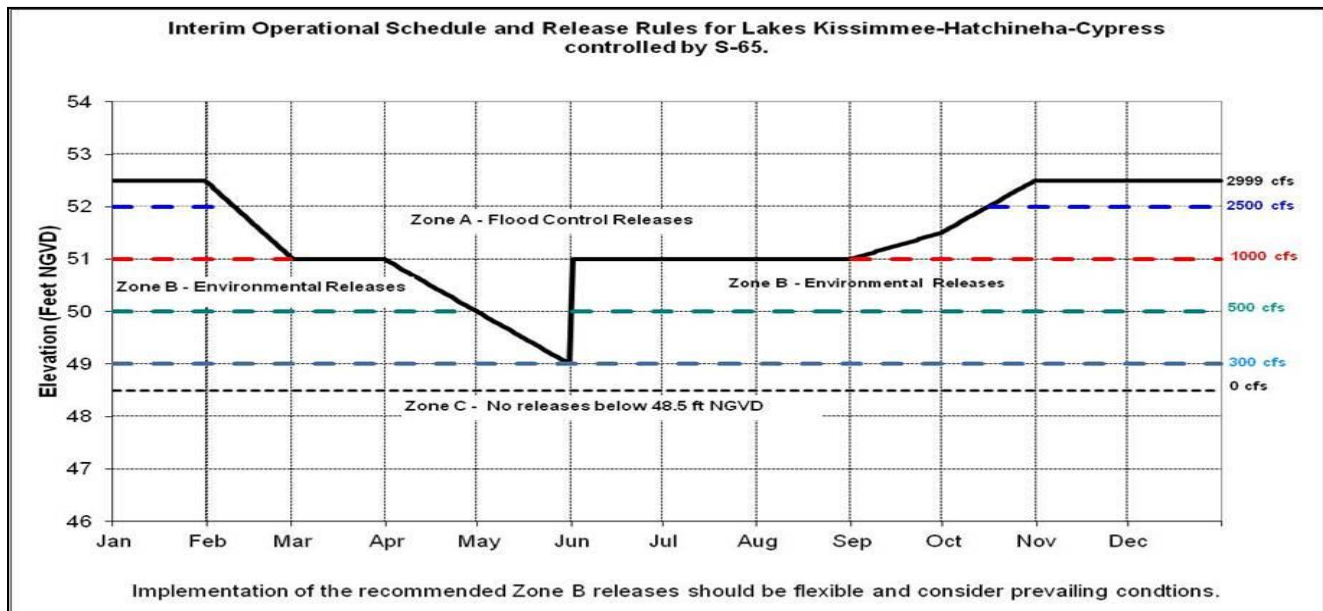


Figure 13. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years.



Figure 14. The Kissimmee Basin.

LAKE OKEECHOBEE

According to the USACE web site, Lake Okeechobee stage is at 15.04 feet NGVD for the period ending at midnight on February 19, 2018. This value is based on the use of four interior Lake stations (L001, L005, L006 and LZ40) and four perimeter stations (S308, S352, S4 and S133). Lake stage last peaked at 17.20 feet NGVD on October 13, 2017 before declining to 16.8 feet NGVD on October 28, 2017 and then back up to 17.02 feet NGVD. The Lake is now 0.29 feet lower than it was a month ago, but still 1.53 feet higher than a year ago (Figure 1). The Lake is now in the Low sub-band (Figure 2). According to RAINDAR, 0.03 inches of rain fell over the Lake during the week February 13, 2018 – February 19, 2018 with most of the watershed receiving 0.1 – 0.5 inches (Figure 3).

Average daily inflows to the Lake decreased from 1,363 cfs last week to 1,218 cfs this week. Most of the inflows were from the Kissimmee River via the S65E structures, averaging 1,094 cfs daily, with another 71 cfs from the S84 structures. The S71 and S72 structures, along with Fisheating Creek and the northern pumps, contributed a combined 52 average daily cfs as well.

Average daily outflows for the Lake increased from the previous week, going from 2,025 cfs to 3,345 cfs, through increases in discharges at all but the S308 structure, which remained at zero. S77 discharges went from 296 cfs the previous week to 837 cfs this past week, discharges south through the S350 structures increased from an average of 1,505 cfs the previous week to 2,242 cfs this past week, and discharges to the L8 canal via Culvert 10A this week averaged 267 daily cfs compared to 224 daily cfs last week. The corrected evapotranspiration value based on the L006 weather platform solar radiation data was the same as the previous week at 0.12 inches.

Total Lake inflows and outflows for the last week are detailed in Table 1, as well as the approximate change in Lake stage from each major structure's total flows over the period. Figure 4 shows the combined average daily cfs for inflows and outflows for the Lake over the past eight weeks. These data are provisional, and are subject to change.

Based on the Lake Okeechobee wading bird habitat suitability index, there are approximately 51,578 acres of suitable foraging habitat for long-legged birds and 14,354 acres for long and short-legged birds on the Lake (Figure 5).

The most recent satellite imagery using the cyanobacteria monitoring product derived from NOAA's OLCI satellite sensor indicate the cyanobacterial bloom potential may be intensifying although it has remained very low over the past four months. Potential for elevated cyanobacterial levels were last observed in the northern portion of the Lake in early September 2017 (Figure 6).

Table 1. Average daily inflows and outflows and the approximate depth equivalents on Lake Okeechobee for various structures.

INFLOWS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S65E & S65EX1	1094	0.4
S71 & 72	1	0.0
S84 & 84X	71	0.0
Fisheating Creek	36	0.0
S154	0	0.0
S191	0	0.0
S133 P	13	0.0
S127 P	0	0.0
S129 P	0	0.0
S131 P	0	0.0
S135 P	0	0.0
S2 P	2	0.0
S3 P	0	0.0
S4 P	0	0.0
C5	0	0.0
Rainfall	80	0.0
Total	1298	0.5

OUTFLOWS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S77	837	0.3
S308	0	0.0
S351	1173	0.5
S352	642	0.3
S354	427	0.2
L8	267	0.1
ET	2287	0.9
Total	5633	2.2

PROVISIONAL DATA

Water Management Recommendations

The Lake stage is 15.04 feet NGVD having decreased 0.14 feet from the week prior and 0.29 feet over the past month. Submerged and emergent vegetation communities in the nearshore region have experienced stages >16.0 feet NGVD three times in less than two years, and stages >15.5 feet NGVD for 105 consecutive days this water year, the longest period since late 2004 (112 consecutive days). These stages, combined with turbid conditions from Hurricane Irma's winds, will likely cause substantial declines in these communities over the coming months and/or years. Lower Lake stages near the end of WY2018 would help to recover these important communities, and long, steady recessions of water levels throughout the dry season may help promote another productive year for wading birds on the Lake as well.

1 Year Ago: 02/19/2017

1 Month Ago: 01/20/2018

Current: 02/19/2018

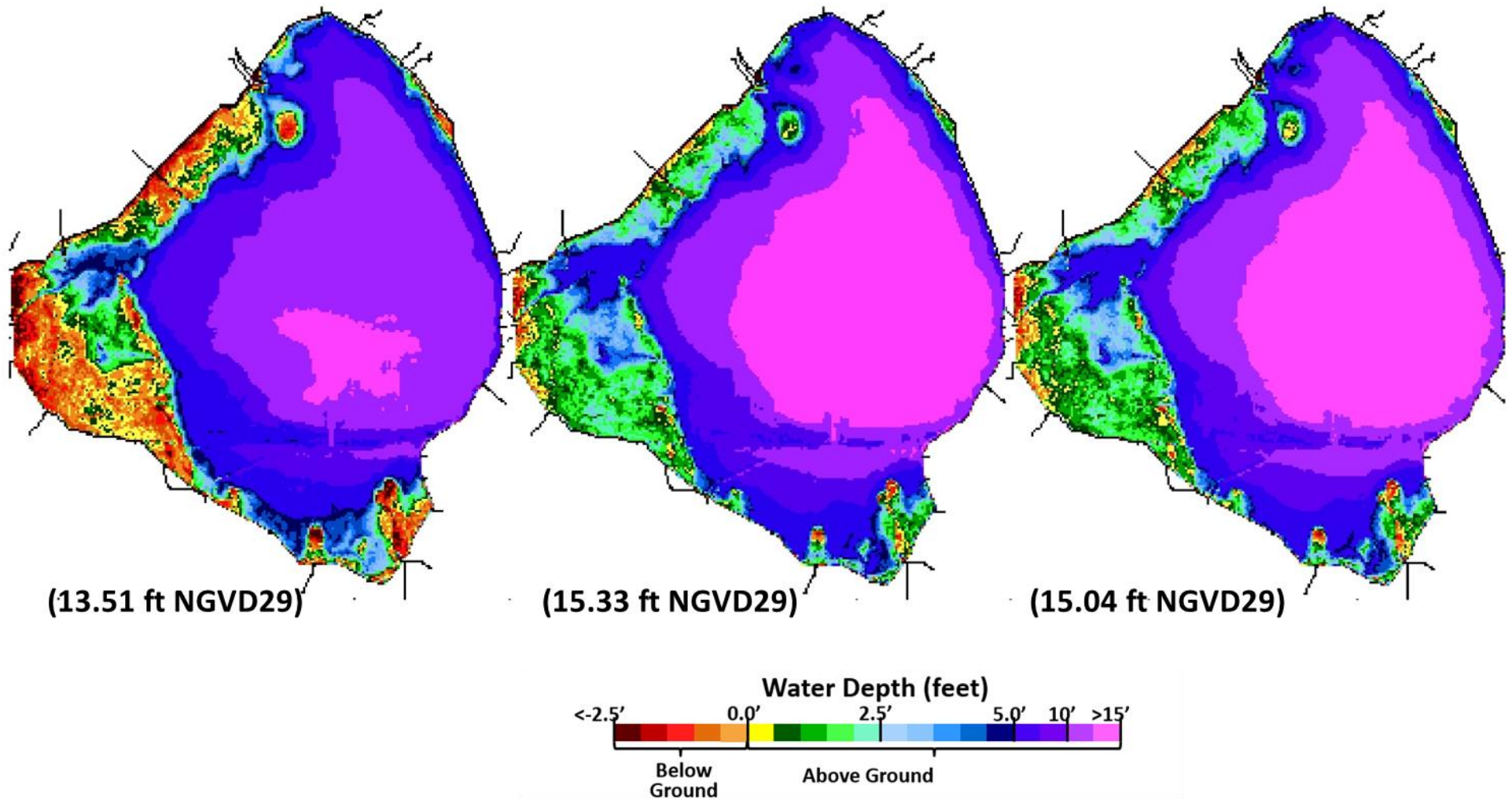


Figure 1. Water depth estimates on Lake Okeechobee based on the South Florida Water Depth Assessment Tool.

Lake Okeechobee Water Level History and Projected Stages

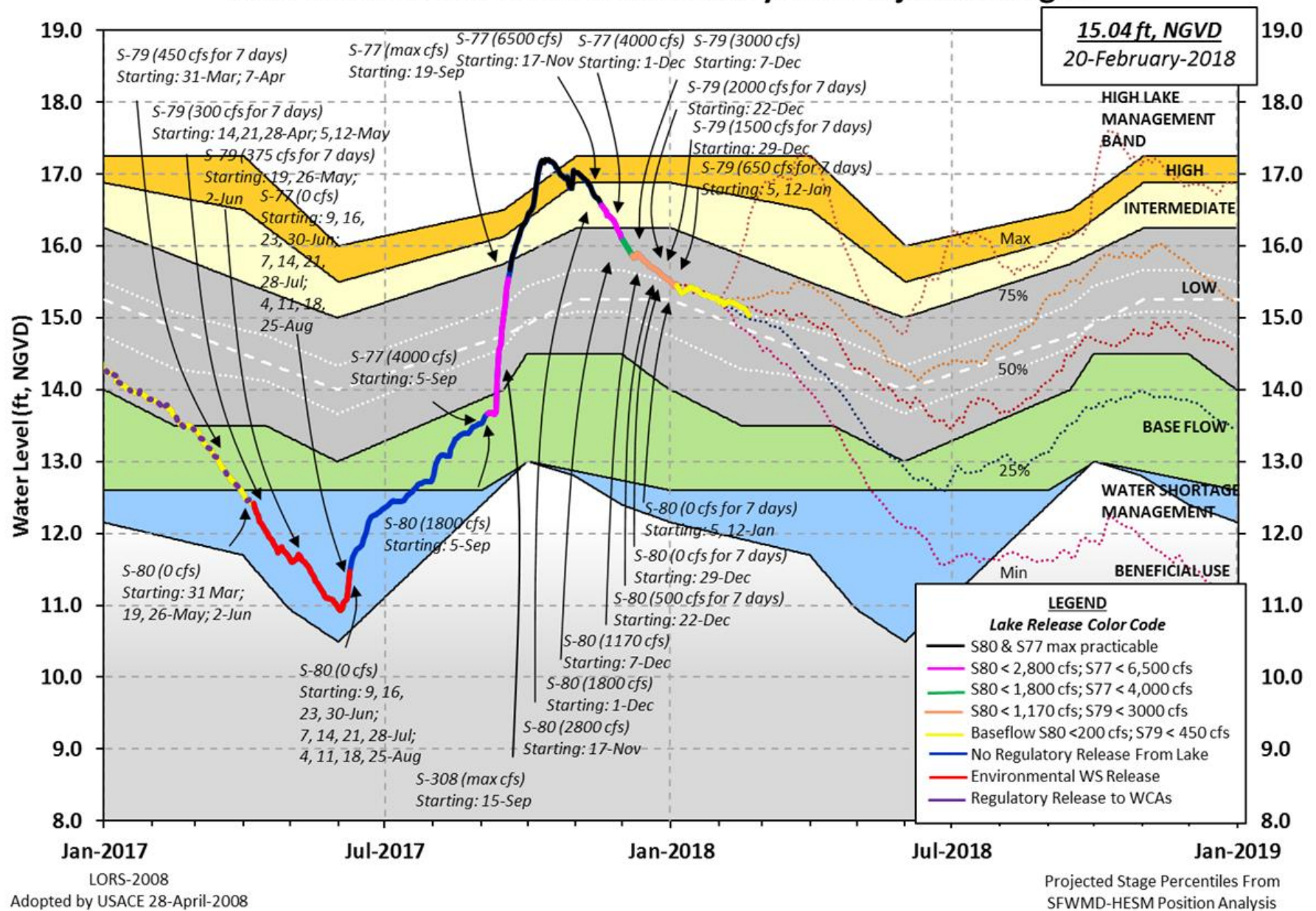


Figure 2. Recent Lake Okeechobee stage and releases, with projected stages based on a dynamic position analysis.

SFWMD PROVISIONAL RAINDAR 7-DAY BASIN RAINFALL ESTIMATES

FROM: 0615 EST, 02/13/2018 THROUGH: 0615 EST, 02/20/2018

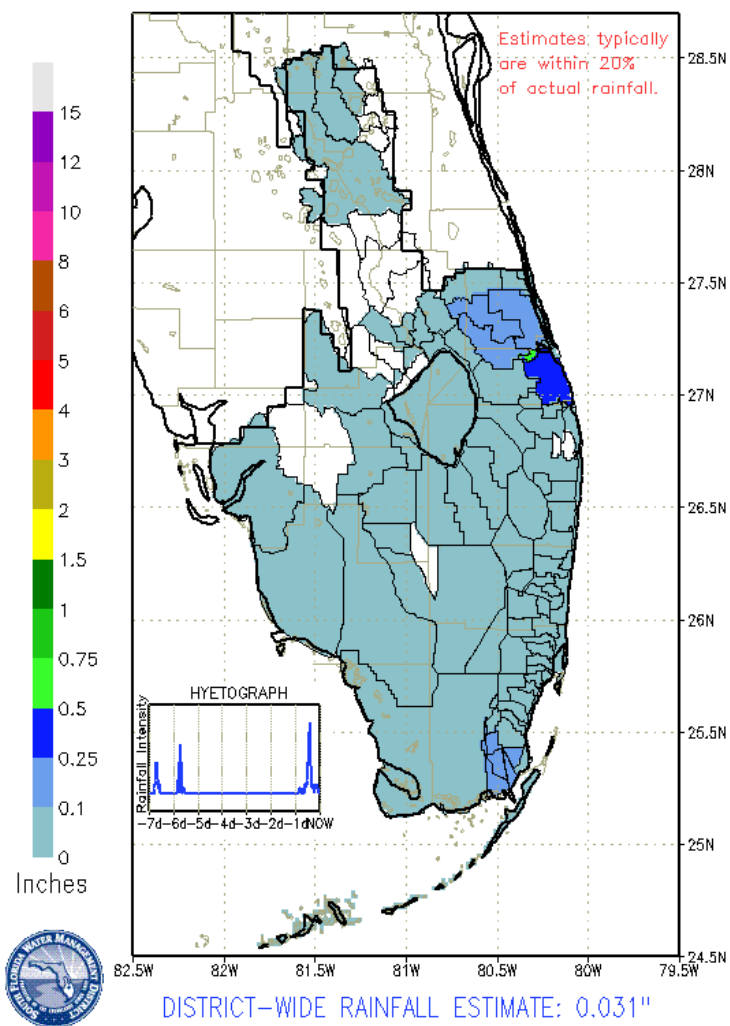
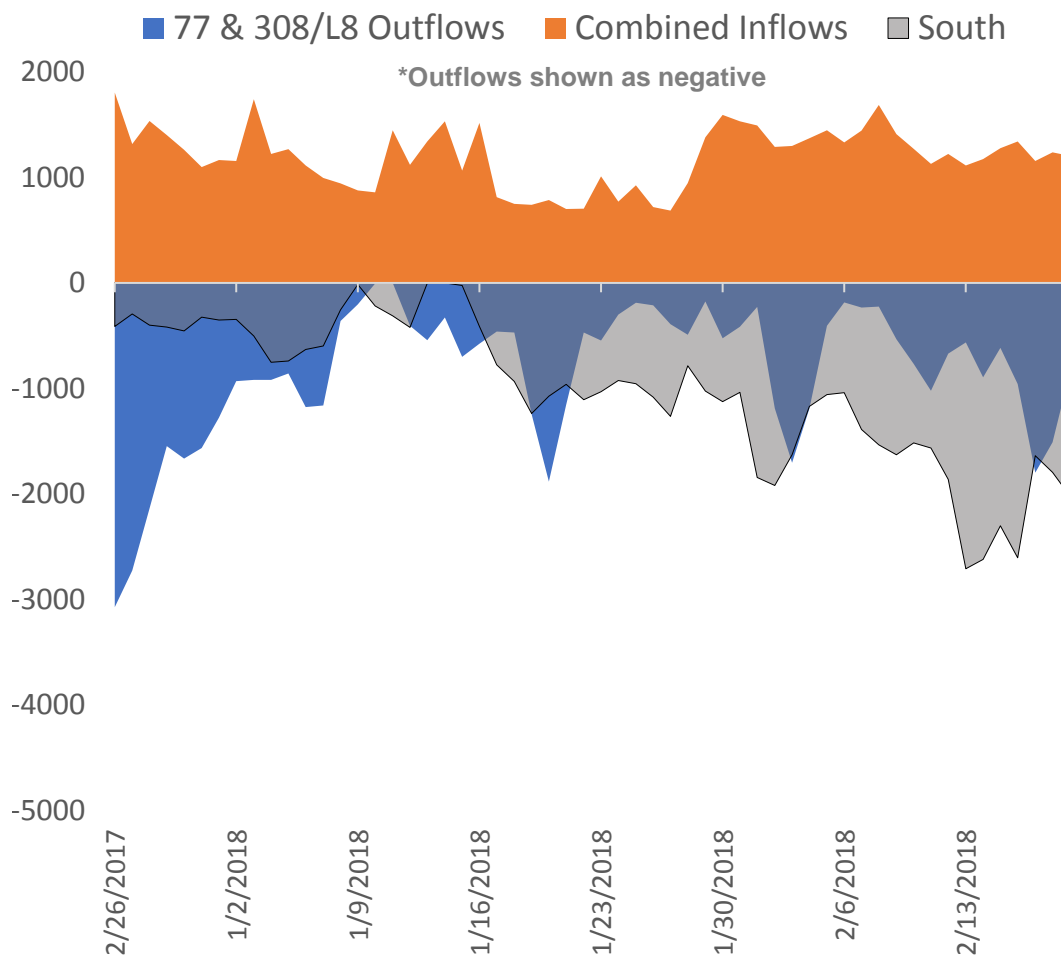


Figure 3. Rainfall estimates by basin.



PROVISIONAL DATA

Figure 4. Major inflows and outflows of Lake Okeechobee, including the S350 structures designated as South. Inflows and outflows are shown as positive and negative, respectively, for visual purposes.

1 Year Ago: 02/19/2017

1 Month Ago: 01/20/2018

Current: 02/19/2018

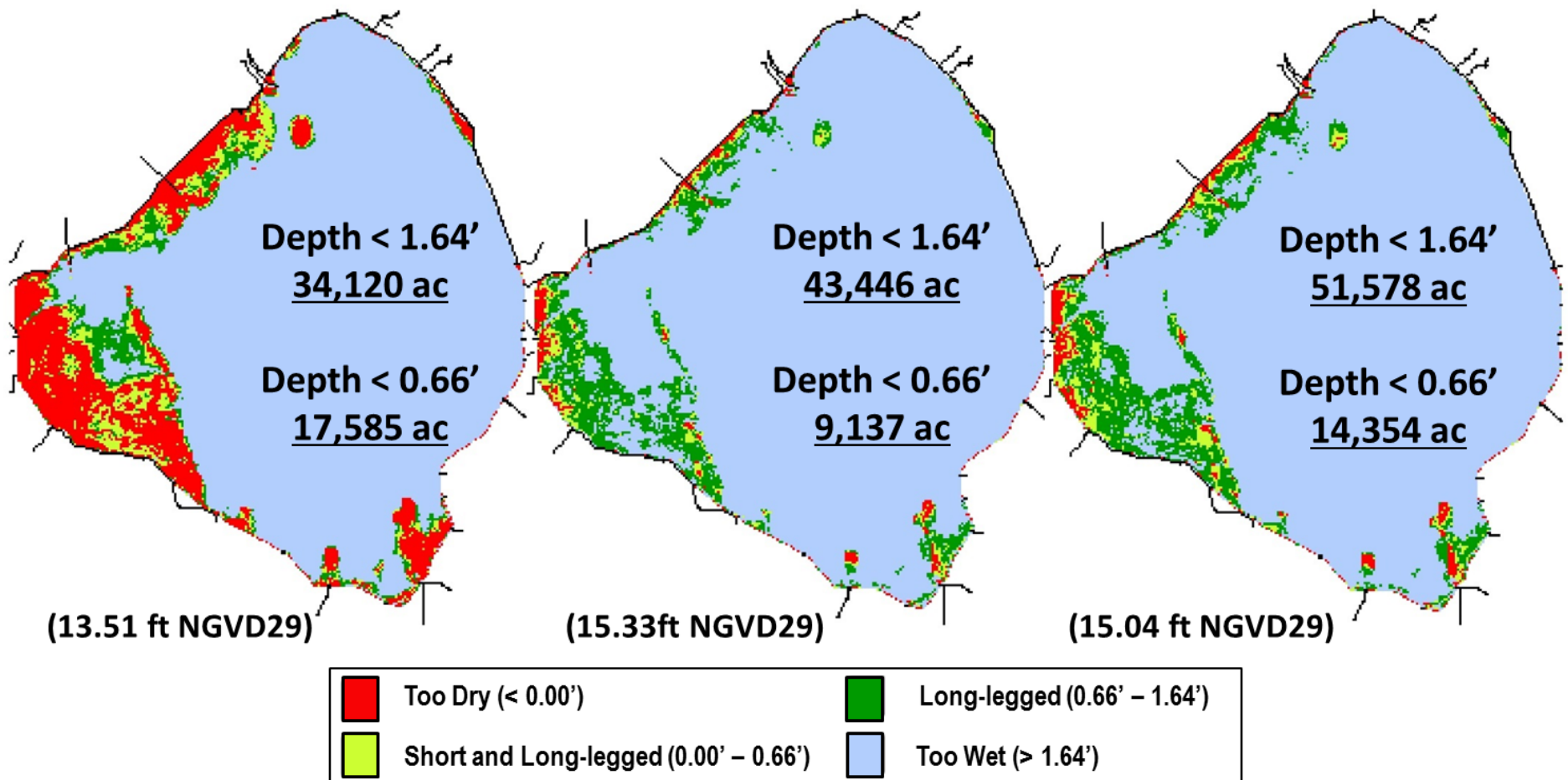


Figure 5. Wading bird habitat suitability index for Lake Okeechobee based on the South Florida Water Depth Assessment Tool.

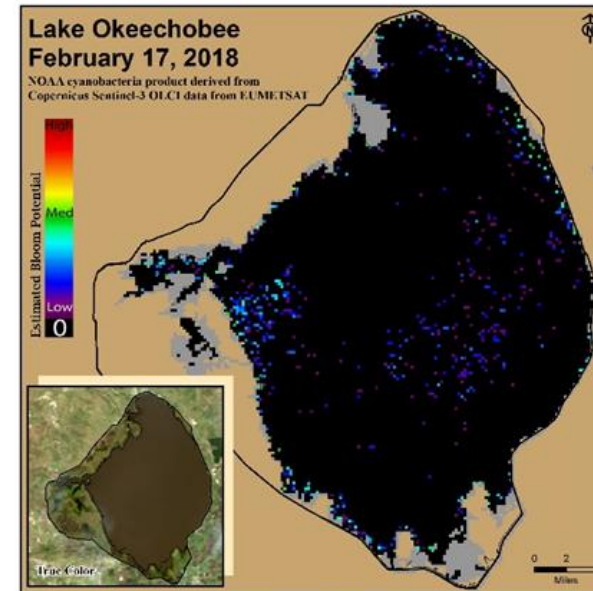
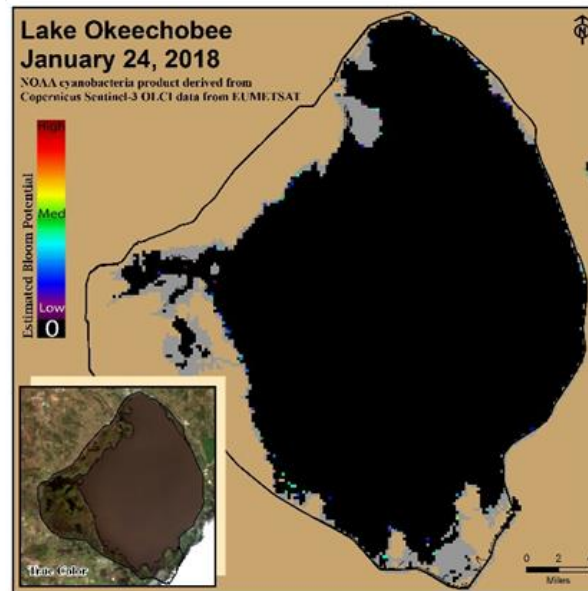
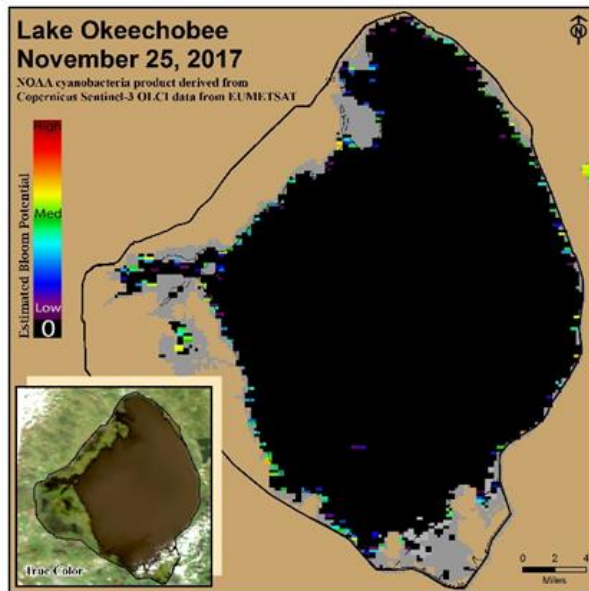
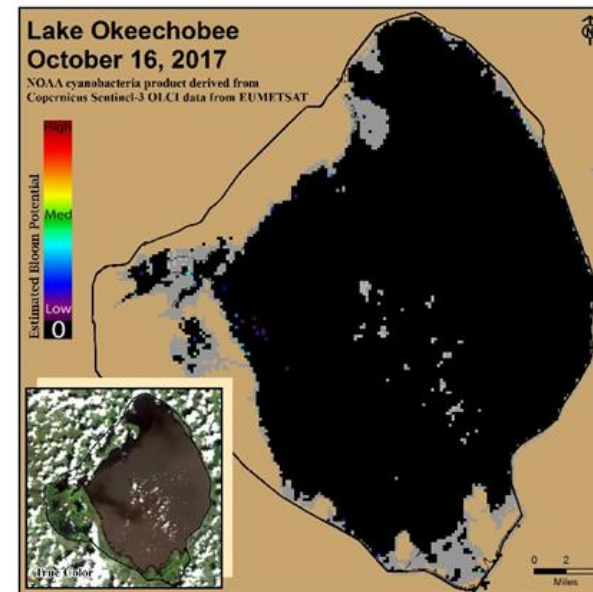
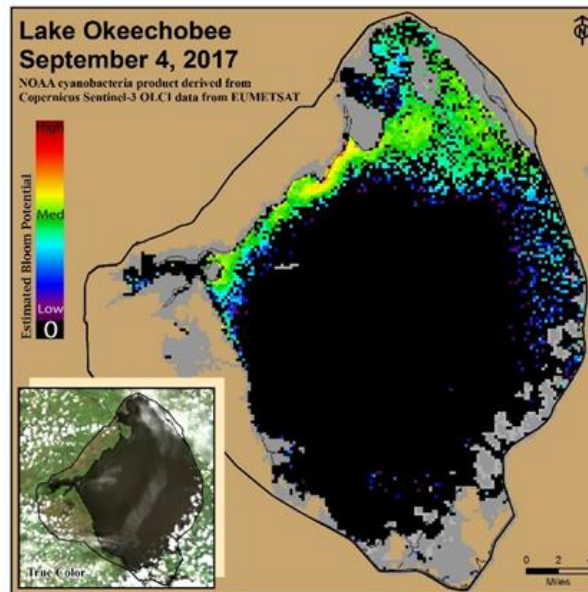
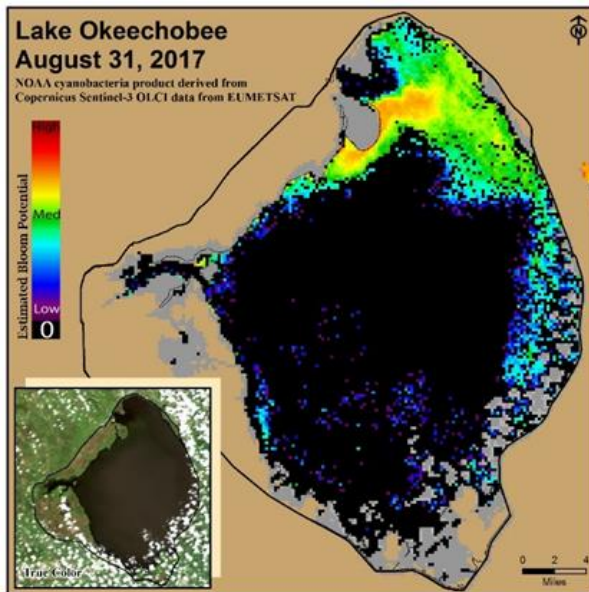


Figure 6. Potential for cyanobacterial blooms on Lake Okeechobee based on NOAA's harmful algal bloom monitoring system derived from Copernicus Sentinel-3 OLCI data from EUMETSAT.

LAKE ISTOKPOGA

Lake Istokpoga stage is 39.24 feet NGVD as of midnight February 19, 2018 and is currently 0.26 feet below its regulation schedule to accommodate construction on downstream structures (Figure 7). Average daily inflows to the lake from Josephine Creek for the week February 13, 2018 – February 19 were similar to the previous week at 65 cfs. No data have been reported for Arbuckle Creek since July 4, 2017 as the gauge is being recalibrated after construction in the area. Average daily discharge from S68 and S68X decreased from the previous week, going from 313 cfs to 112 cfs this past week. According to RAINDAR, <0.01 inches of rain fell in the Lake Istokpoga basin over the past week.

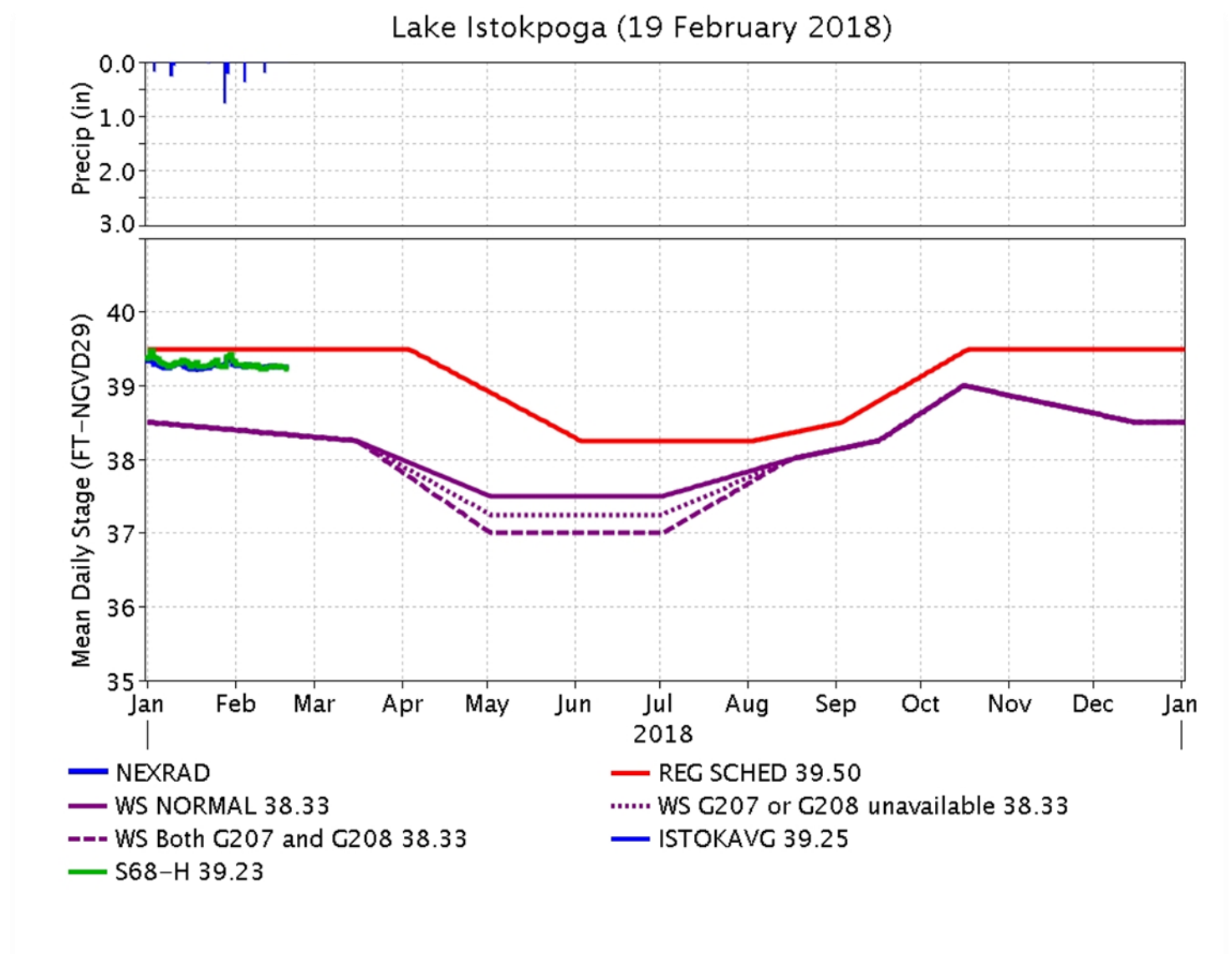


Figure 7. Recent stages on Lake Istokpoga.

ESTUARIES

St. Lucie Estuary:

Last week total inflow into the St. Lucie Estuary averaged about 196 cfs (Figures 1 and 2) and last month inflow averaged about 236 cfs. Last week's provisional averaged inflows from the tidal basin and the structures are shown in Table 1.

Table 1. Weekly average inflows (data is provisional).

Location	Flow (cfs)
Tidal Basin Inflow	92
S-80	0
S-308	0
S-49 on C-24	22
S-97 on C-23	0
Gordy Rd. structure on Ten Mile Creek	82

Over the past week, salinity increased throughout the estuary except for surface salinity at HR1 (Table 2, Figures 3 and 4). The seven-day moving average salinity of the water column (an average of the surface and bottom salinity) at the US1 Bridge is 19.8. Salinity conditions in the middle estuary are in the good range for adult eastern oysters (Figure 3).

Table 2. Seven-day average salinity at three monitoring sites in the St. Lucie Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for adult eastern oysters (*Crassostrea virginica*) in the middle estuary.

Sampling Site	Surface	Bottom	Envelope
HR1 (North Fork)	13.9 (14.5)	17.8 (16.5)	NA ¹
US1 Bridge	19.0 (18.5)	20.5 (19.4)	10.0-26.0
A1A Bridge	27.0 (26.8)	29.5 (28.7)	NA ¹

¹Envelope not applicable.

Continuous monitoring of water quality is conducted at HR1 in the North Fork. Weekly dissolved oxygen data are summarized in Table 3.

Table 3. Weekly dissolved oxygen conditions at HR1 in the North Fork of the St. Lucie Estuary.

Location	Depth	Average DO (mg/l)	Minimum DO (mg/l)	Maximum DO (mg/l)
HR1	surface	5.56	2.62	7.97
HR1	bottom	3.57	0.77	6.19

Continuous monitoring of water quality is conducted at five Land/Ocean Biogeochemical Observatory (LOBO) stations located in the St. Lucie Estuary and maintained by Florida Atlantic University/Harbor Branch Oceanographic Institute (FAU-HBOI). Data are summarized in Table 4 and station location map is shown in Figure 5.

Table 4. Weekly ranges of instrument depth, chlorophyll *a* (a measure of algal biomass) and dissolved oxygen concentrations at five FAU-HBOI LOBO stations located in the St. Lucie Estuary.

Location	Depth (m)	Chlorophyll <i>a</i> (µg/l)	Average DO (mg/l)	Minimum DO (mg/l)	Maximum DO (mg/l)
SF2	2.61	4.47 - 8.07	1.71	0.53	3.33
SF	1.49	4.74 - 9.6	6.76	5.41	8.50
NF	2.00	3.09 - 8.15	4.56	3.79	5.31
ME	1.79	4.47 - 12.75	6.53	5.78	7.29
IRL-SLE	3.42	0.24 - 3.13	6.25	5.50	6.98

NOAA satellite imagery indicates no visible cyanobacteria bloom potential in the St. Lucie Estuary this week.

Caloosahatchee Estuary:

Last week total inflow into the Caloosahatchee Estuary averaged about 701 cfs (Figures 6 and 7) and last month inflow averaged about 797 cfs. Last week's provisional averaged inflows from the structures are shown in Table 5.

Table 5. Weekly average inflows (data is provisional).

Location	Flow (cfs)
S-77	837
S-78	554
S-79	622

Over the past week, salinity remained about the same throughout the estuary (Table 6, Figures 8 & 9). The seven-day average salinity values are within the good range for adult eastern oysters at Cape Coral and at Shell Point (Figure 10). Salinity data were not available at Sanibel. The 30-day moving average surface salinity is 3.2 at Val I-75 and 9.0 at Ft. Myers. With no flow through S-79, daily salinity at Val I-75 is forecast in two weeks to be 6.8, and the 30-day moving average is forecast to be 4.6 (Figure 11). Salinity conditions between Val I-75 and Ft. Myers are good for tape grass.

Table 6. Seven-day average salinity at six monitoring stations in the Caloosahatchee Estuary. Current average is in bold face type, previous average in parentheses. The envelope reflects the preferred salinity range for tape grass (*Vallisneria americana*) at Val I-75 and for adult eastern oysters (*Crassostrea virginica*) elsewhere.

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	3.3 (3.1)	3.5 (3.5)	NA ¹
*Val I75	4.2 (3.7)	5.8 (6.6)	0.0-5.0 ²
Ft. Myers Yacht Basin	10.0 (9.7)	11.6 (12.9)	NA
Cape Coral	17.2 (17.2)	18.9 (19.1)	10.0-30.0
Shell Point	28.1 (27.6)	27.4 (27.3)	10.0-30.0
Sanibel	NR ³ (NR)	NR (NR)	10.0-30.0

¹Envelope not applicable, ²Envelope is based on a 30-day average, and ³Not Reporting.

*Val I75 is temporarily unavailable (salinity values are estimated using models developed for this site).

Monitoring data collected by the River, Estuary and Coastal Observing Network of Sanibel-Captiva Conservation Foundation using continuous sensors are summarized in Table 7 as concentration ranges of chlorophyll *a* and dissolved oxygen at Beautiful Island, Ft. Myers, and Shell Point in the Caloosahatchee Estuary.

Table 7. Weekly ranges of chlorophyll *a* (a measure of algal biomass) and dissolved oxygen concentrations at three monitoring stations maintained by the Sanibel-Captiva Conservation Foundation.

Parameter Name	RECON Monitoring Stations		
	Beautiful Island	Ft. Myers	Shell Point
Chlorophyll <i>a</i> (µg/l)	Down since 07/11/17	5.89 – 13.12	1.55 – 3.89
Dissolved Oxygen (mg/l)	Down since 07/11/17	5.26 – 7.80	5.40 – 9.62

The Florida Fish and Wildlife Research Institute reported on February 16, 2018, that *Karenia brevis*, the *Florida red tide dinoflagellate*, was observed in background to low concentrations in three samples collected from or offshore of Lee County.

NOAA satellite imagery indicates no visible cyanobacteria bloom potential in the Caloosahatchee Estuary this week.

Water Management Recommendations

Lake stage is in the Low sub-band of 2008 LORS. Tributary hydrological conditions are normal. The 2008 LORS recommends up to 450 cfs at S-79 and up to 200 cfs at S-80. Given the current estuarine conditions, there are no ecological benefits associated with freshwater releases from Lake Okeechobee.

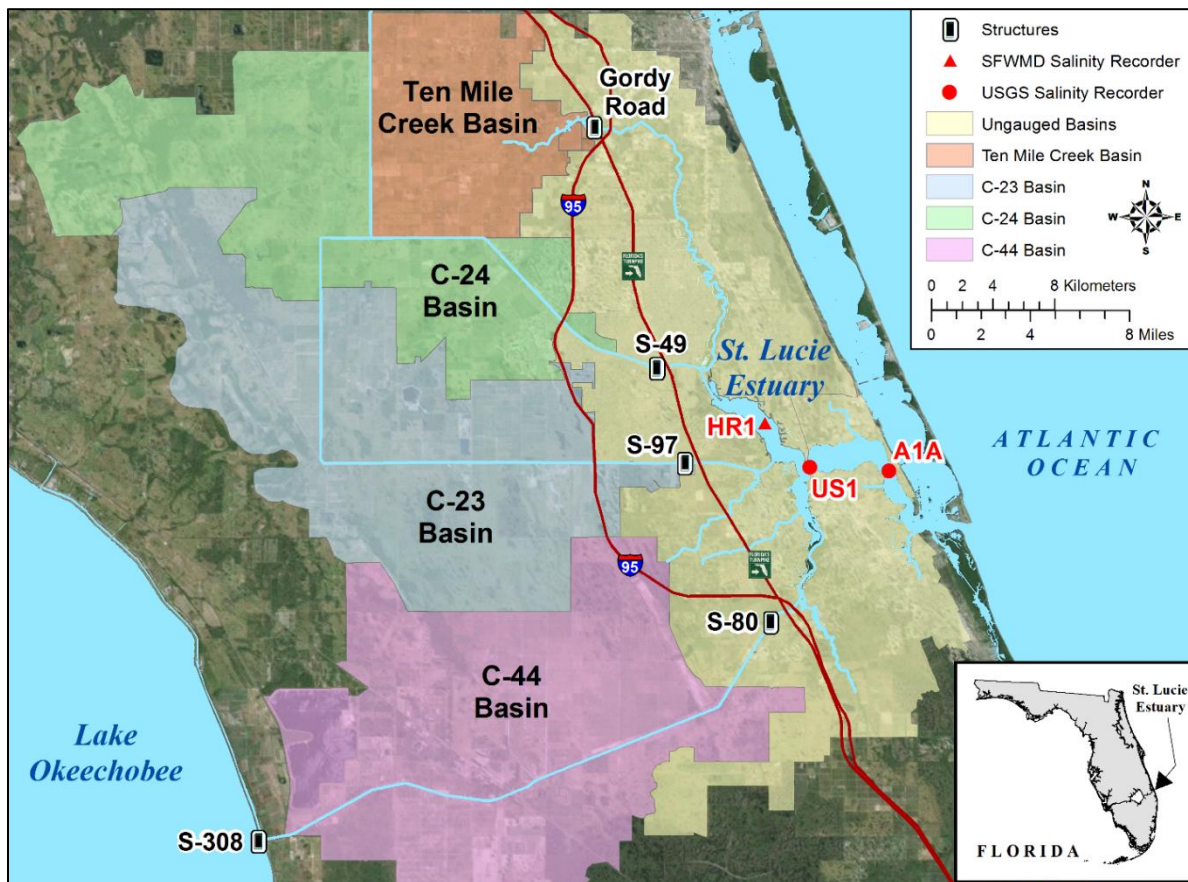


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

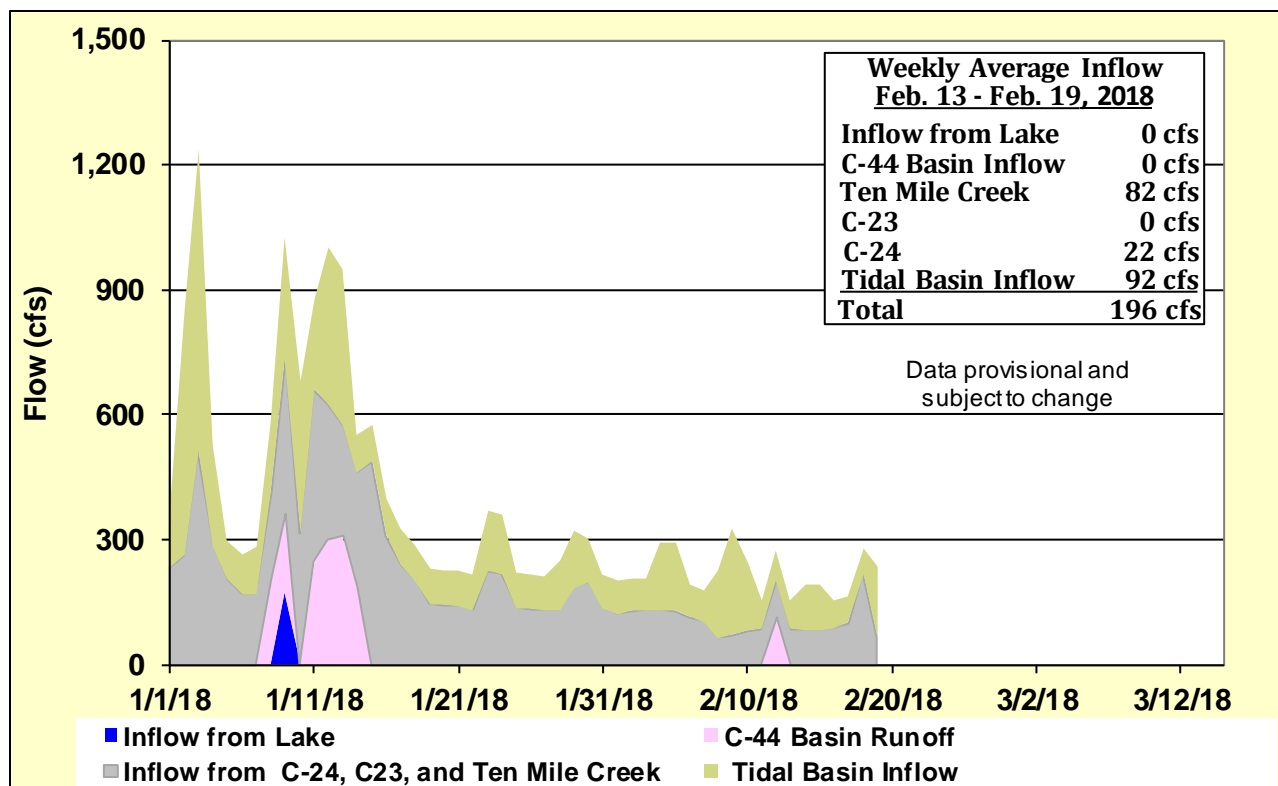


Figure 2. Estimated surface freshwater inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basins into the St. Lucie Estuary.

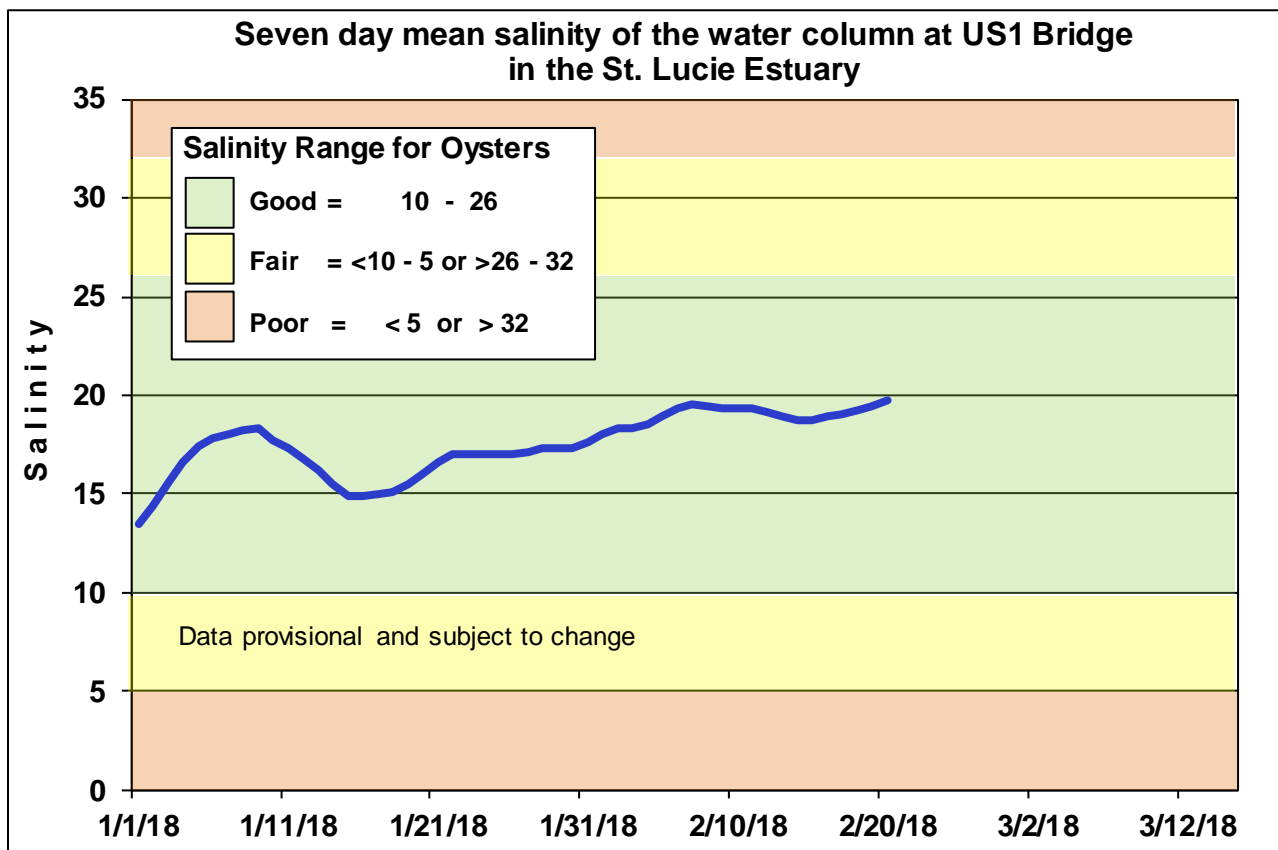


Figure 3. Seven-day mean salinity of the water column at the US1 Bridge.

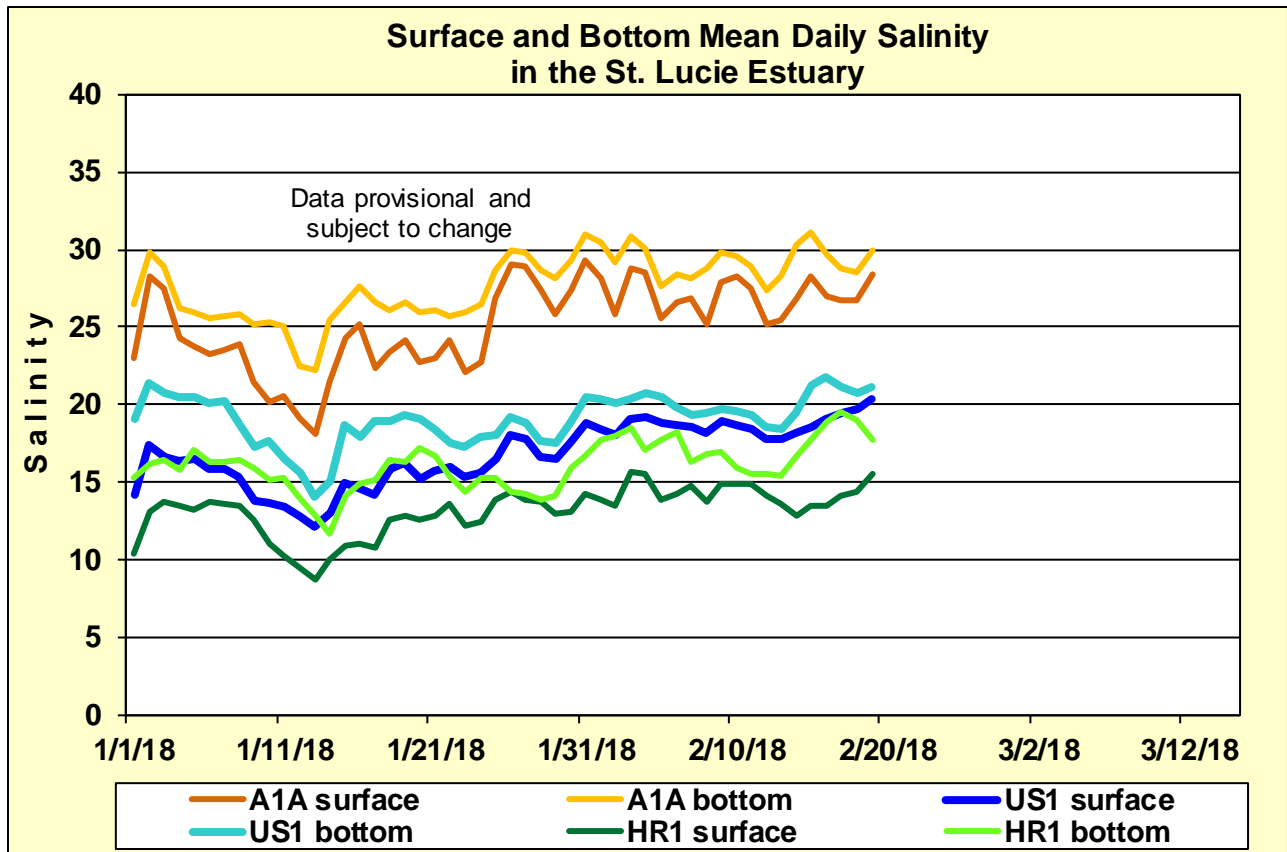


Figure 4. Daily mean salinity at the A1A, US1 and estimated HR1 stations.

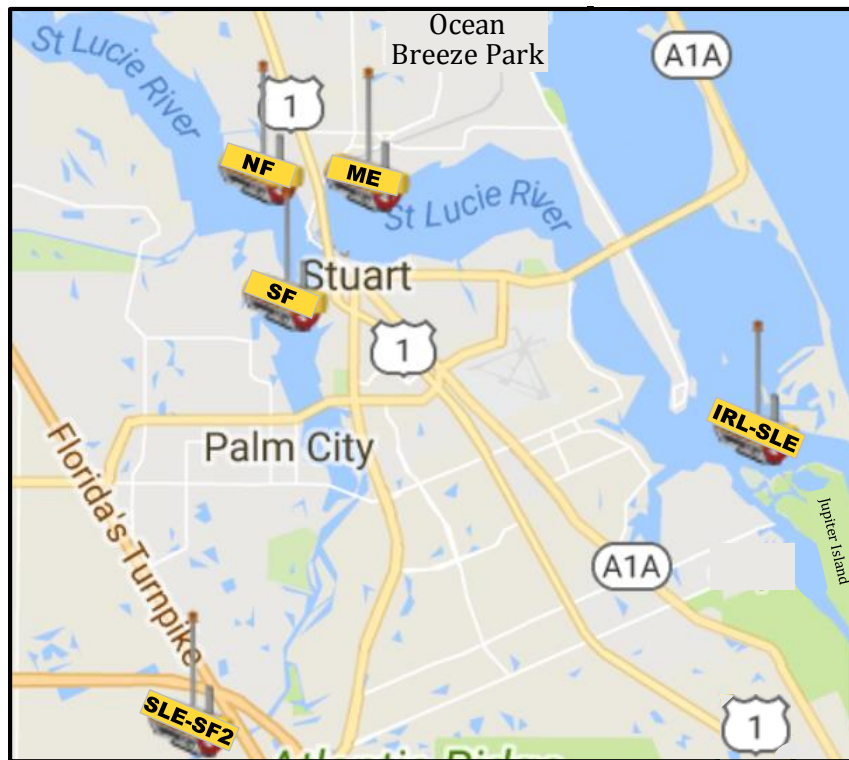


Figure 5. Location of FAU-HBOI LOBO water quality stations in the St. Lucie Estuary.

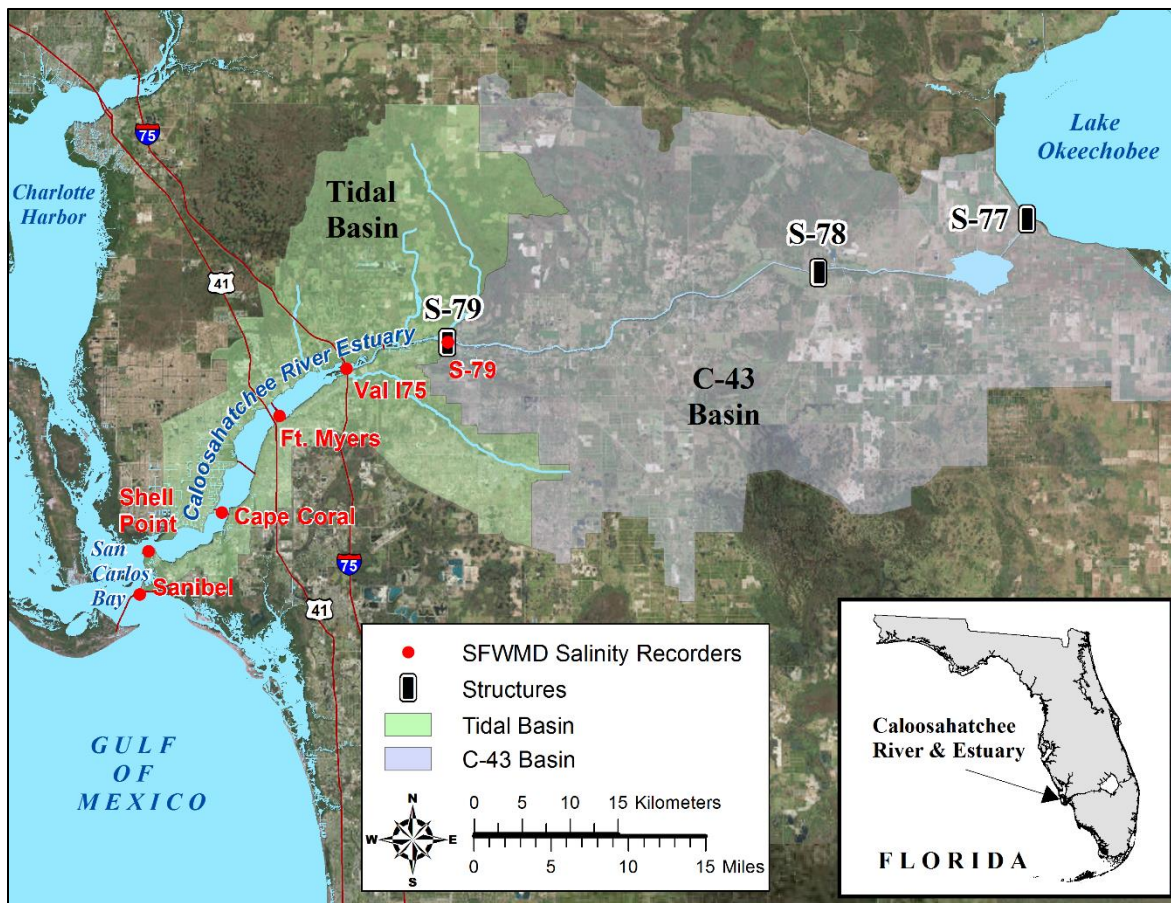


Figure 6. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

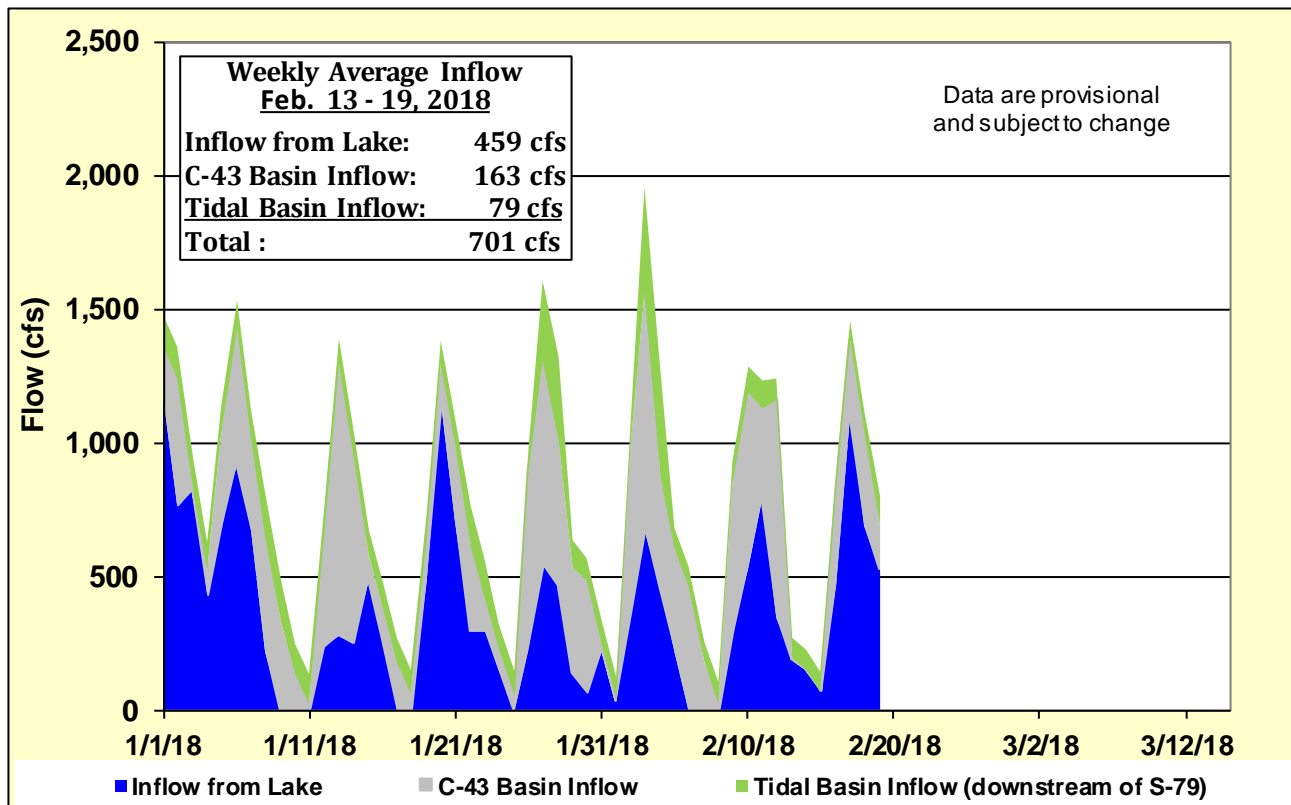


Figure 7. Freshwater inflows from Lake Okeechobee, runoff from the C-43 basin, and tributaries in the tidal basin into the Caloosahatchee River Estuary.

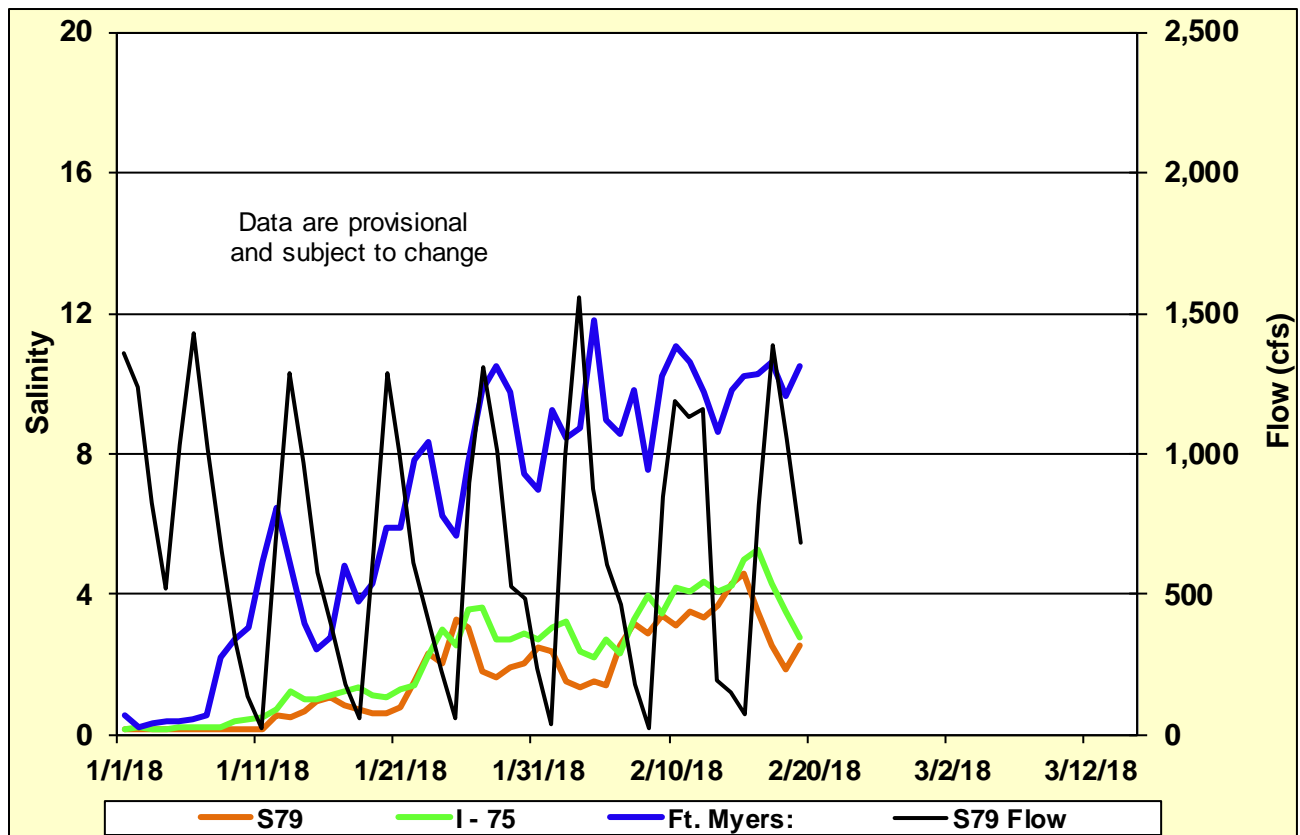


Figure 8. Daily mean flows at S-79 and salinity at upper estuary monitoring stations.

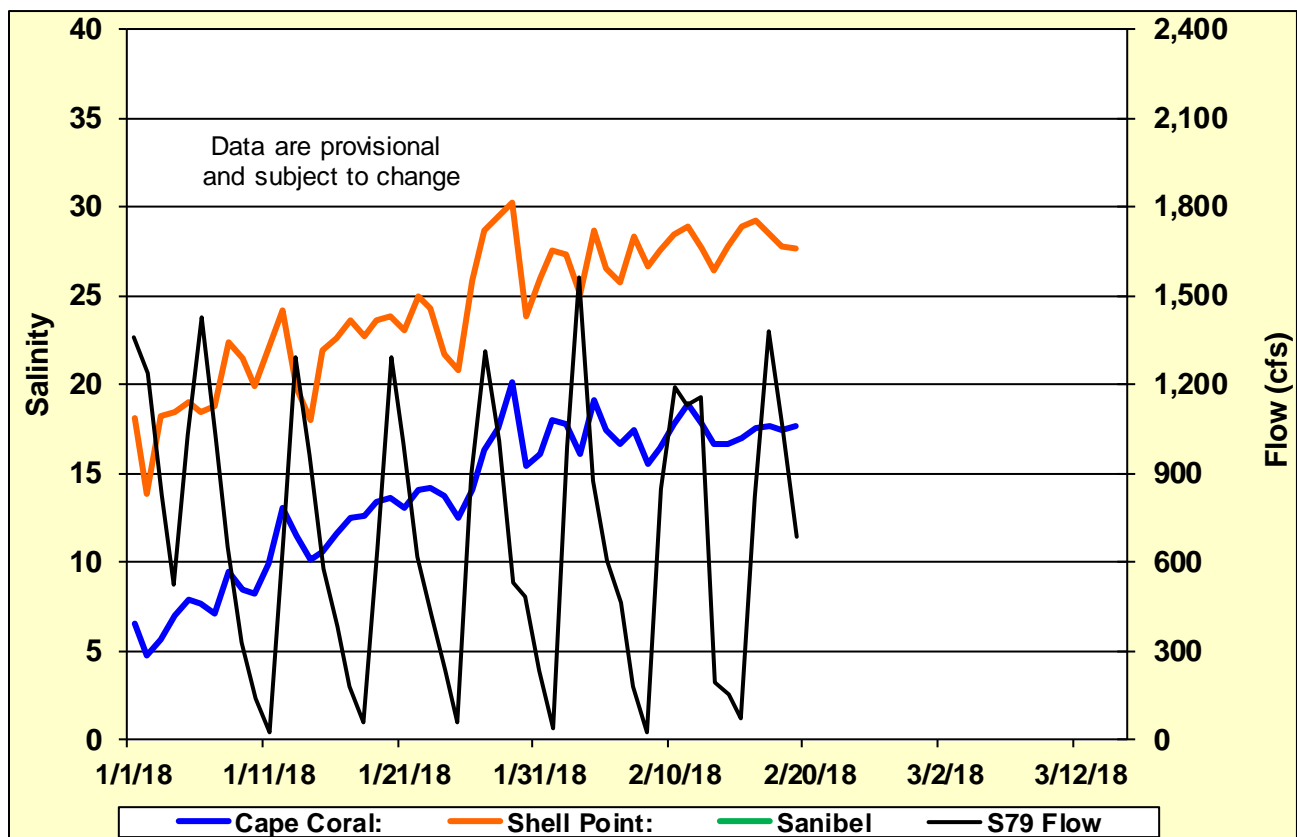


Figure 9. Daily mean flows at S-79 and salinity at lower estuary stations.

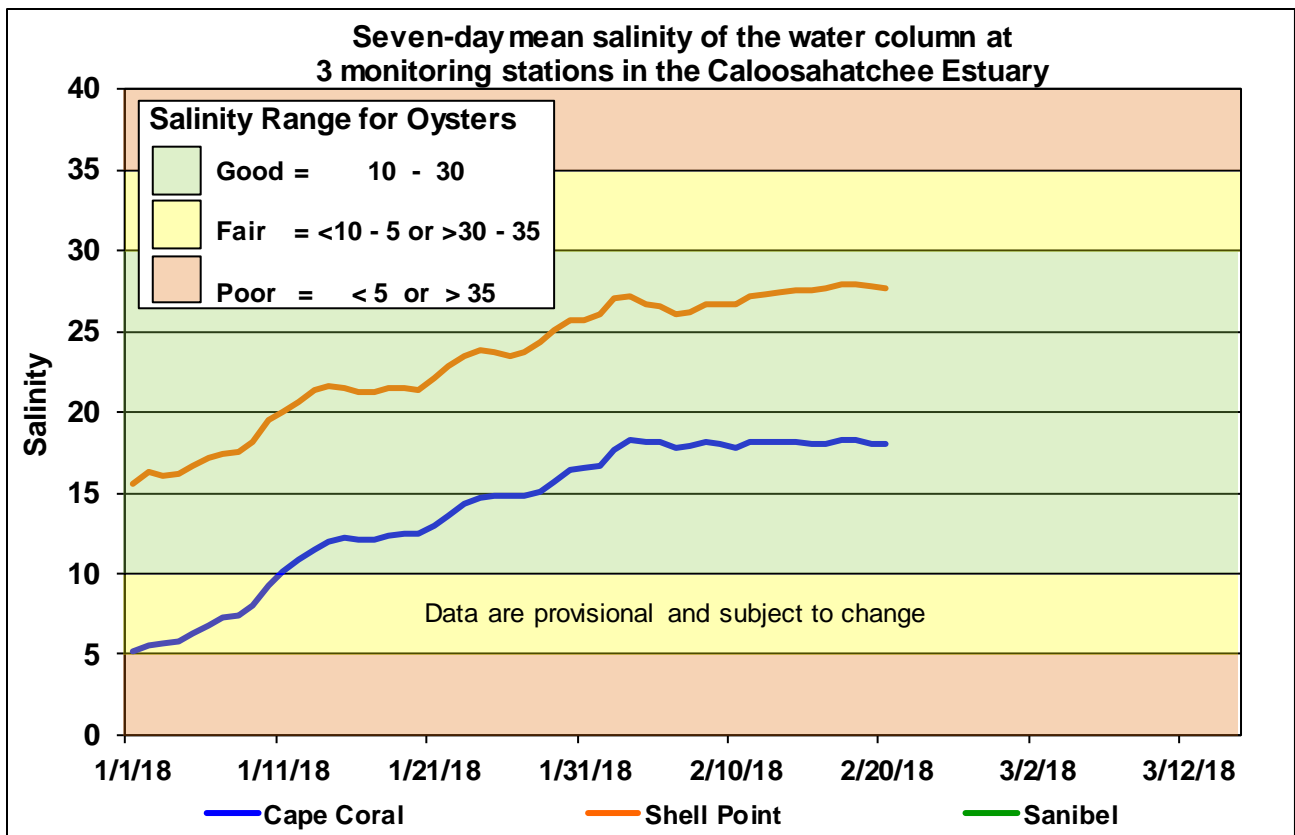


Figure 10. Seven-day mean salinity at Cape Coral Bridge, Shell Point, and Sanibel Bridge monitoring stations.

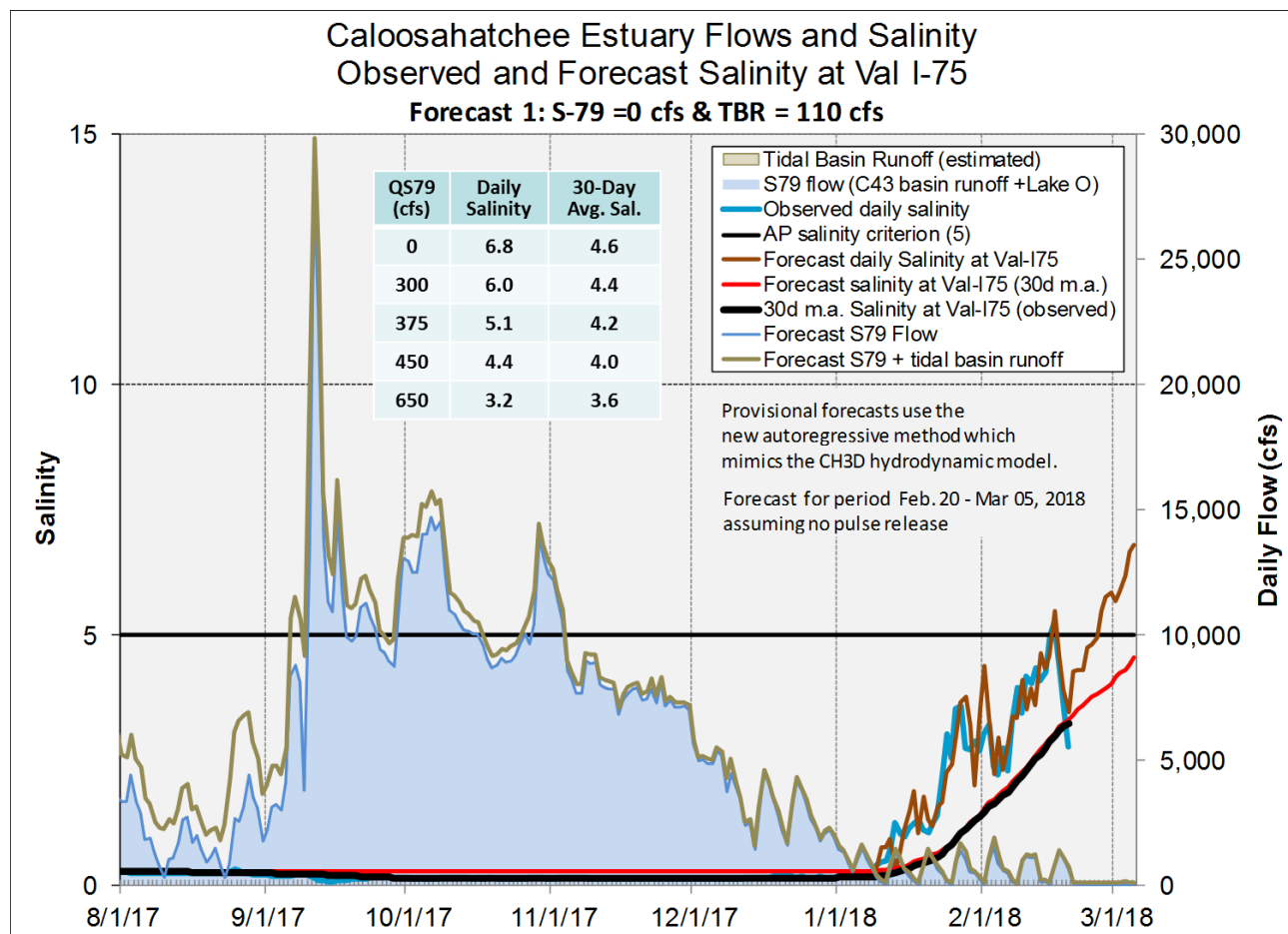



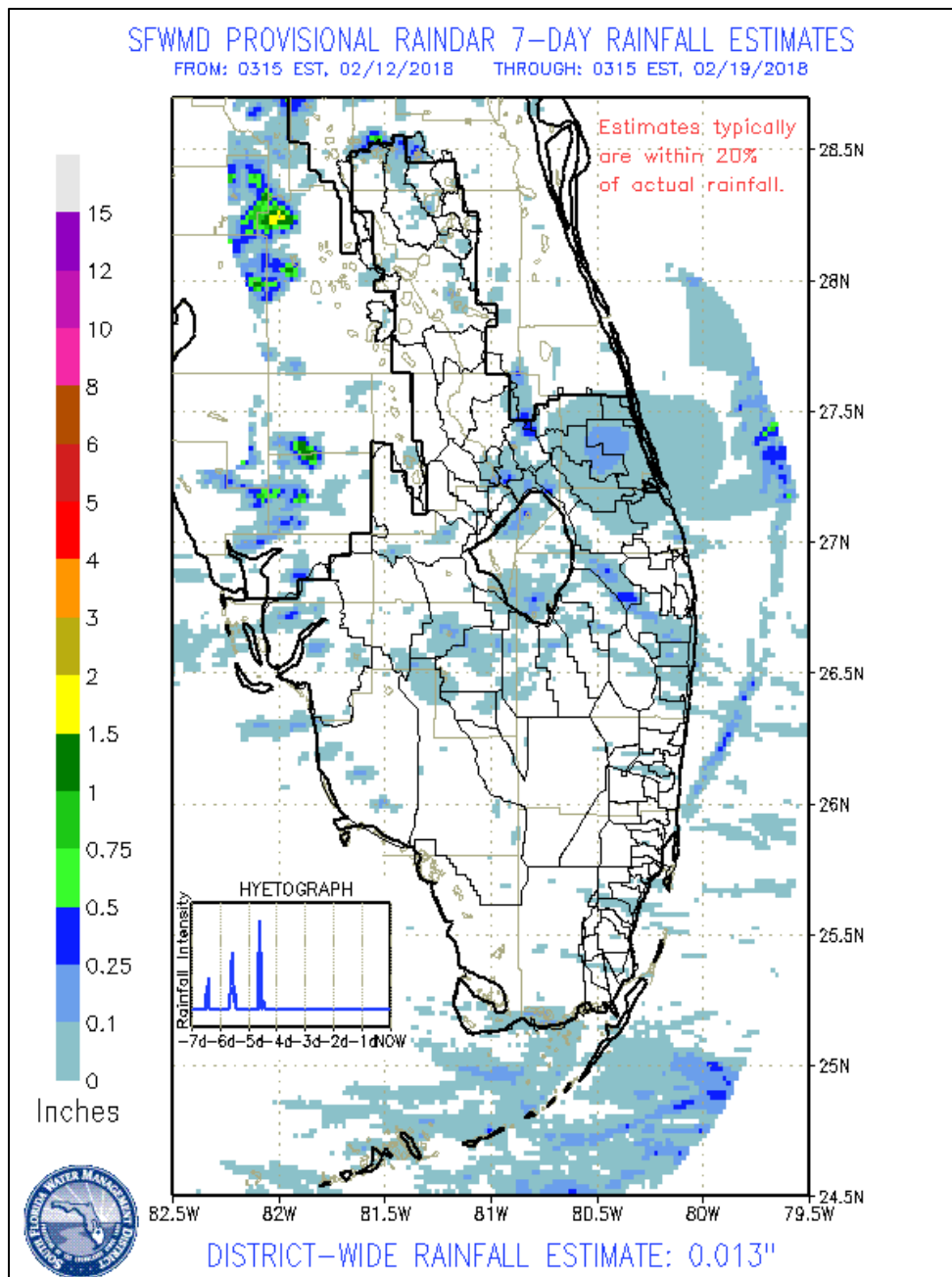


Figure 11. 14-day salinity forecast at Val I-75 assuming no releases at S-79.

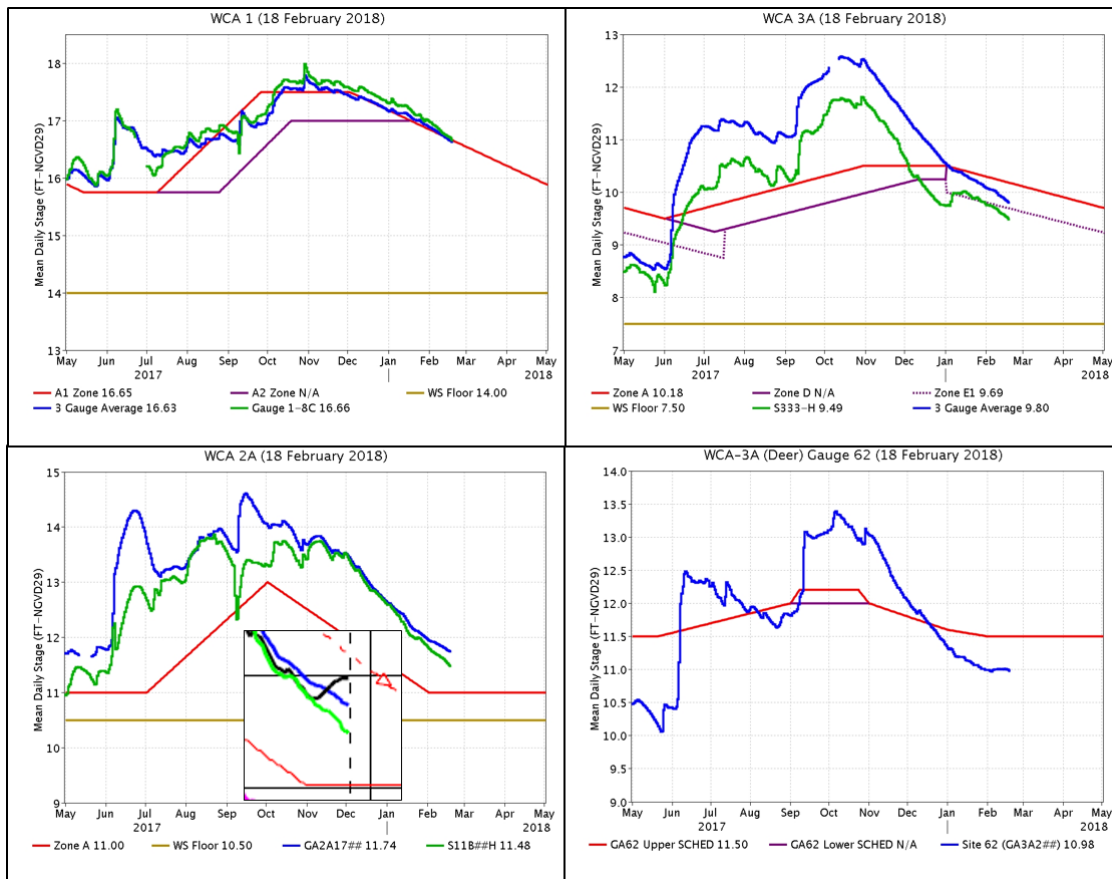
EVERGLADES

At the gauges monitored for this report, the water depth across the Everglades fell an average of 0.10 feet last week, a slight increase from the week prior. Individual gauge changes in the WCAs ranged from -0.03 feet (northwestern WCA-3A) to -0.15 feet (central WCA-3A). Pan evaporation was estimated at 1.68 inches last week.

Everglades Region	Rainfall (Inches)	Stage Change (feet)	
WCA-1	<0.01	-0.11	 Good  Fair  Poor
WCA-2A	0.00	-0.10	
WCA-2B	<0.01	-0.15	
WCA-3A	0.00	-0.11	
WCA-3B	0.00	-0.08	
ENP	<0.01	-0.05	



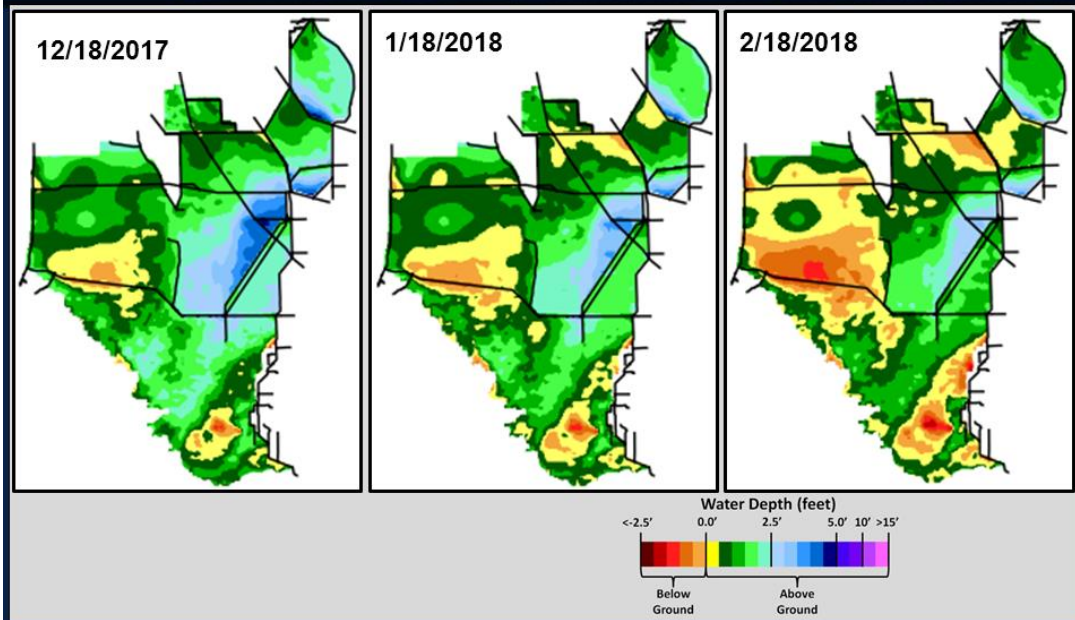
Regulation Schedules: WCA-1 three-gauge average continues trending along the top of the Zone A1 schedule, at 0.02 feet above. WCA-2A (subject to a temporary deviation – see inset) marsh stage at gauge GA2A17 is 0.74 feet above Zone A1, below the temporary schedule, and is falling away from the temporary schedule. WCA-3A three-gauge average stage is 0.38 feet below Zone A and is falling away from the regulation line. WCA-3A at gauge 62 (Northwest corner) stage is 0.52 feet below the upper schedule and has leveled off.



Water Depths and Changes: The WDAT tool for spatial interpolation of depth indicates a range from a low of -1.0 feet to -0.5 feet in the northeastern corner of WCA-3A, to a high of 3.5 feet to 4.0 feet in small pockets of the extreme southern regions of WCA-1 and WCA-2B. These are the same conditions as last week. Comparing WDAT water depths from present, water depths over the last week fell across most of the Everglades. Northern WCA-2A and the northwestern perimeter of WCA-1 rose slightly over the past week. Of note, the northwestern corner of WCA-3A is lower than it was a week ago.



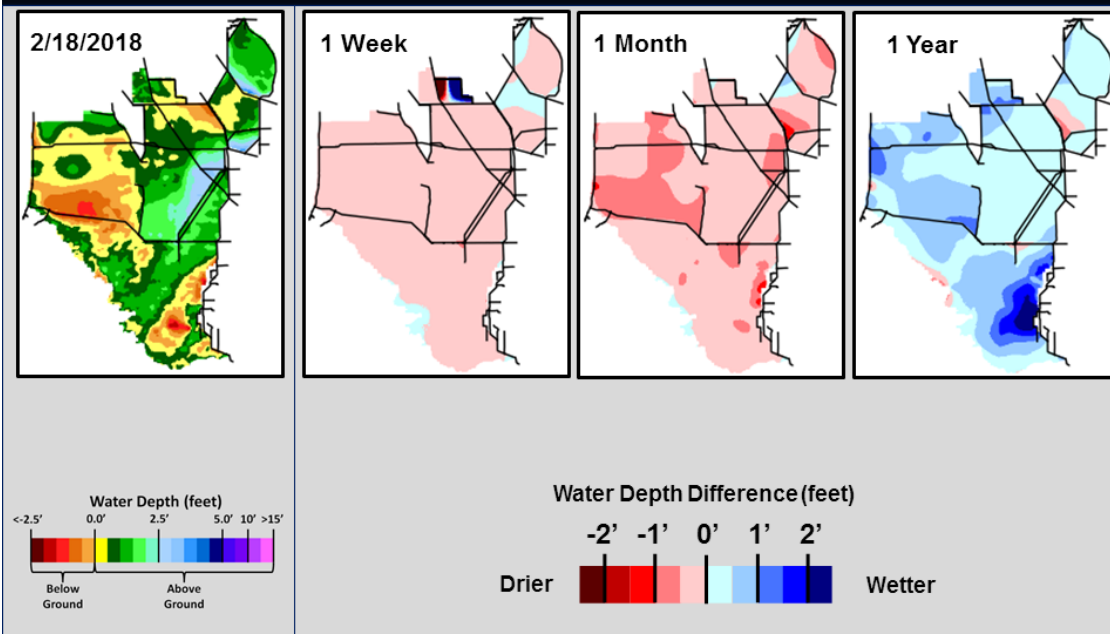
SFWDAT Water Depth Monthly Snapshots



South Florida Water Depth Assessment Tool (SFWDAT)



SFWDAT Everglades Difference Maps (Present – Past)



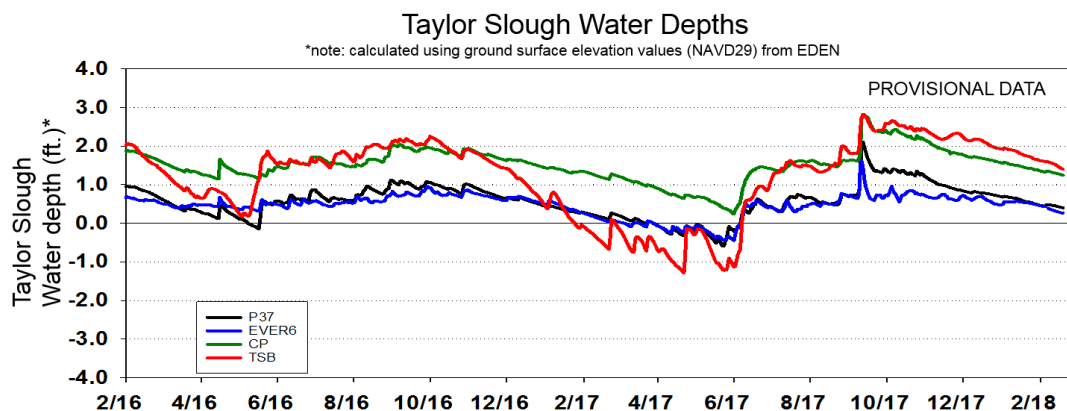
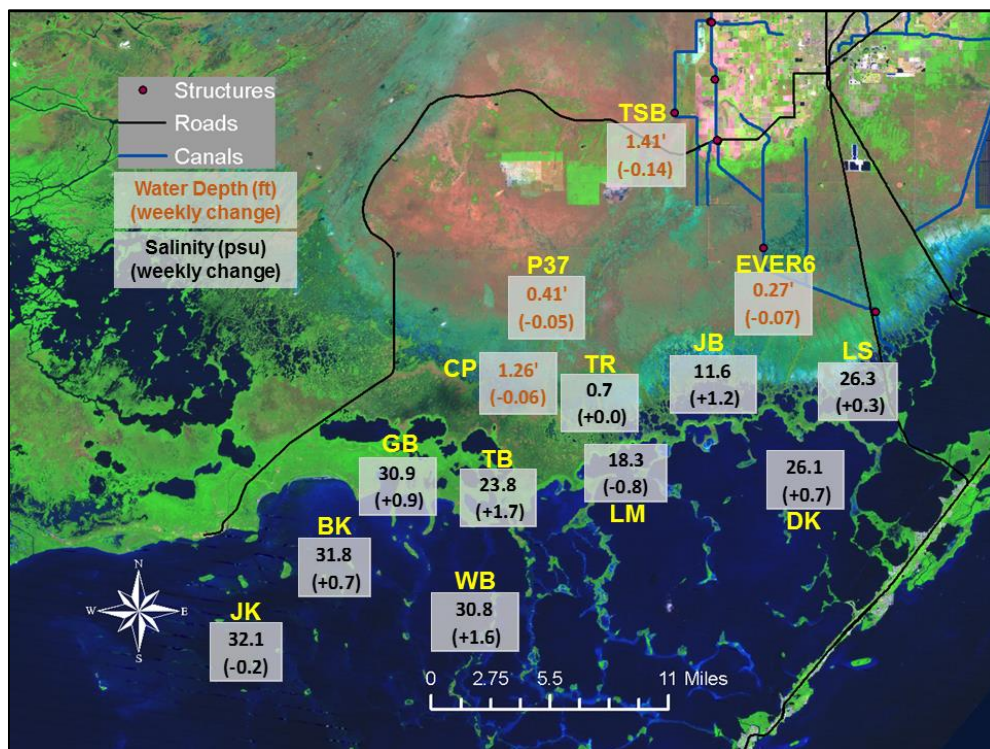
South Florida Water Depth Assessment Tool (SFWDAT)

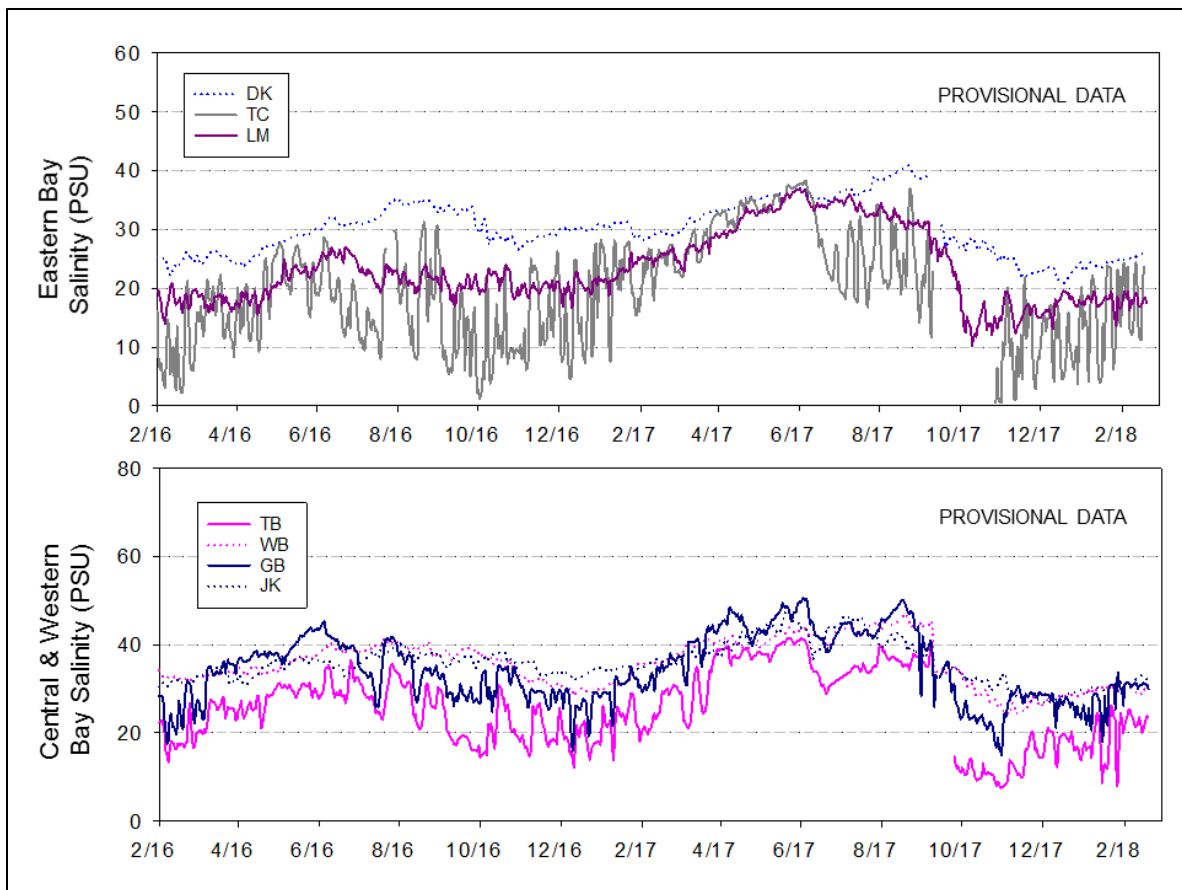
Wading bird flight conducted by University of Florida, February 16, 2018:

- 5,000 Great Egret nests nesting in Alley North and 750 pairs of Wood Storks nesting in WCAs.
- Birds foraging in north and central WCA-3A North, north and western WCA-3A South and central WCA-2A.

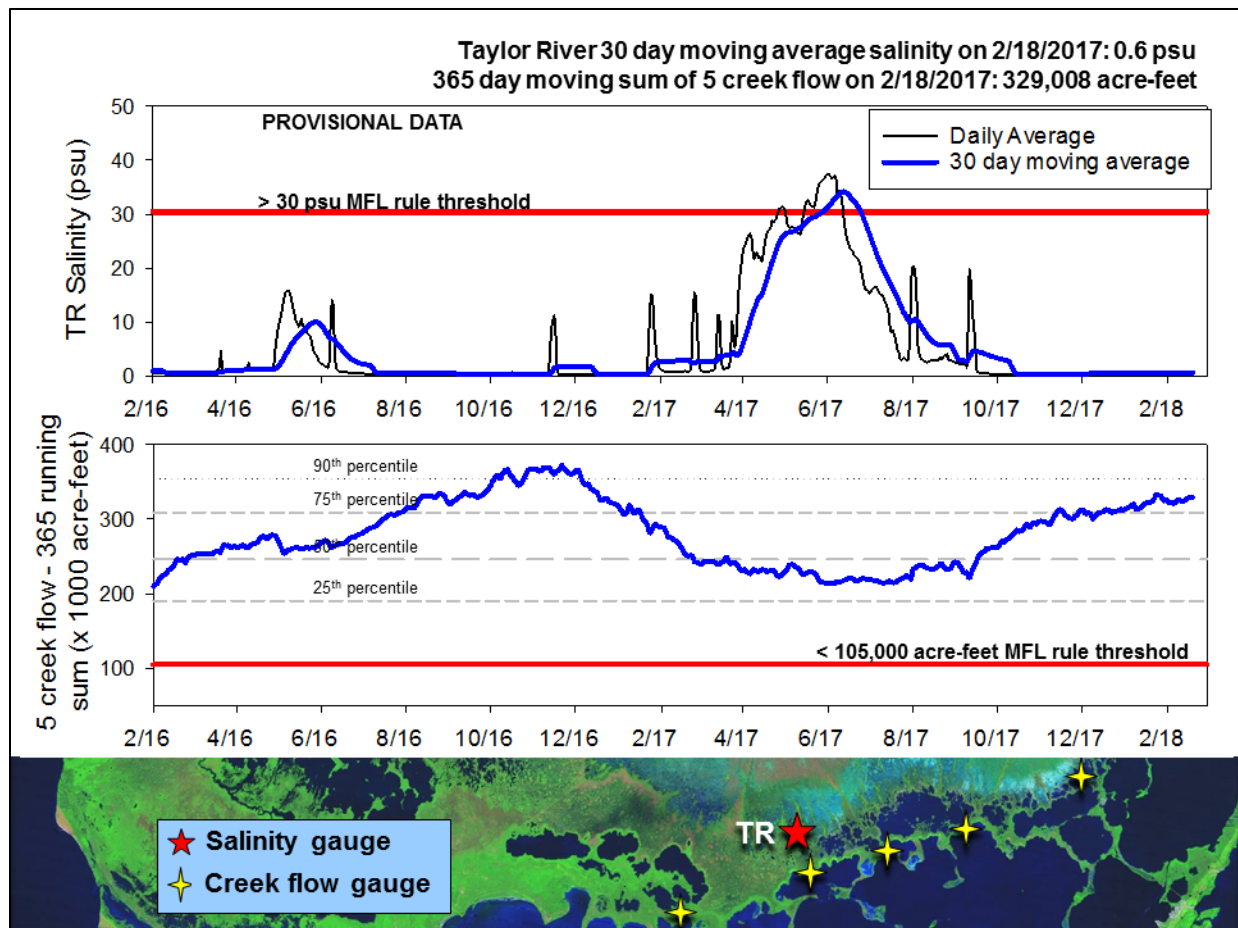
Taylor Slough Stages: Water levels continue to decrease in Taylor Slough as expected for this time of year. Changes this past week ranged from -0.05 feet to -0.14 feet. Water levels are still 1 to 15 inches above the historical average for this time of year with the largest divergence occurring in northern Taylor Slough.

Florida Bay Salinities: Salinity changes for the last week were small with the largest change, in either direction, being an increase of 1.7 psu in the central nearshore region. Current salinities range from 12 psu in the northeastern embayments to 32 psu in the western bay. Compared to historical averages, salinities range from 3 psu below to 2 psu above average.





Florida Bay MFL: Mangrove zone daily average salinity remains near fresh at 0.7 psu. The 30-day moving average is 0.6 psu and is slowly rising. The weekly cumulative flow from the five creeks denoted by yellow stars on the map decreased by 1,400 acre-feet over the last week to end at 1,900 acre-feet. This is 400 acre-feet less than the historical average for this time of year. The 365-day moving sum of flow from the five creeks increased about 5,500 acre-feet over the last week to end at 329,008 acre-feet (still greater than the long-term average of 257,628 acre-feet). Creek flow is provisional data from the USGS and is highly variable.



Water Management Recommendations

At this point in the season there is little ecological need for manipulation of recession rate or depths, with the exception being northeastern WCA-3A. While recession rates have slowed at gauge 63 (representative of that region) to an average of 0.12 feet per week over the last month, WDAT modeling shows that region as the driest in the Water Conservation Areas. Maintaining open water conditions around the Alley North wading bird nesting colony in northeast WCA-3A is important to protect nests from terrestrial predators. Peat soils may also be protected from fire risk by extending the dry season recession in that region. Across the Everglades, slowing recession rates to the optimal range for wading birds, between 0.05 feet and 0.09 feet per week, would have an ecological benefit.

More specific recommendations appear in the summary table below. The red text represents new or modified information or recommendations.

Everglades Ecological Recommendations, February 20th, 2018 (red is new)

Area	Current Condition	Cause(s)	Recommendation	Reasons
WCA-1	Stages decreased by 0.09' to 0.12'	Rainfall, ET, management	Maintain 0.07 to 0.10 feet per week recession rates.	Protect habitat and facilitate invasive plant treatments.
WCA-2A	Stages decreased by 0.10'	Rainfall, ET, management	Maintain depths at temporary regulation schedule or slightly above. Maintain recession rates at 0.07 to 0.10 feet per week.	Foster conditions for wildlife and optimal wading bird foraging. Protect nesting habitat.
WCA-2B	Stages decreased by 0.15'	Rainfall, ET, management	Maintain depths at regulation schedule or slightly above.	Protect upstream/downstream habitat and wildlife. Foster conditions for wading bird foraging.
WCA-3A NE	Stages decreased by 0.13'	Rainfall, ET, management	Slower recession rates with additional inflows would be beneficial.	Protect habitat and wildlife, foster conditions for wading bird foraging and protect nesting habitat.
WCA-3A NW	Stages decreased by 0.03'	Rainfall, ET, management	Maintain moderate recession rates and continue current flows.	
Central WCA-3A S	Stages decreased by 0.15'	Rainfall, ET, management	Slow recession rates.	Protect habitat and wildlife, foster conditions for wading bird foraging and protect habitat.
Southern WCA-3A S	Stages decreased by 0.13'	Rainfall, ET, management		
WCA-3B	Stages decreased by 0.08'	Rainfall, ET, management	Maintain depths at regulation schedule.	Protect habitat and wildlife from high water stress.
ENP-SRS	Stages decreased by 0.05'	ET, rainfall, topography, management	Make discharges to the Park according to the 2012 WCP rainfall plan.	Keep peat wet to promote native habitat and maintain wetland plant and animal communities. Protect habitat and wildlife, including apple snail reproduction.
Taylor Slough	Stage changes ranged from -0.05' to -0.14'	Rain, ET, inflows	Move water southward as possible	When available, provide freshwater buffer for downstream conditions.
FB- Salinity	Salinity changes ranged -0.8 to +1.7 psu	Rain, ET, inflows, wind	Move water southward as possible	When available, provide freshwater to main low salinity buffer and promote water movement.