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M E M O R A N D U M

TO: John Mitnik, Interim Assistant Executive Director, Executive Office Staff

FROM: SFWMD Staff Environmental Advisory Team

DATE: April 8, 2020

SUBJECT: Weekly Environmental Conditions for Systems Operations

Summary

Weather Conditions and Forecast

Scattered showers focused south today; potential for showers and thunderstorms this weekend. The trailing end of a weak frontal boundary remains across south Florida so expect scattered shower activity to develop with daytime heating and focus over the southern end of the peninsula mainly this afternoon. A rebuilding upper level high pressure ridge over the Gulf of Mexico should then bring a return of mostly dry conditions Wednesday and Thursday. A weakening frontal boundary is forecast to slide southward over the District late Thursday night and Friday and then stall across south Florida Friday night and Saturday before lifting back north Saturday night. This boundary should bring some more shower and thunderstorm activity focused north and east Friday and then over the southern half of the District Saturday. With the frontal boundary most likely north of the District, expect some scattered afternoon shower activity Sunday before the boundary slides back south into the Florida peninsula Monday night. The weather pattern in the extended outlook would favor average rainfall with some areas of above-average rainfall during the second 7-day period ("Week 2") as frontal boundaries bring moisture to the area.

Kissimmee

Tuesday morning stages were 52.6 feet NGVD (4.5 feet below schedule) in East Lake Toho, 53.3 feet NGVD (0.8 feet below schedule) in Toho, and 50.3 feet NGVD (0.5 feet below schedule) in Kissimmee-Cypress-Hatchineha; headwater stages were 46.4 feet NGVD at S-65A and 25.7 feet NGVD at S-65D. Tuesday morning discharges were 349 cfs at S-65, 323 cfs at S-65A, 349 cfs at S-65D and 537 cfs at S-65E. Dissolved oxygen concentration in the Kissimmee River averaged 7.6 mg/L for the week through Sunday. Kissimmee River mean floodplain depth on Sunday was 0.07 feet. *Today's recommendations:* Continue the recession on Lake Tohopekaliga to reach low pool (52 feet NGVD) on June 1st. Continue the recession on Lakes Kissimmee-Cypress-Hatchineha to reach low pool (49 feet NGVD) on June 1st.

Lake Okeechobee

Lake Okeechobee stage was 11.70 feet NGVD on April 7, 2020, down 0.21 feet from the previous week, and down 0.76 feet from the previous month. The Lake entered the Beneficial Use sub-band on March 4, 2020 and is now 0.18 feet above the Water Shortage sub-band. Water levels moved below the ecological envelope (which varies seasonally from 12 – 15 feet NGVD +/- 0.5 feet) on October 15, 2019 and are currently 1.09 feet below the bottom of the updated (draft) envelope. Lake stages below the ecological envelope will continue to benefit recovering submerged and emergent marsh vegetation at low elevations but will reduce aquatic habitat for fish and wildlife in the marshes. Wading bird and snail kite nesting efforts are likely to be lower for the second consecutive year on the Lake due to low lake stages during the breeding season.

Estuaries

Total inflow to the St. Lucie Estuary averaged 224 cfs over the past week with no flow coming from Lake Okeechobee. Salinities increased slightly in the estuary over the past week. Salinity at the US1 Bridge is in the good range for adult eastern oysters.

Total inflow to the Caloosahatchee Estuary averaged 497 cfs over the past week with 390 cfs coming from the Lake. Salinity decreased slightly in the upper estuary (S79, Vall-75) but little changed in the lower estuary over the past week. Salinities are in the good range for tape grass at Val I-75 and fair range at Ft. Myers. Salinities are in the good range for adult eastern oysters at Cape Coral and in the fair range at Shell Point and Sanibel.

Water Management Recommendations

Lake stage is in the Beneficial Use sub-band of 2008 LORS. Tributary hydrological conditions are dry.

The SFWMD's Lake Okeechobee Adaptive Protocol's Release Guidance suggests up to 300 cfs at S-79 and S-77 environmental water supply release to supplement as needed to the Caloosahatchee Estuary.

Stormwater Treatment Areas

Over the past week, 3,500 ac-feet of Lake Okeechobee water was delivered to the FEBs/STAs. The total amount of Lake releases sent to the FEBs/STAs in WY2020 (since May 1, 2019) is approximately 140,000 ac-feet. The total amount of inflows to the STAs in WY2020 is approximately 971,000 ac-feet. Most STA cells are near target stage, except STA-5/6 cells that continue to dry out. STA-1E Western Flow-way is offline for the Restoration Strategies project to fill and grade Cells 5 and 7. Operational restrictions are in place in STA-1W Northern Flow-way related to STA-1W Expansion #1 startup activities, in STA-3/4 Western Flow-way for energy dissipator installation, in STA-1E Central Flow-way, STA-2 Flow-way 1, STA-2 Flow-way 2, STA-2 Flow-way 3, STA-2 Flow-way 4, and STA-3/4 Eastern Flow-way for vegetation management activities, and in STA-5/6 Flow-ways 2 and 3 following the Restoration Strategies project to grade non-effective treatment areas. This week, if 2008 LORS recommends Lake releases to the WCAs and the conditions allow, releases will be sent to A-1 FEB/STA-3/4.

Everglades

Current stages in northeastern WCA-3A remain well below average (Site 62 in the northwest is 0.20 feet below and Site 63 in the northeast is 0.78 feet below) for this time of year. Conserving fresh water in the Everglades, distributing it to where depths are low (WCA-3A NE), or maintaining average depths (WCA-3A NW), then allowing it to flow south has important ecological benefit. Wading bird nesting and foraging numbers are building in WCA-3A South and WCA-1, ecological benefit is gained by moderating recession rates exceeding -0.09 feet per week when possible. Recession rates in WCA-3A South are very near the optimal rate for wading bird foraging success, maintaining this rate in upcoming weeks may prove important to wading bird nesting as the numbers of wading birds nesting in the northernmost (and soonest to dry down) region of that basin. Again this week as it has been for the last three very little precipitation fell over Taylor Slough and Florida Bay and stages continue to fall below average after a long period of well above average as westward water management ceases. After being a foot or more higher than the historical average for the dry season up until now, the Upper Taylor Slough region is now 10 inches below average. Average salinities in Florida Bay increased and remain well above average.

Supporting Information

KISSIMMEE BASIN

Kissimmee Basin Rainfall

The Upper Kissimmee Basin received 0.45 inches of rainfall in the past week and the Lower Basin received 0.36 inches (SFWMD Daily Rainfall Report 4/6/2020).

Upper Kissimmee Basin

Stages and departures in the Kissimmee Chain of Lakes (KCOL) are shown in **Table 1**. KCOL stage hydrographs with respective regulation schedules and rainfall are shown in Figures 1-3.

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: 4/7/2020

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)						
							4/5/20	3/29/20	3/22/20	3/15/20	3/8/20	3/1/20	2/23/20
Lakes Hart and Mary Jane	S-62	0	LKMJ	60.2	R	60.6	-0.4	-0.4	-0.4	-0.4	-0.3	-0.2	-0.1
Lakes Myrtle, Preston, and Joel	S-57	0	S-57	60.6	R	60.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Alligator Chain	S-60	0	ALLI	63.0	R	63.5	-0.5	-0.6	-0.6	-0.7	-0.6	-0.6	-0.5
Lake Gentry	S-63	0	LKGT	61.0	R	61.0	0.0	-0.1	-0.1	-0.2	-0.2	-0.1	-0.1
East Lake Toho	S-59	0	TOHOE	52.6	R	57.2	-4.6	-4.8	-5.0	-5.2	-5.1	-58.0	-4.8
Lake Toho	S-61	61	TOHOW, S-61	53.3	R	54.2	-0.9	-1.1	-1.3	-1.3	-1.2	-1.0	-0.9
Lakes Kissimmee, Cypress, and Hatchineha	S-65	357	KUB011, LKIS5B	50.4	R	50.9	-0.5	-0.5	-0.2	0.0	0.2	0.4	0.3

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 A = projected ascension line, R = USACE regulation schedule, S = temporary recession target line, T = temporary schedule, 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: 4/7/2020

Metric	Location	1-Day Average		Average for the Preceding 7-Days ¹							
		4/5/2020	4/5/20	3/29/20	3/22/20	3/15/20	3/8/20	3/1/20	2/23/20	2/16/20	2/9/20
Discharge (cfs)	S-65	372	357	448	690	920	1,013	983	918	922	853
Discharge (cfs)	S-65A ²	323	310	384	595	837	956	956	930	895	823
Discharge (cfs)	S-65D ²	337	302	476	699	940	968	985	960	946	881
Headwater Stage (feet NGVD)	S-65D ²	25.82	25.78	25.71	25.75	25.85	25.69	25.80	25.86	25.82	25.79
Discharge (cfs)	S-65E ²	317	262	433	653	864	891	905	880	844	861
Discharge (cfs)	S-67	0	0	0	0	0	0	0	0	0	0
DO (mg/L) ³	Phases I & II/III river channel	7.2	7.6	6.9	7.6	8.0	8.3	8.0	7.4	8.2	8.9
Mean depth (feet) ⁴	Phase I floodplain	0.07	0.07	0.08	0.11	0.20	0.24	0.26	0.26	0.27	0.24

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

²S-65A discharge combines S-65A with auxiliary structures; S-65D discharge combines discharge at S-65D, S-65DX1, and S-65DX2; S-65D stage averages stage at S-65D and S-65DX1; S-65E discharge combines S-65E and S-65EX1.

³DO is the average for sondes at KRBN, PC62, PC33, PD62R, and PD42R.

⁴1-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)

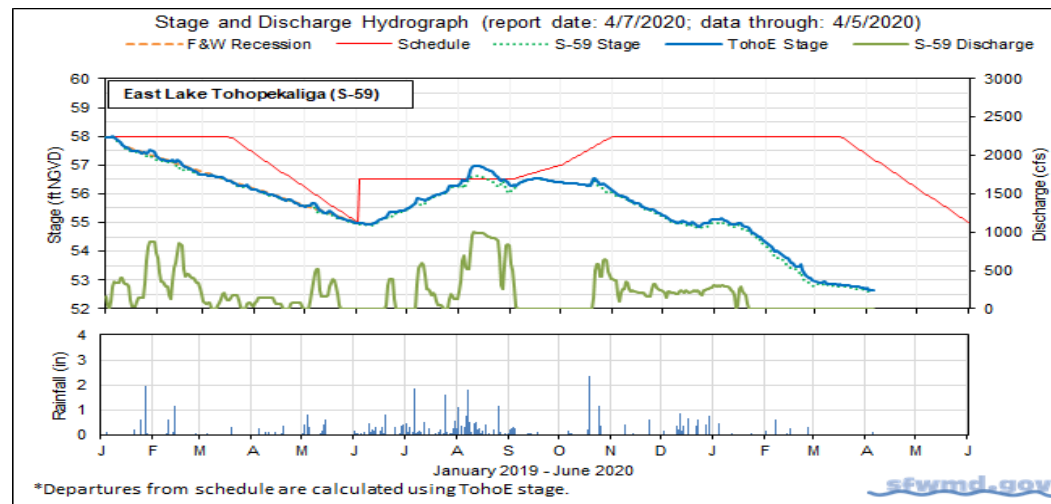


Figure 1.

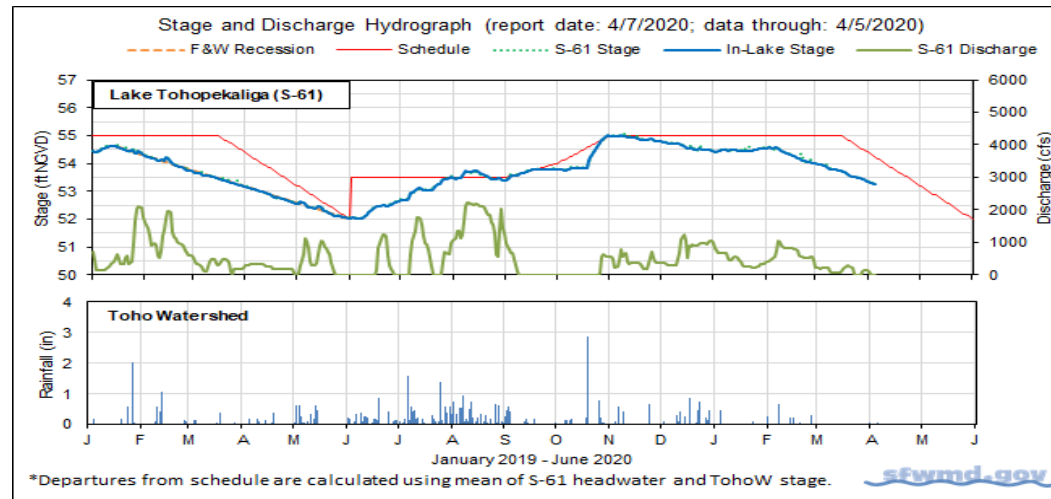


Figure 2.

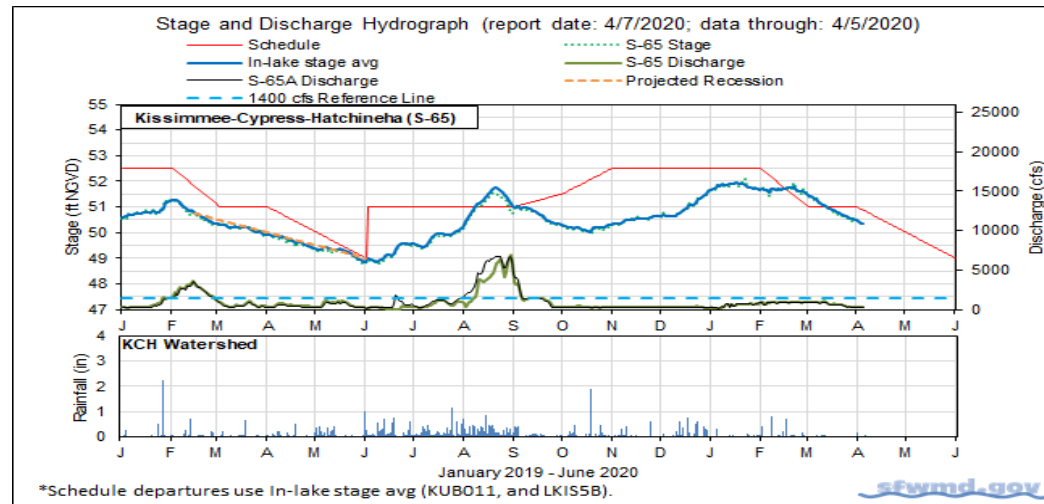


Figure 3.

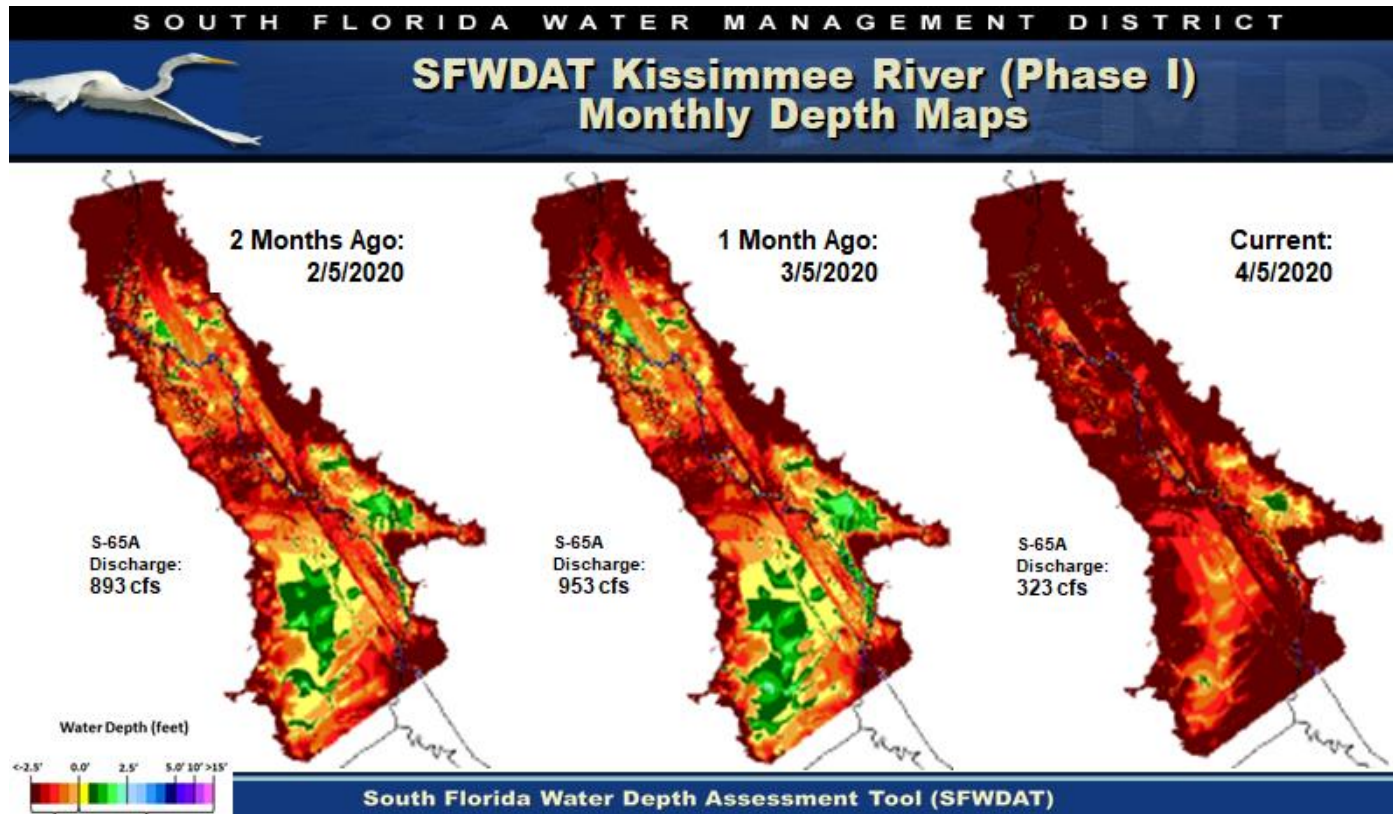
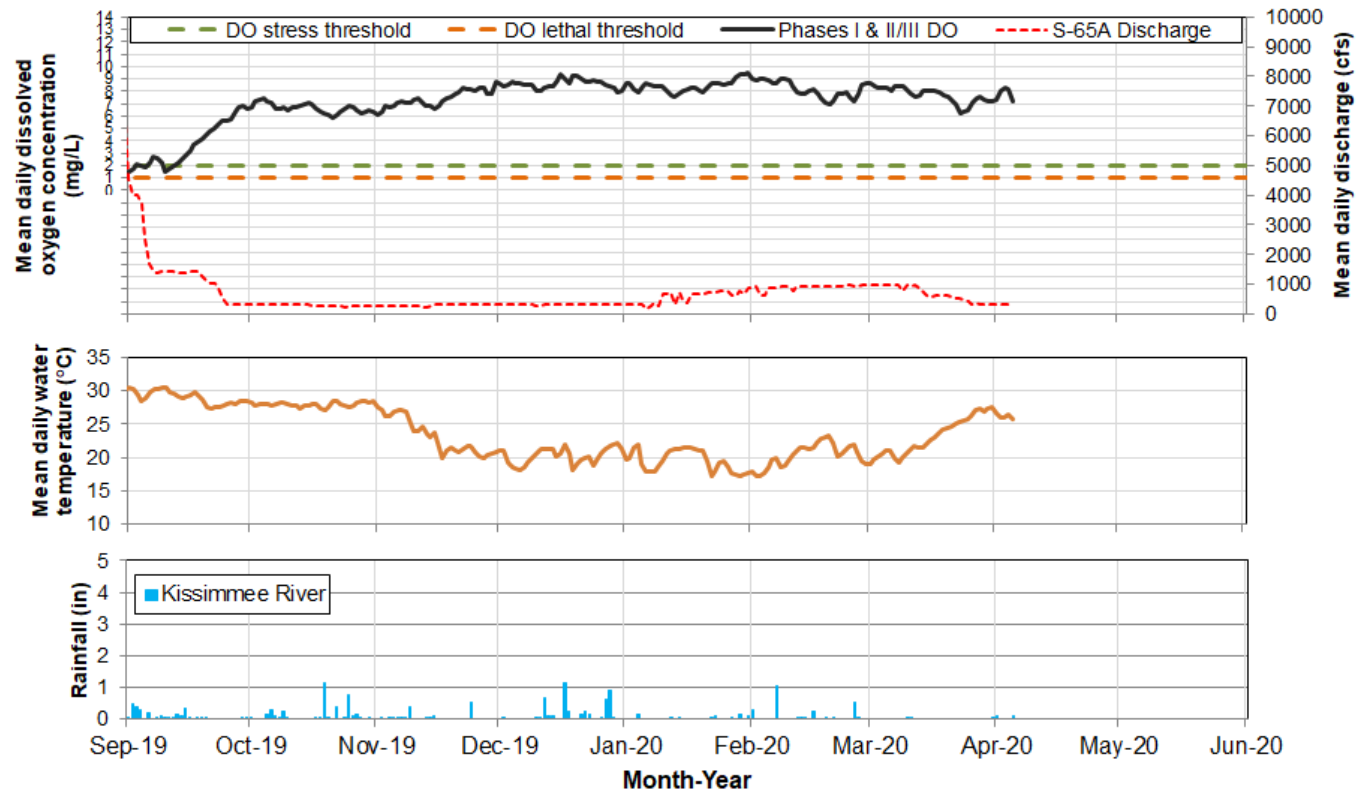


Figure 4. Phase I area floodplain water depths for this week, one month ago, and two months ago. Note that the WDAT color-coding has been modified to accommodate greater water depths; these maps are not directly comparable to Kissimmee Basin WDAT maps published prior to January 16, 2012.



Report Date: 4/7/2020; data are through: 4/5/2020.

Figure 5. Mean daily dissolved oxygen, discharge, temperature and rainfall in the Phases I/II/III river channel.

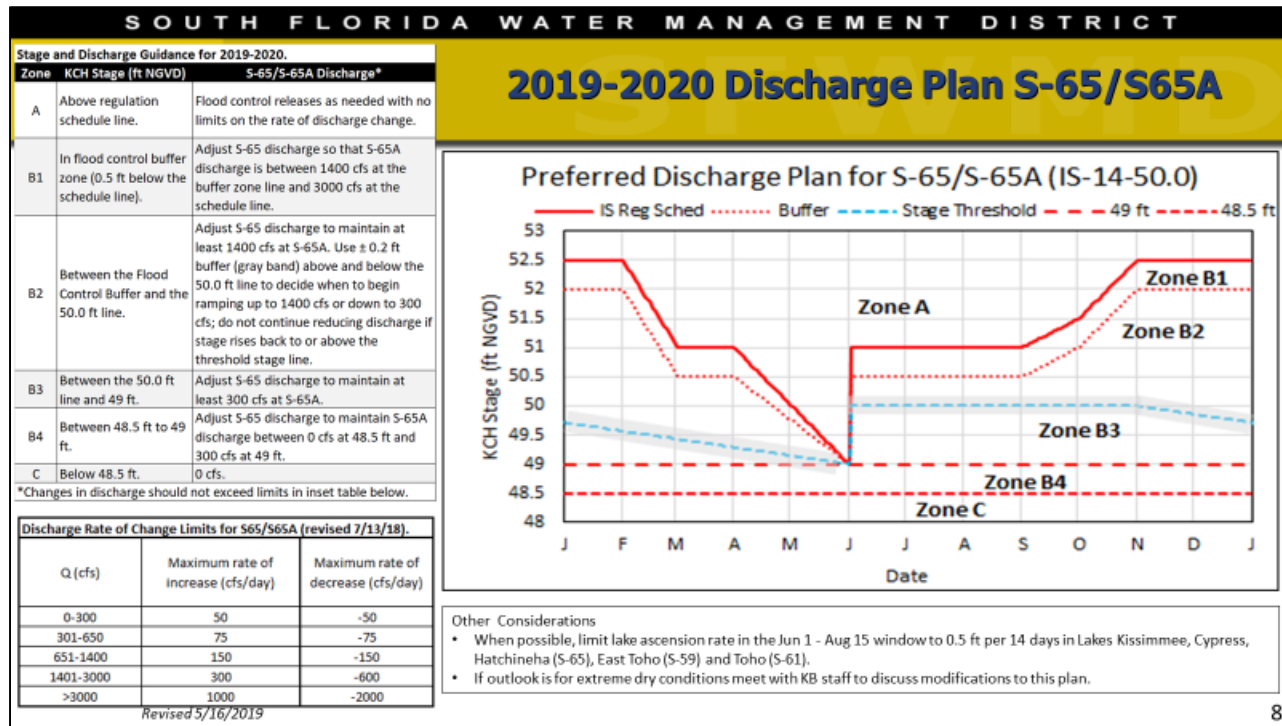


Figure 6. The 2019-2020 Discharge Plan for S-65/S-65A.

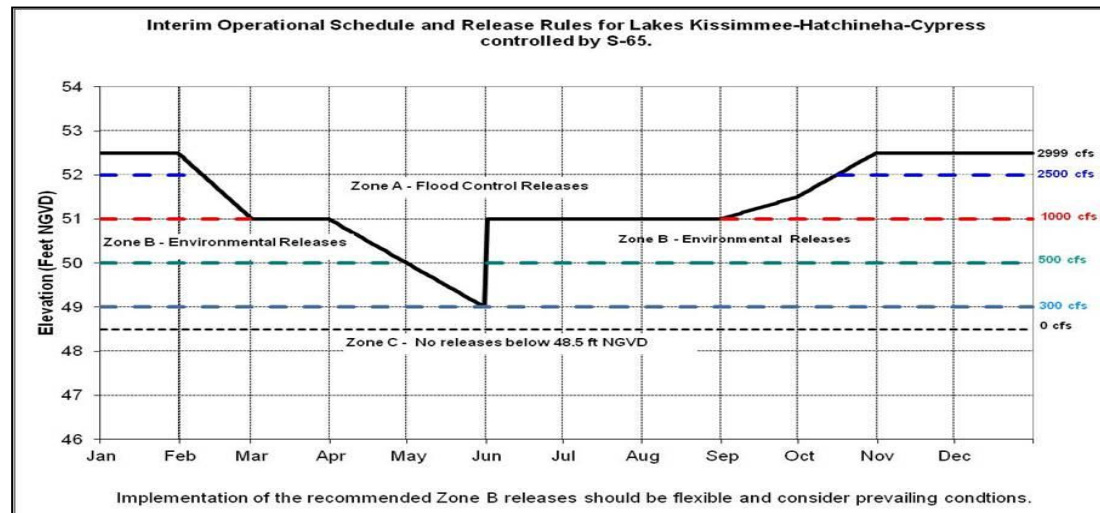


Figure 7. Interim operations schedule for S-65. The discharge schedule shown to the right has not been used in recent years.

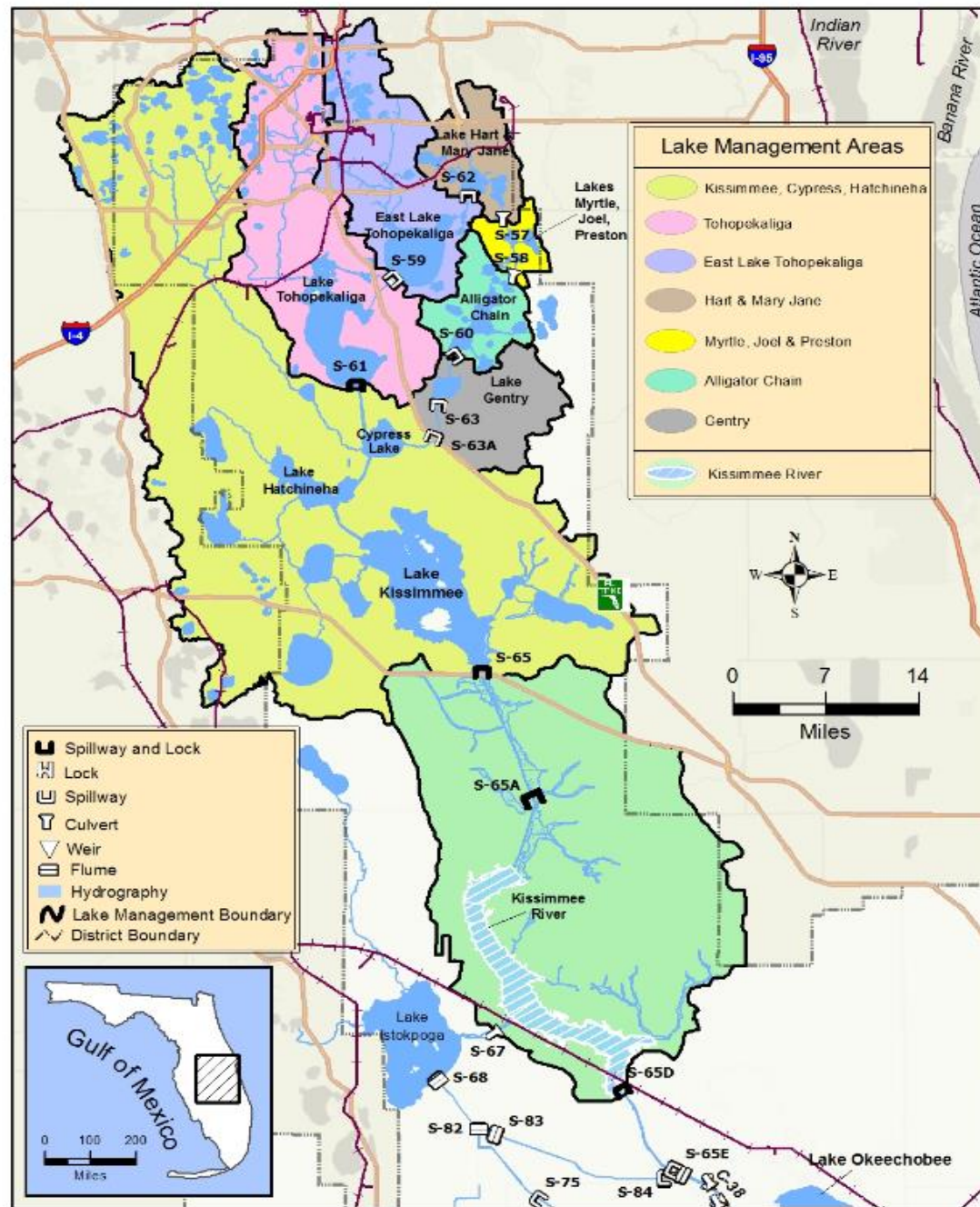


Figure 8. The Kissimmee Basin.

LAKE OKEECHOBEE

Lake Okeechobee stage is 11.70 feet NGVD, 0.76 feet lower than a month ago and 0.10 feet lower than one year ago (Figure 1). The Lake is currently 1.09 feet below the preferred (draft) ecological envelope (Figure 2). Lake stages moved into the Base Flow sub-band on September 11, 2019 and entered the Beneficial Use sub-band on March 4, 2020 (Figure 3). Lake stage had been hovering near 13.0 feet from December 2019 to mid-February 2020, before declining over 1.2 feet in the past month and a half. According to RAINДАР, 0.17 inches of rain fell directly over the Lake during the past week (Figure 4). Most of the watershed received less than 0.5 inches of rain but a few scattered areas received up to 1.5 inches, especially along the northeastern coastline.

The average daily inflows (minus rainfall) decreased again from 414 cfs to just 287 cfs, and average daily outflows (minus evapotranspiration) decreased by around 500 cfs from the previous week to total 3,020 cfs. Almost all the inflow came from the Kissimmee River (S-65E & S-65EX1), while most of the outflows were released south through the S-350 structures (2,163 cfs) or west through S-77 (C-43/Caloosahatchee Canal, 869 cfs). Passive inflow of 117 cfs also came from the east through S-308. Total lake inflows and outflows for the past 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 5 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.

Current satellite imagery (April 4, 2020) using NOAA's cyanobacteria monitoring product derived from EUMETSAT's Sentinel 3 OLCI sensor data suggested low/moderate potential for cyanobacterial blooms along the northern shoreline of the Lake, slightly lower than this time last year (Figure 6). However, conditions have been similar to last year throughout the spring, with slight changes occurring in intensity and location along the western and northern sides of the lake from week to week.

Water Management Summary

Lake Okeechobee stage was 11.70 feet NGVD on April 7, 2020, down 0.21 feet from the previous week, and down 0.76 feet from the previous month. The Lake entered the Beneficial Use sub-band on March 4, 2020 and is now 0.18 feet above the Water Shortage sub-band. Water levels moved below the ecological envelope (which varies seasonally from 12 – 15 feet NGVD +/- 0.5 feet) on October 15, 2019 and are currently 1.09 feet below the bottom of the updated (draft) envelope. Lake stages below the ecological envelope will continue to benefit recovering submerged and emergent marsh vegetation at low elevations but will reduce aquatic habitat for fish and wildlife in the marshes. Wading bird and snail kite nesting efforts are likely to be lower for the second consecutive year on the Lake due to low lake stages during the breeding season.

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

INFLOWS	Previous week Avg Daily CFS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S-65E & S-65EX1	407	283	0.1
S-71 & S-72	0	0	0.0
S-84 & S-84X	0	0	0.0
Fisheating Creek	7	5	0.0
S-154	0	0	0.0
S-191	0	0	0.0
S-133 P	0	0	0.0
S-127 P	0	0	0.0
S-129 P	0	0	0.0
S-131 P	0	0	0.0
S-135 P	0	0	0.0
S-2 P	0	0	0.0
S-3 P	0	0	0.0
S-4 P	0	0	0.0
L-8 Backflow			
Rainfall	0	348	0.2
Total	414	635	0.3

OUTFLOWS	Previous week Avg Daily CFS	Avg Daily Flow cfs	Equivalent Depth Week Total (in)
S-77	1172	869	0.4
S-308	52	-117	-0.1
S-351	1183	1220	0.6
S-352	372	343	0.2
S-354	627	600	0.3
L-8 Outflow	118	105	0.0
ET	2424	2974	1.4
Total	5947	5994	2.8

Data are provisional

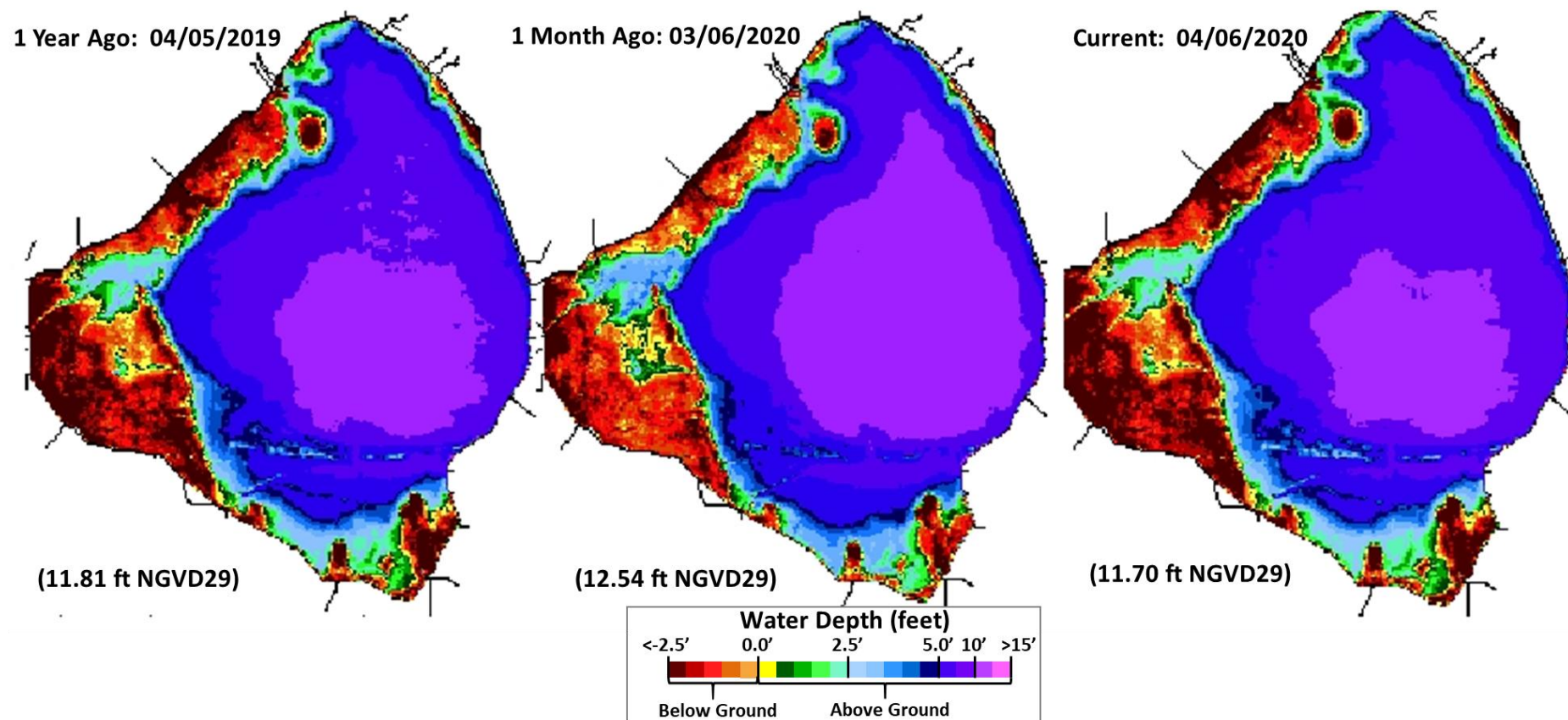


Figure 1. Water depth estimates on Lake Okeechobee based on the South Florida Water Depth Assessment Tool.

Lake Okeechobee Stage vs (Draft) Ecological Envelope

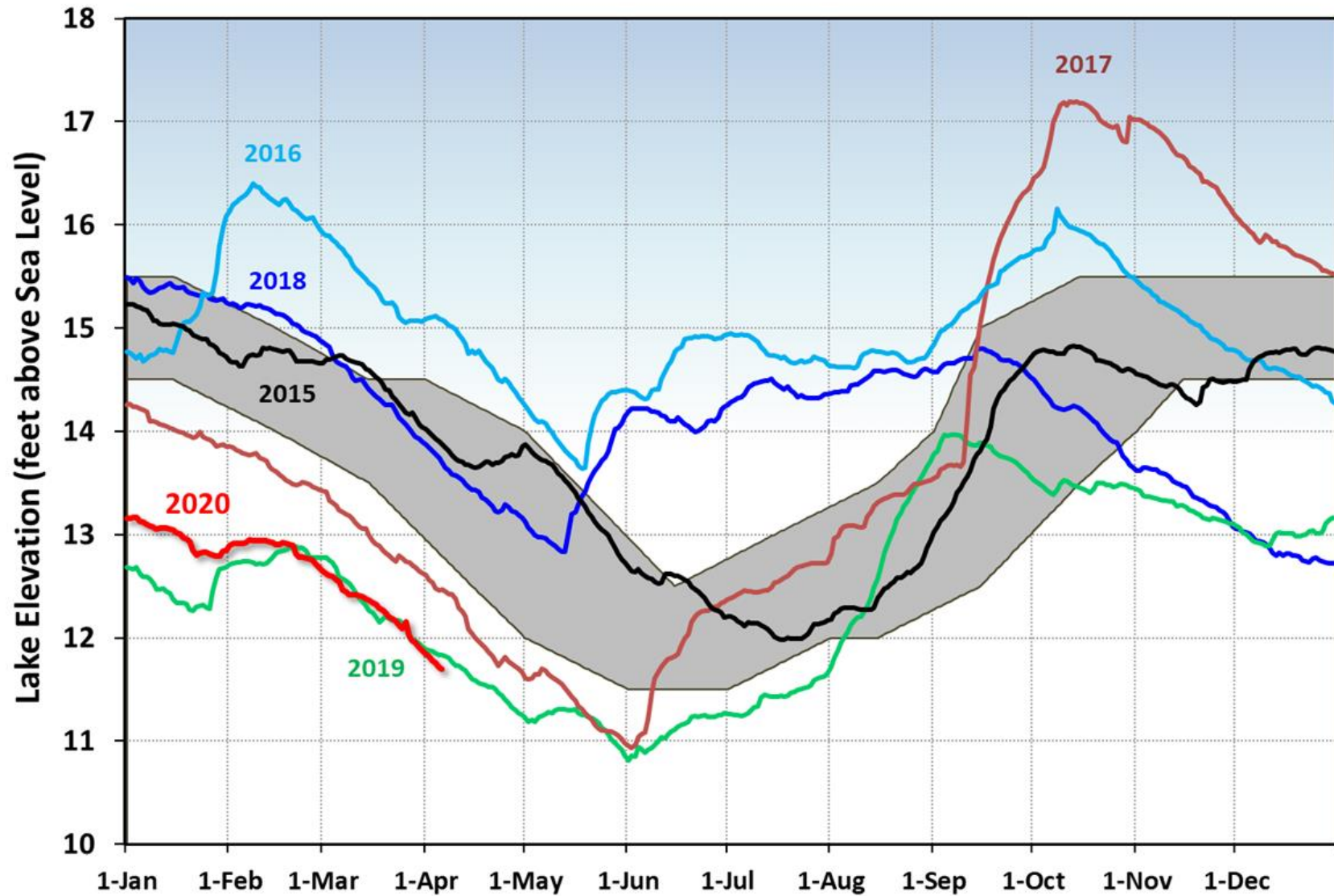
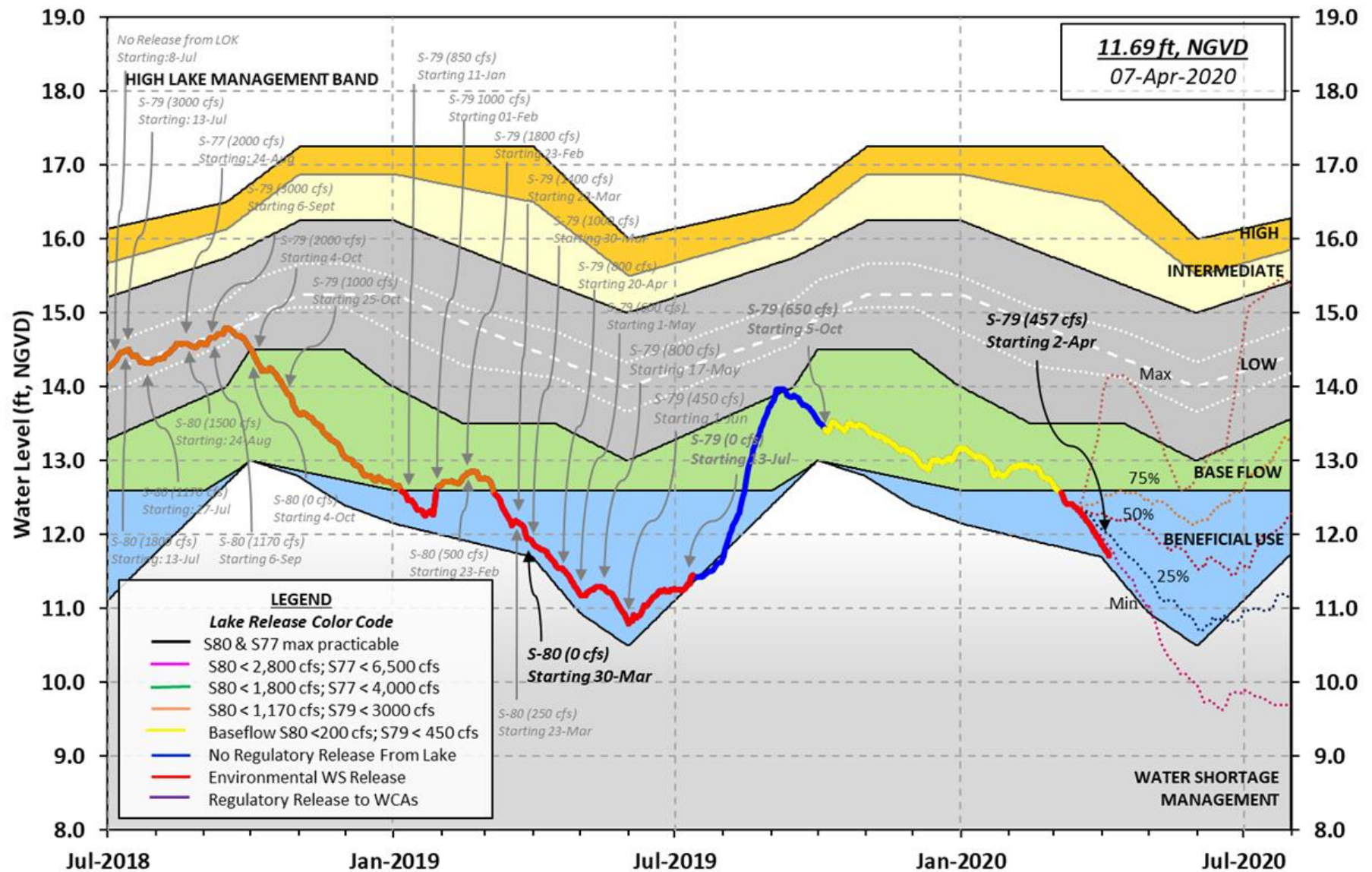


Figure 2. Select annual stage hydrographs for Lake Okeechobee in comparison to the (Draft) updated Ecological Envelope.

Lake Okeechobee Water Level History and Projected Stages



LORS-2008

Adopted by USACE 28-April-2008

Projected Stage Percentiles From
SFWMD-HESM Position Analysis

Figure 3. Recent Lake Okeechobee stage and releases, with projected stages based on a dynamic position analysis.

SFWMD PROVISIONAL RAINDAR 7-DAY BASIN RAINFALL ESTIMATES

FROM: 0345 EST, 03/31/2020 THROUGH: 0345 EST, 04/07/2020

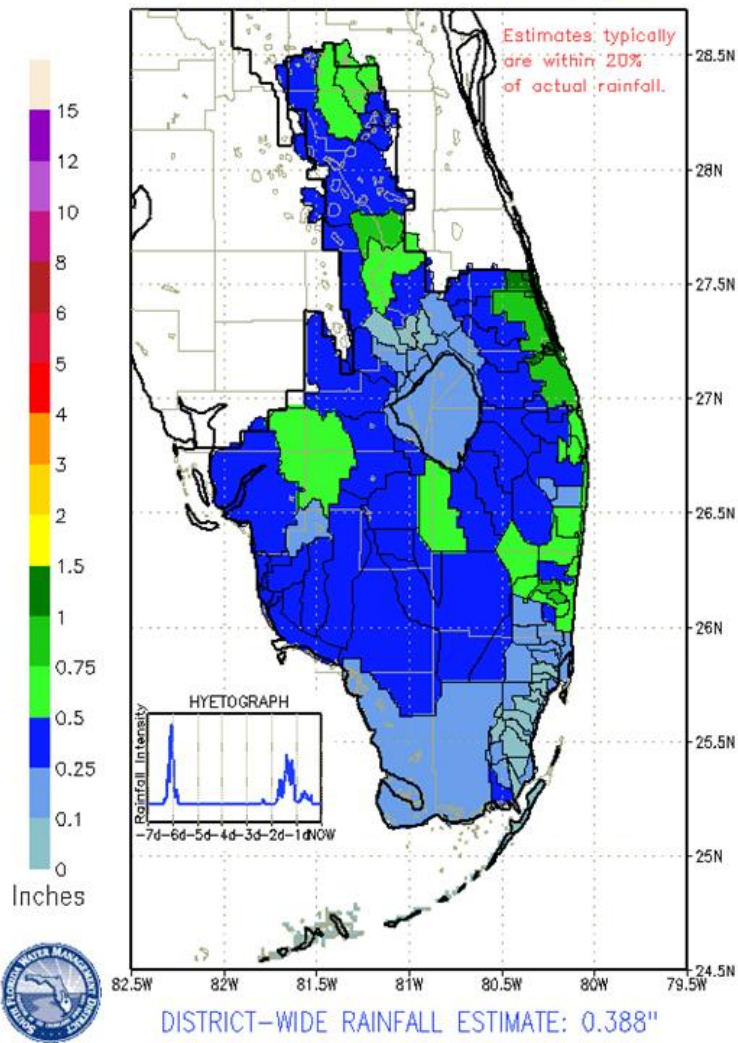


Figure 4. 7-Day rainfall estimates by RAINDAR.

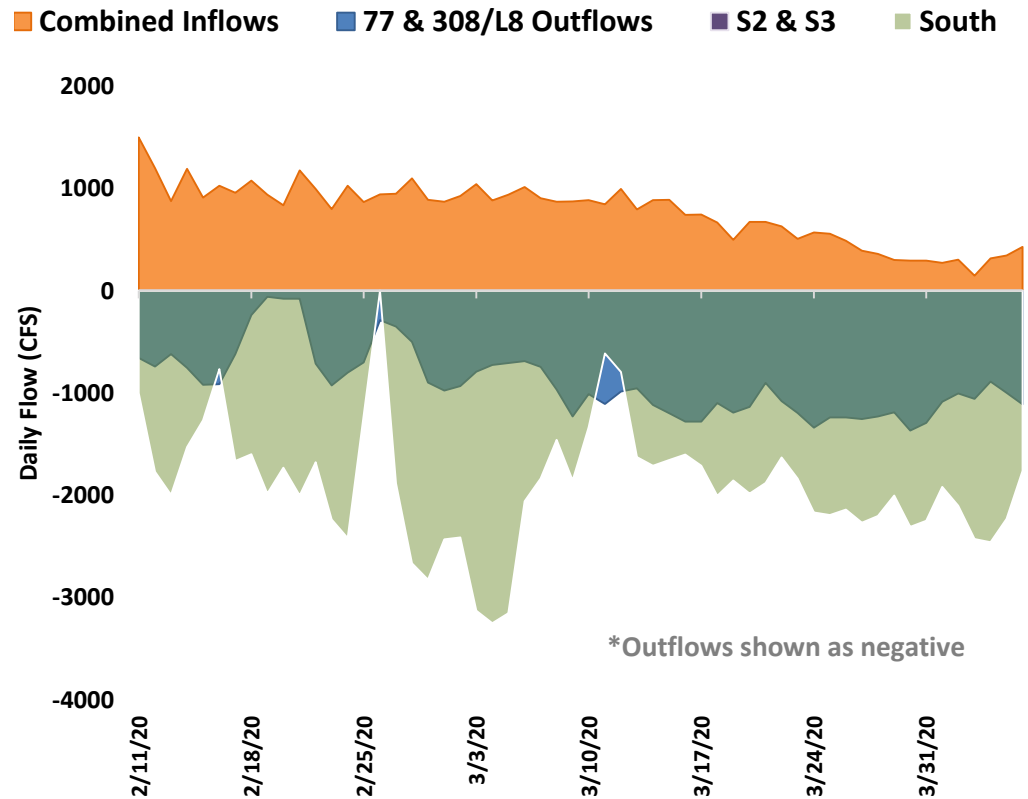


Figure 5. Major inflows (orange) and outflows (blue) of Lake Okeechobee, including the S-350 structures designated as South (green). The L-8 Canal flows through Culvert 10A are included as outflows when positive, and as inflows when backflowing into the Lake. All inflows and outflows are shown as positive and negative, respectively, for visual purposes. Outflows through the S-77 and S-308 structures are shown based on their downstream gauges to account for lock openings for navigation.

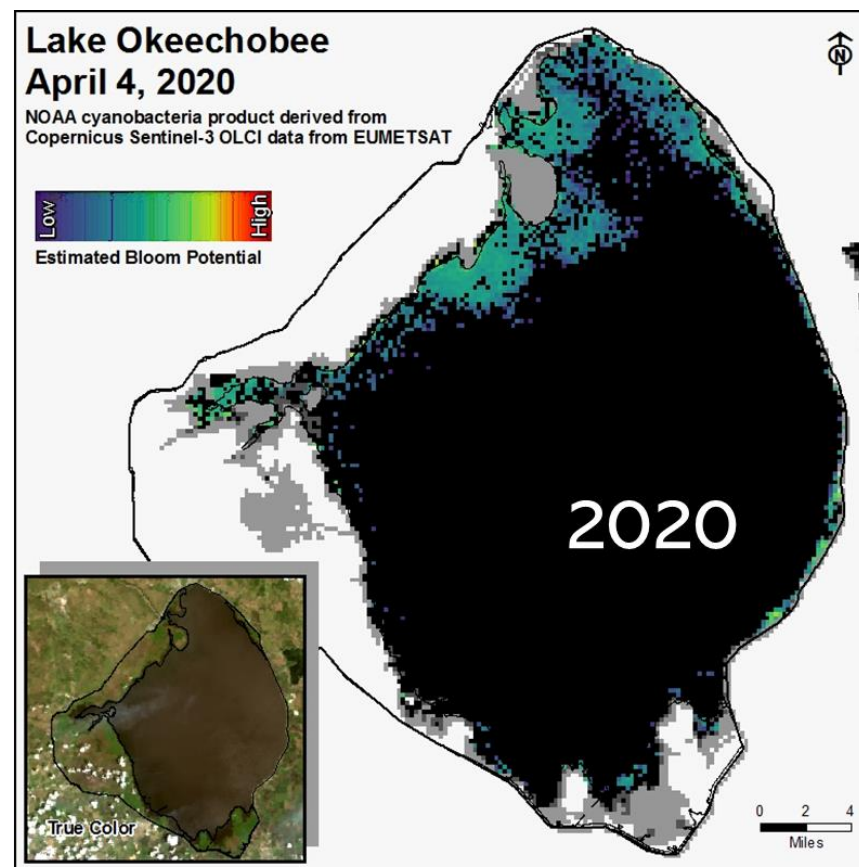
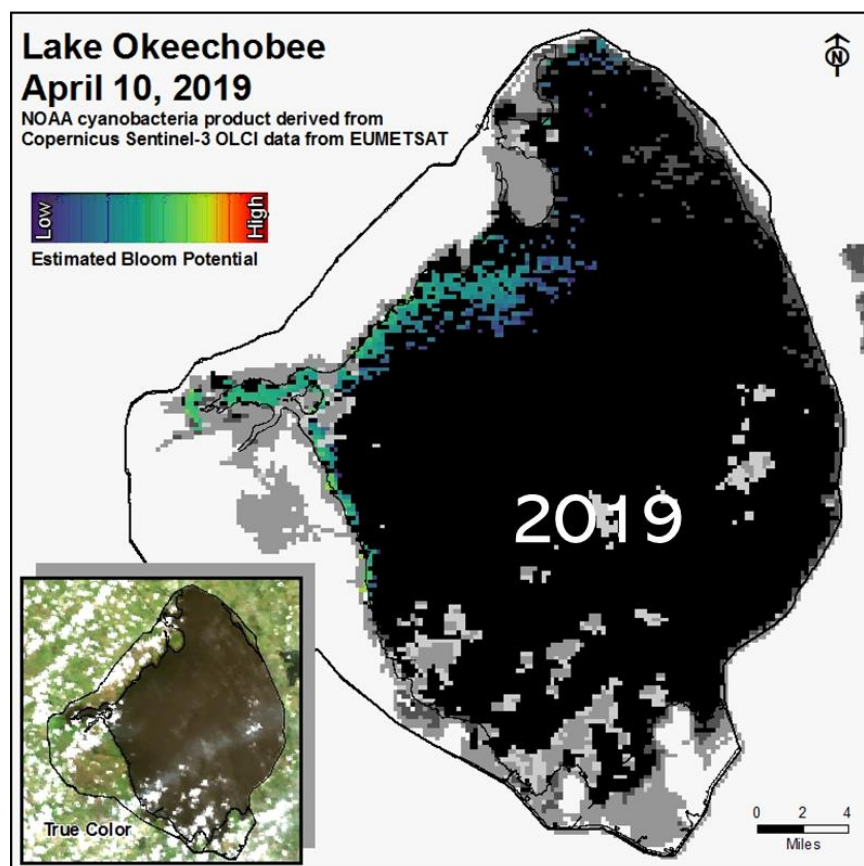


Figure 6. Potential for cyanobacterial blooms on Lake Okeechobee in early April 2019 and 2020, based on NOAA's harmful algal bloom monitoring system. Gray color indicates cloud cover.

ESTUARIES

St. Lucie Estuary:

Last week total inflow to the St. Lucie Estuary averaged approximately 224 cfs (Figures 1 and 2) and last month inflow averaged about 176 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 are provisional).

Location	Flow (cfs)
Tidal Basin Inflow	206
S-80	0
S-308	-117
S-49 on C-24	0
S-97 on C-23	0
Gordy Rd. structure on Ten Mile Creek	18

Over the past week, salinity increased throughout the estuary (Table 2, Figures 3 and 4). The seven-day moving average of the water column (an average of the surface and bottom salinity) at the US1 Bridge is 25.2. Salinity conditions in the middle estuary are estimated to be within 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)	21.3 (19.0)	23.8 (21.8)	NA ¹
US1 Bridge	25.2 (23.4)	25.9 (24.0)	10.0-26.0
A1A Bridge	31.6 (30.0)	32.6 (31.2)	NA ¹

¹Envelope not applicable

Caloosahatchee Estuary:

Last week total inflow to the Caloosahatchee Estuary averaged approximately 497 cfs (Figures 5 and 6) and last month inflow averaged about 691 cfs. Last week's provisional averaged inflows from the structures and the tidal basin are shown in Table 3.

Table 3. Weekly average inflows (data is provisional).

Location	Flow (cfs)
S-77	869
S-78	418
S-79	409
Tidal Basin Inflow	88

Over the past week, salinity remained about the same throughout the estuary (Table 4, Figures 7 & 8). The seven-day average salinity values are within the good range for adult eastern oysters at Cape Coral and in the fair range at Shell Point and at Sanibel (Figure 9). The seven-day average surface salinities (Table 4) are in the good range for tape grass at Val I-75 and in the fair range at Ft. Myers.

Table 4.

Seven-day average salinity at six monitoring stations in the Caloosahatchee Estuary. Current average is in bold, previous average in parentheses. The envelope at Val I-75 is for the protection of tape grass in the upper estuary and the envelope in the lower estuary reflects the preferred salinity range for adult eastern oysters (*Crassostrea virginica*).

Sampling Site	Surface	Bottom	Envelope
S-79 (Franklin Lock)	2.1 (2.5)	3.0 (2.9)	NA ¹
Val I75	3.8 (5.0)	5.1 (5.8)	0.0-5.0 ²
Ft. Myers Yacht Basin	11.7 (11.8)	13.7 (12.7)	NA
Cape Coral	20.6 (19.6)	22.6 (21.7)	10.0-30.0
Shell Point	30.2 (EM ³)	30.9 (31.2)	10.0-30.0
Sanibel	33.6 (33.7)	34.6 (34.9)	10.0-30.0

¹Envelope not applicable, ²Envelope is based on a 2-week forecast 30-day average, and ³Equipment Malfunction (see Table 5 below).

Forecast of surface salinity (Table 5 and Figure 10) at Val I-75 for the next two weeks using the autoregression model (Qiu and Wan, 2013) coupled with a linear reservoir model for the tidal basin predicts daily salinity ranging from 3.8 to 7.4 at the end of the two-week period for pulse release at S-79 ranging from 0 to 1000 cfs and estimated Tidal Basin inflows of 70 cfs. The 30-day moving average surface salinity at Val I-75 is forecast to be between 4.2 and 5.6 (Table 5). The current salinity conditions at Val I-75 are within the envelope of salinity 0.0-5.0 for this site (Table 4).

Table 5. Predicted salinity at Val I-75 at the end of forecast period

Scenario	Q79 (cfs)	TB runoff (cfs)	Daily salinity	30 day Mean
A	0	70	7.4	5.6
B	450	70	6.0	4.9
C	650	70	4.4	4.5
D	800	70	4.2	4.4
E	1000	70	3.8	4.2

Red tide

The Florida Fish and Wildlife Research Institute reported on April 3, 2020, that *Karenia brevis*, the Florida red tide dinoflagellate, was not observed in samples collected from or offshore of Lee, Palm Beach, or Broward counties (no samples were analyzed this week from St. Lucie, Martin, or Miami-Dade counties).

Water Management Recommendations

Lake stage is in the Beneficial Use Flow sub-band. Tributary conditions are dry. The South Florida Water Management District's Lake Okeechobee Adaptive Protocol's Release Guidance suggests up to 300 cfs at S-79 and S-77 environmental water supply release to supplement as needed to the Caloosahatchee Estuary.

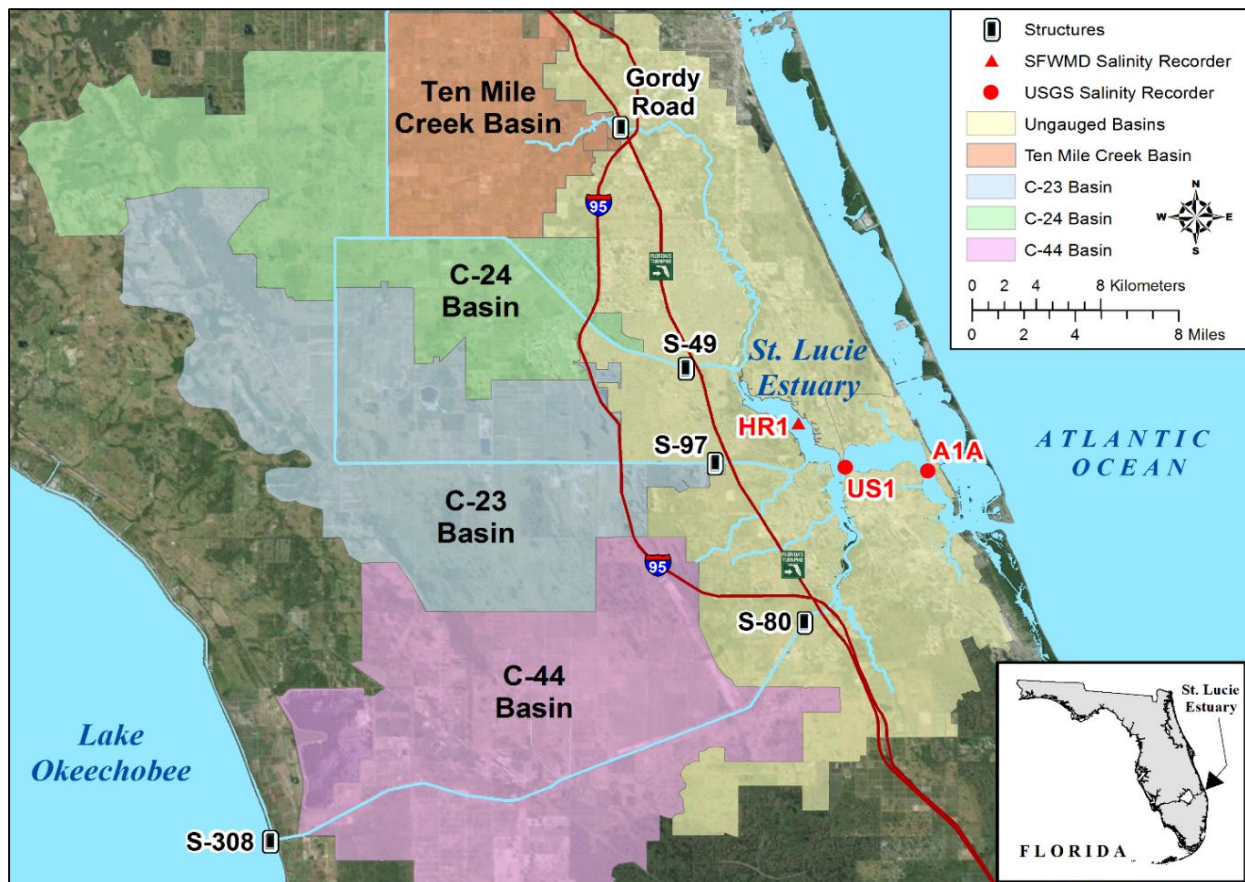


Figure 1. Basins, water control structures, and salinity monitoring for the St. Lucie Estuary.

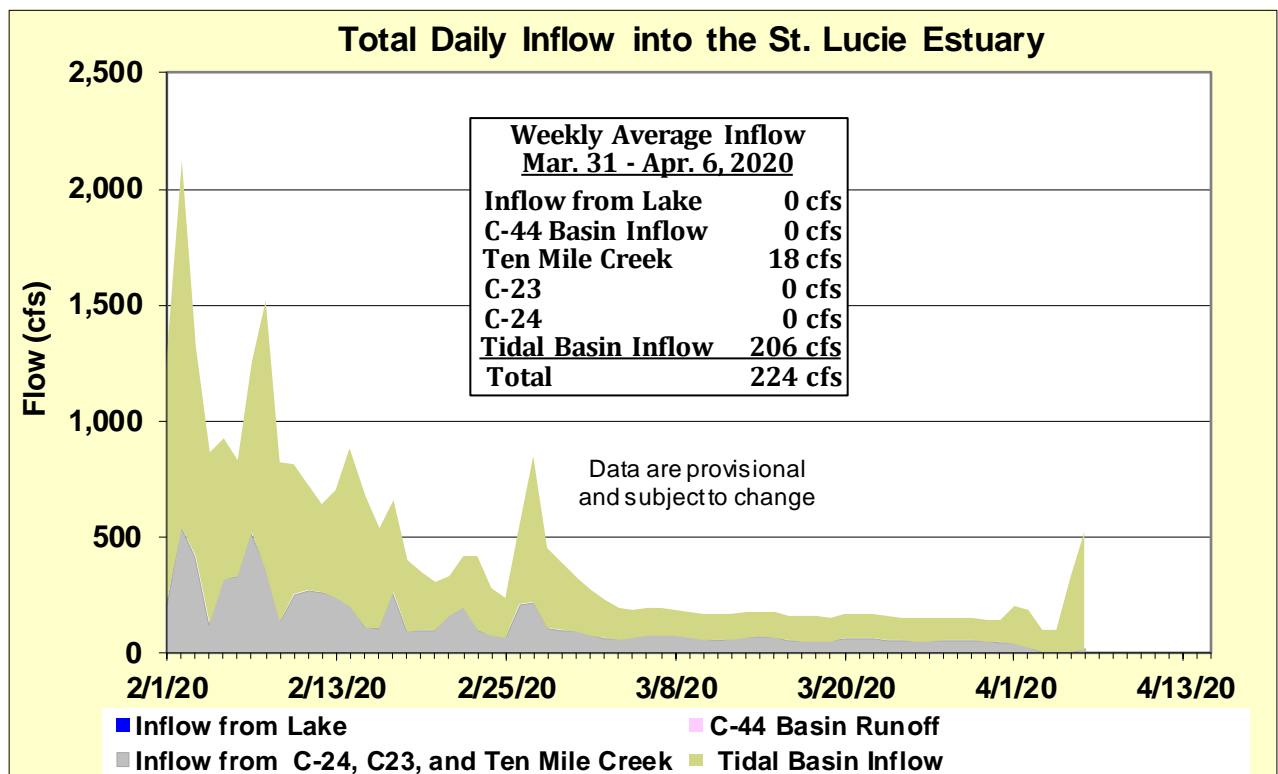


Figure 2. Total daily inflows from Lake Okeechobee and runoff from the C-44, C-23, C-24, Ten Mile Creek, and tidal basin into the St. Lucie Estuary.

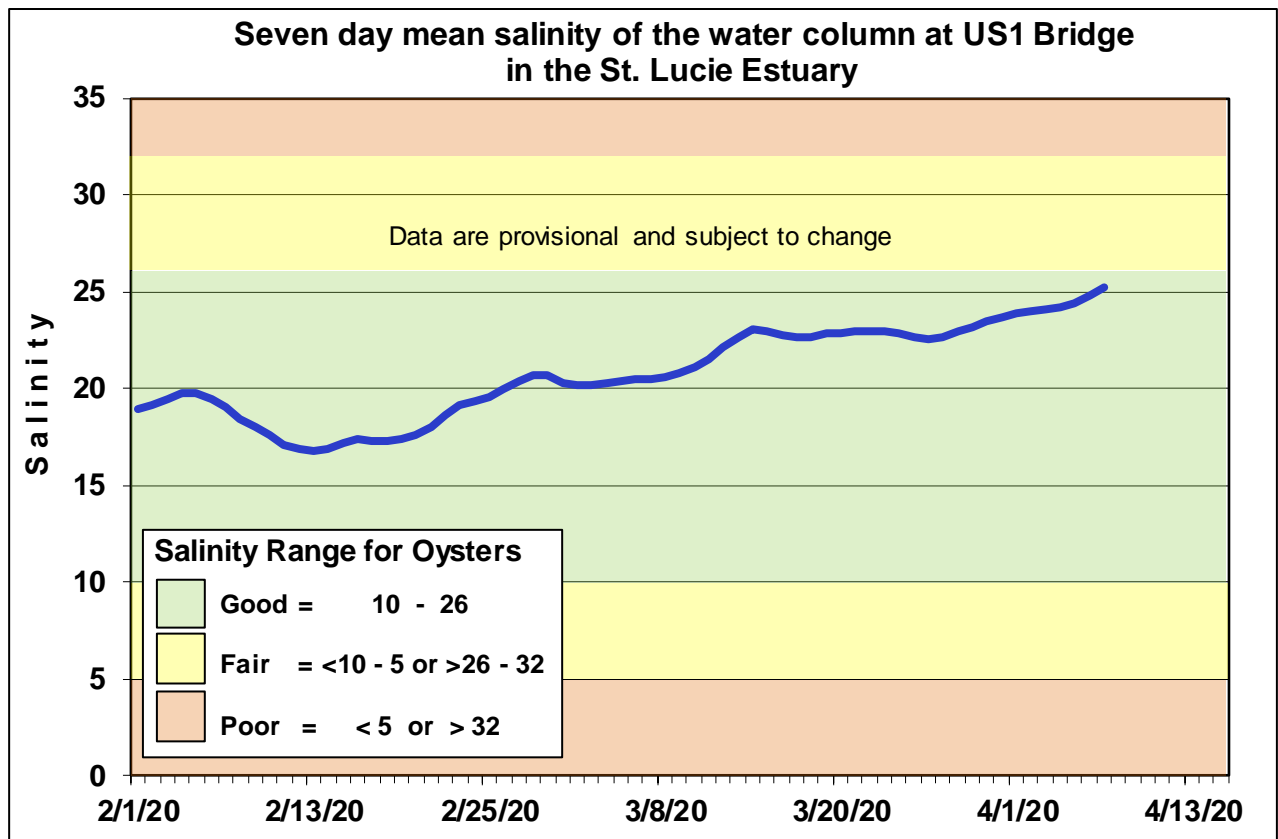


Figure 3. Seven-day mean salinity of the water column at the US1 Bridge.

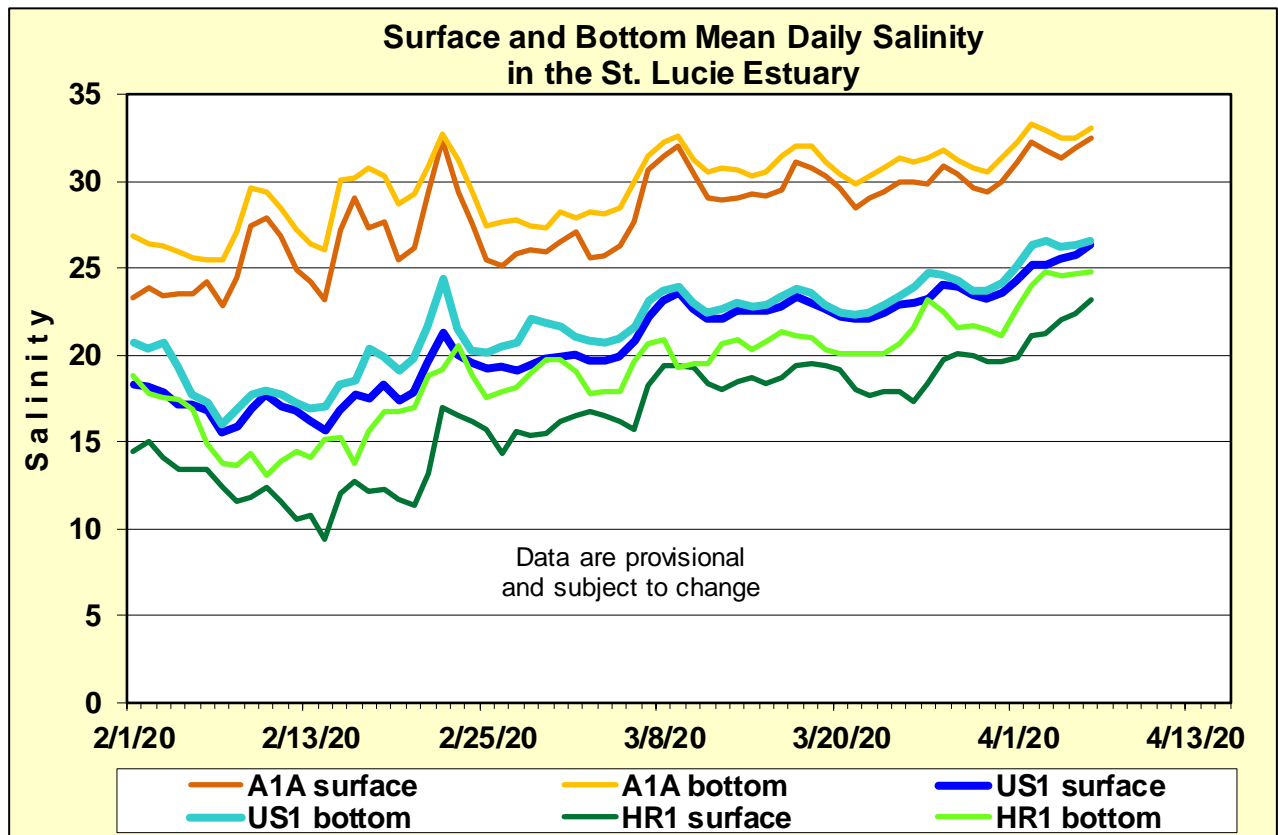


Figure 4. Daily mean salinity at the A1A, US1, and HR1 stations.

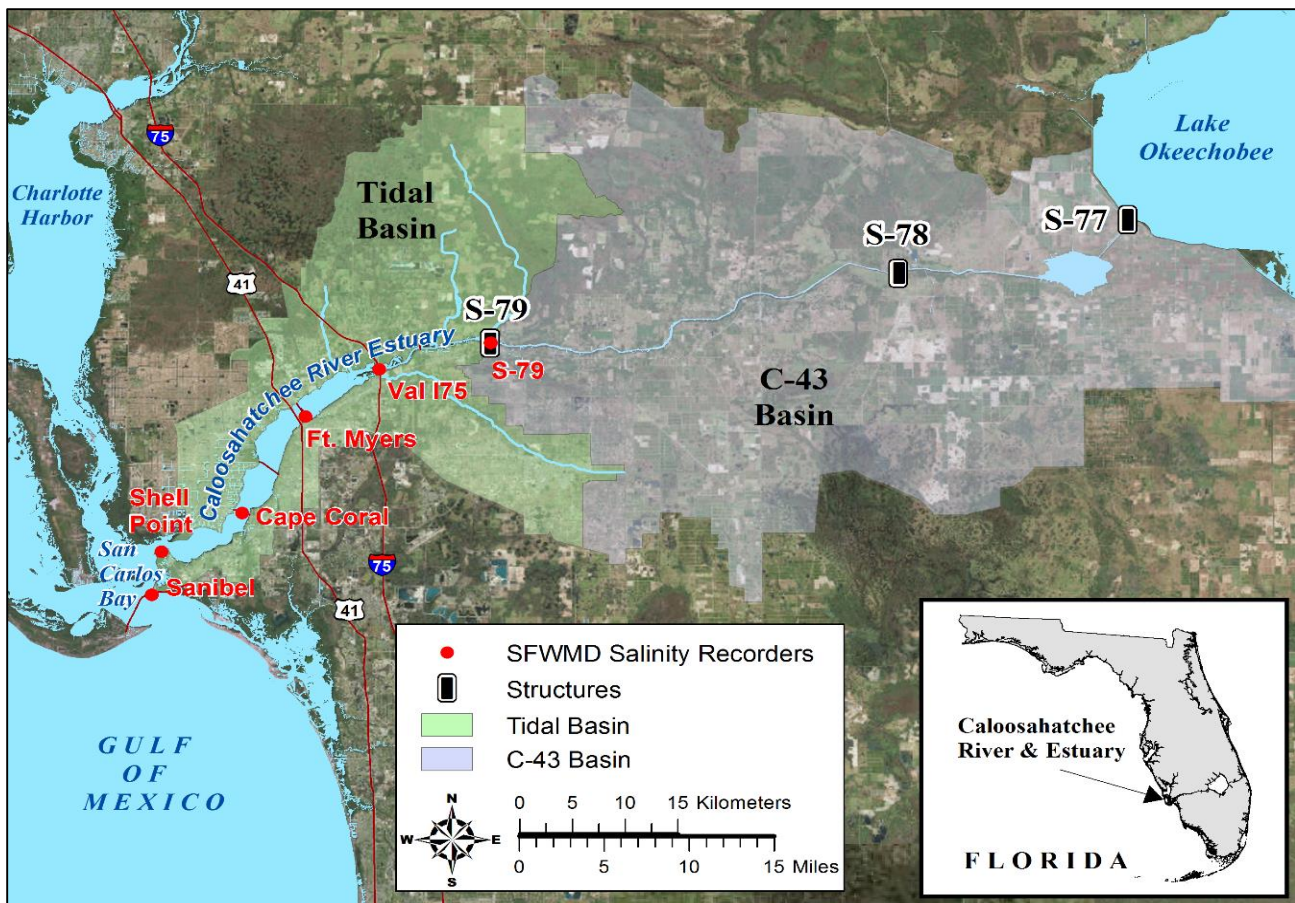


Figure 5. Basins, water control structures, and salinity monitoring for the Caloosahatchee Estuary.

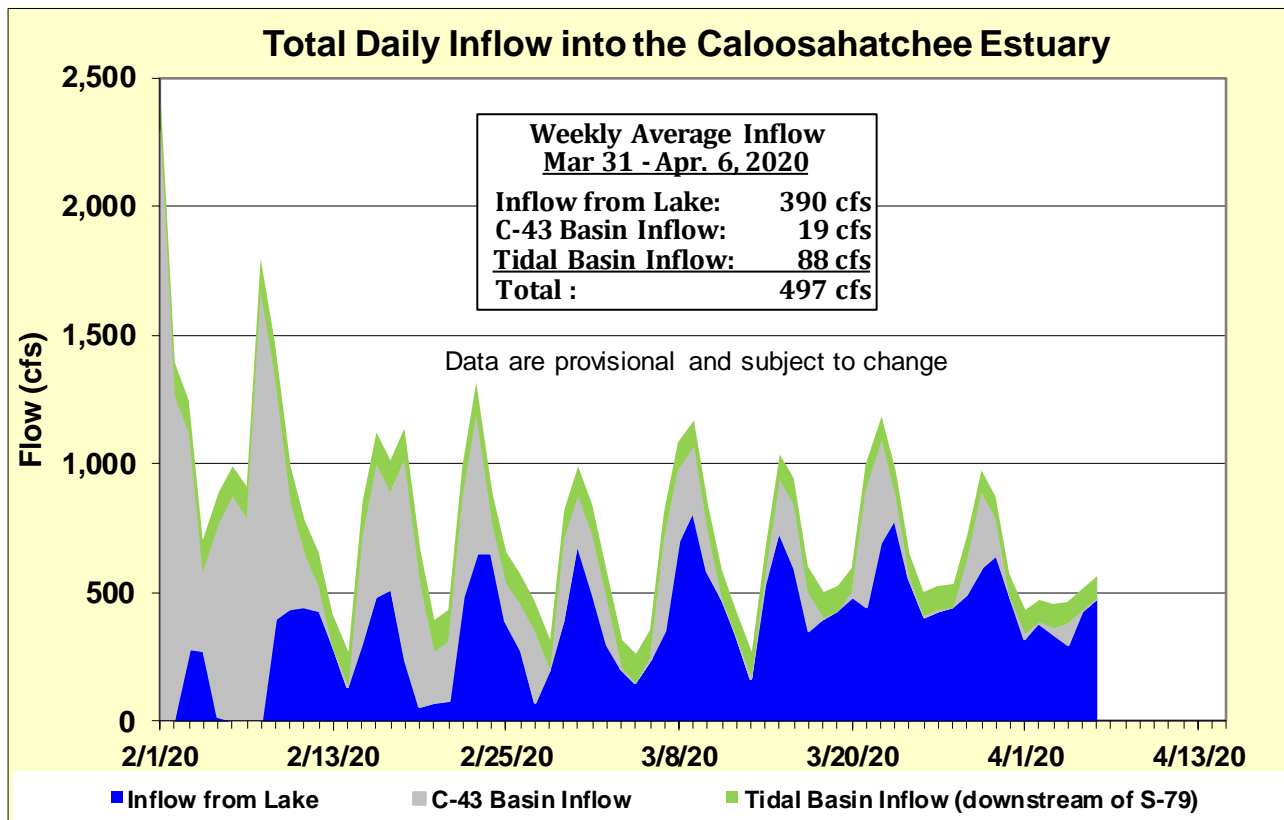


Figure 6. Total daily inflows from Lake Okeechobee, runoff from the C-43 basin

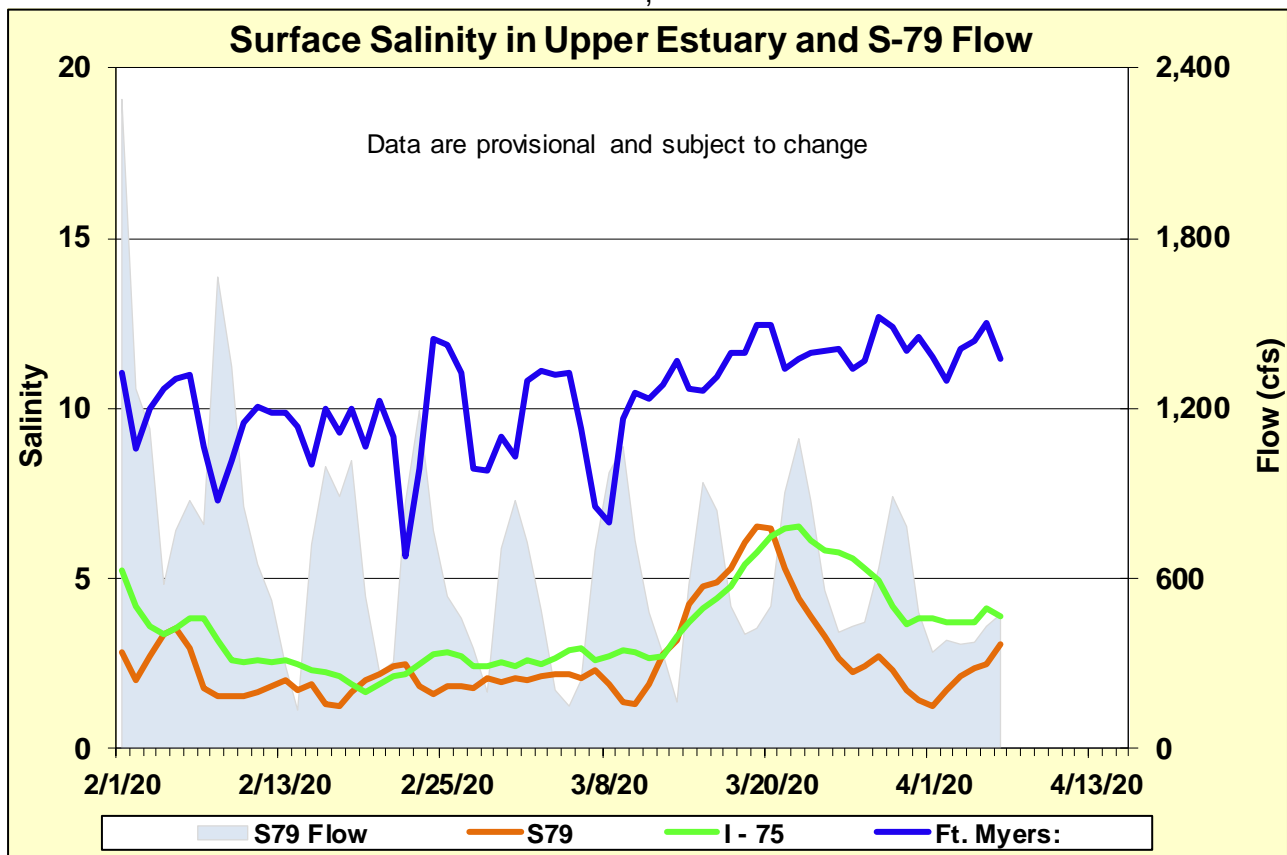


Figure 7. Daily mean flows at S-79 and salinity at upper estuary monitoring stations.

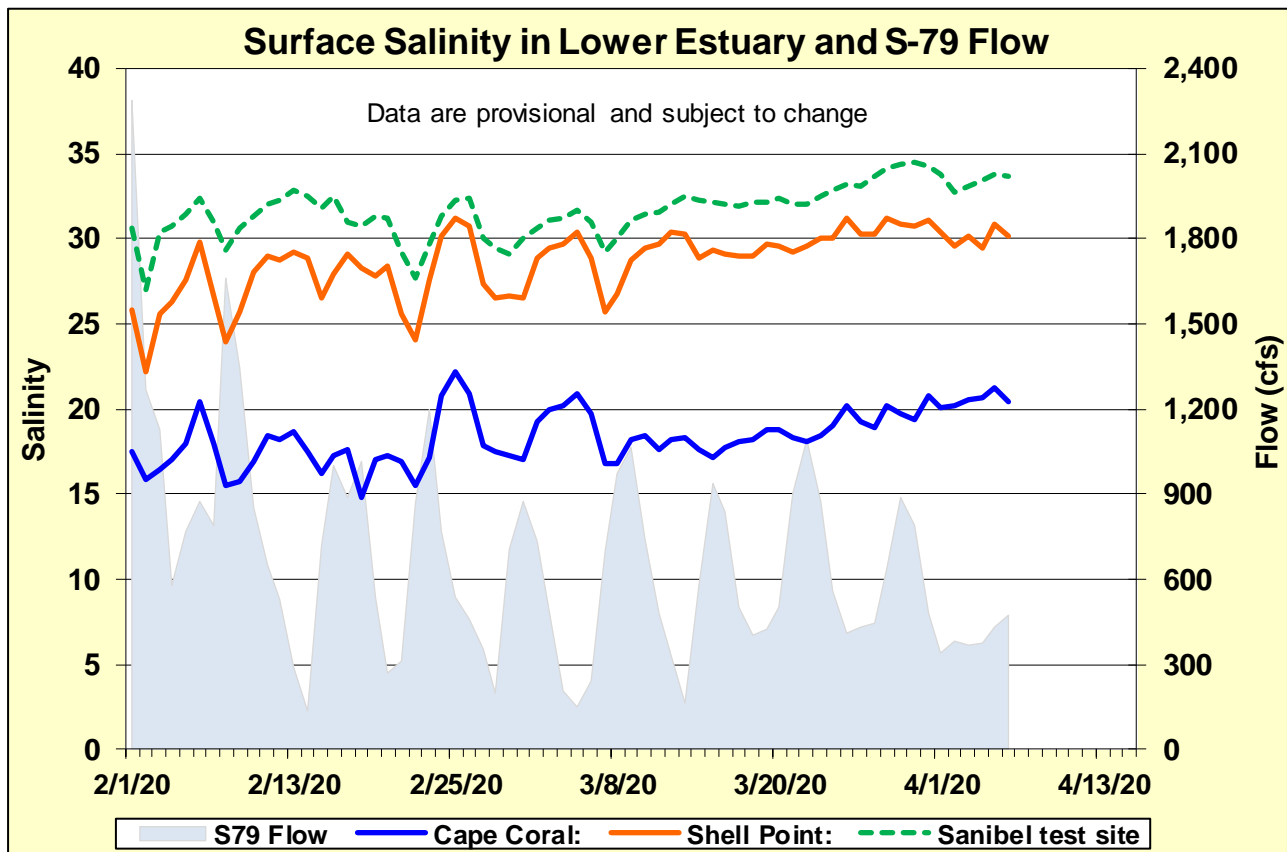


Figure 8. Daily mean flows at S-79 and salinity at lower estuary stations.

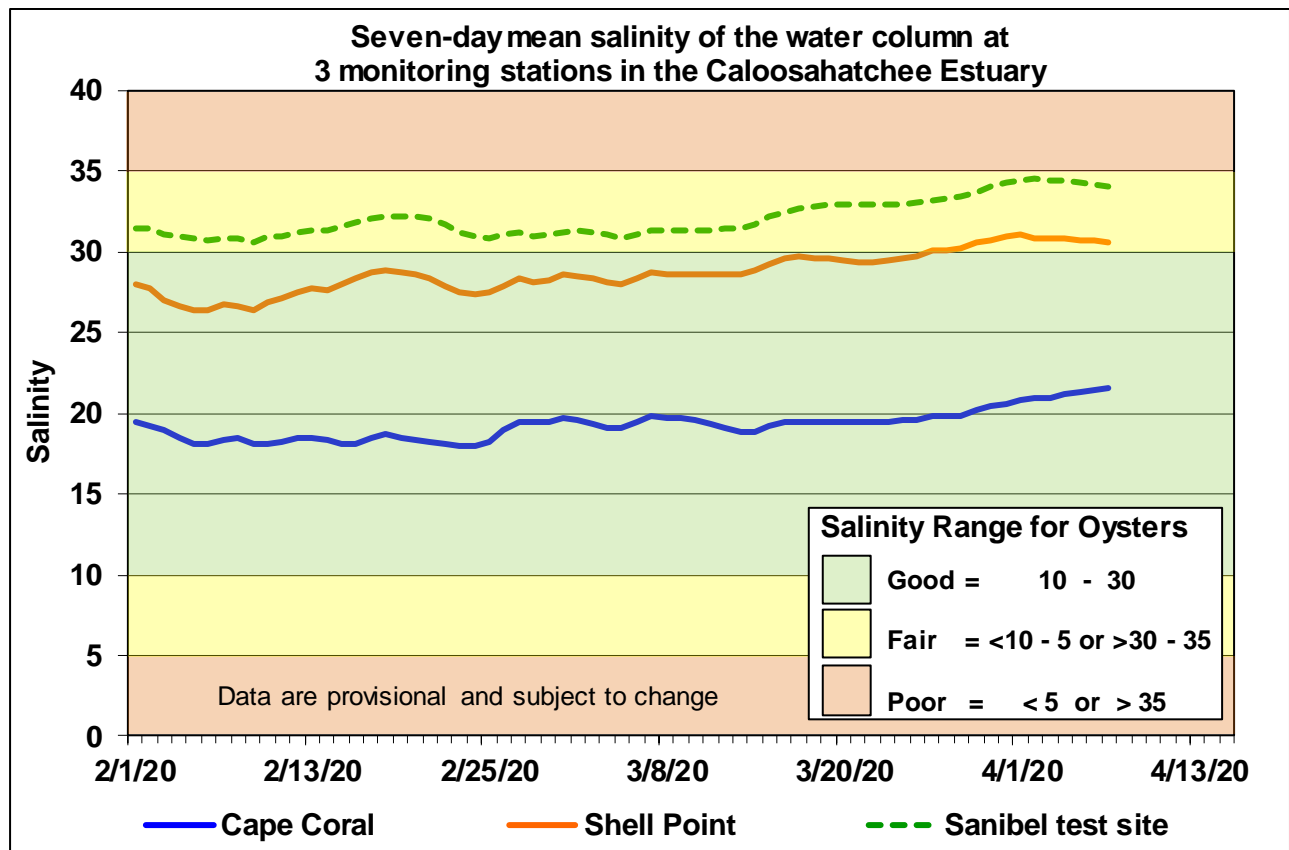


Figure 9. Seven-day mean salinity at Cape Coral, Shell Point, and Sanibel monitoring stations.

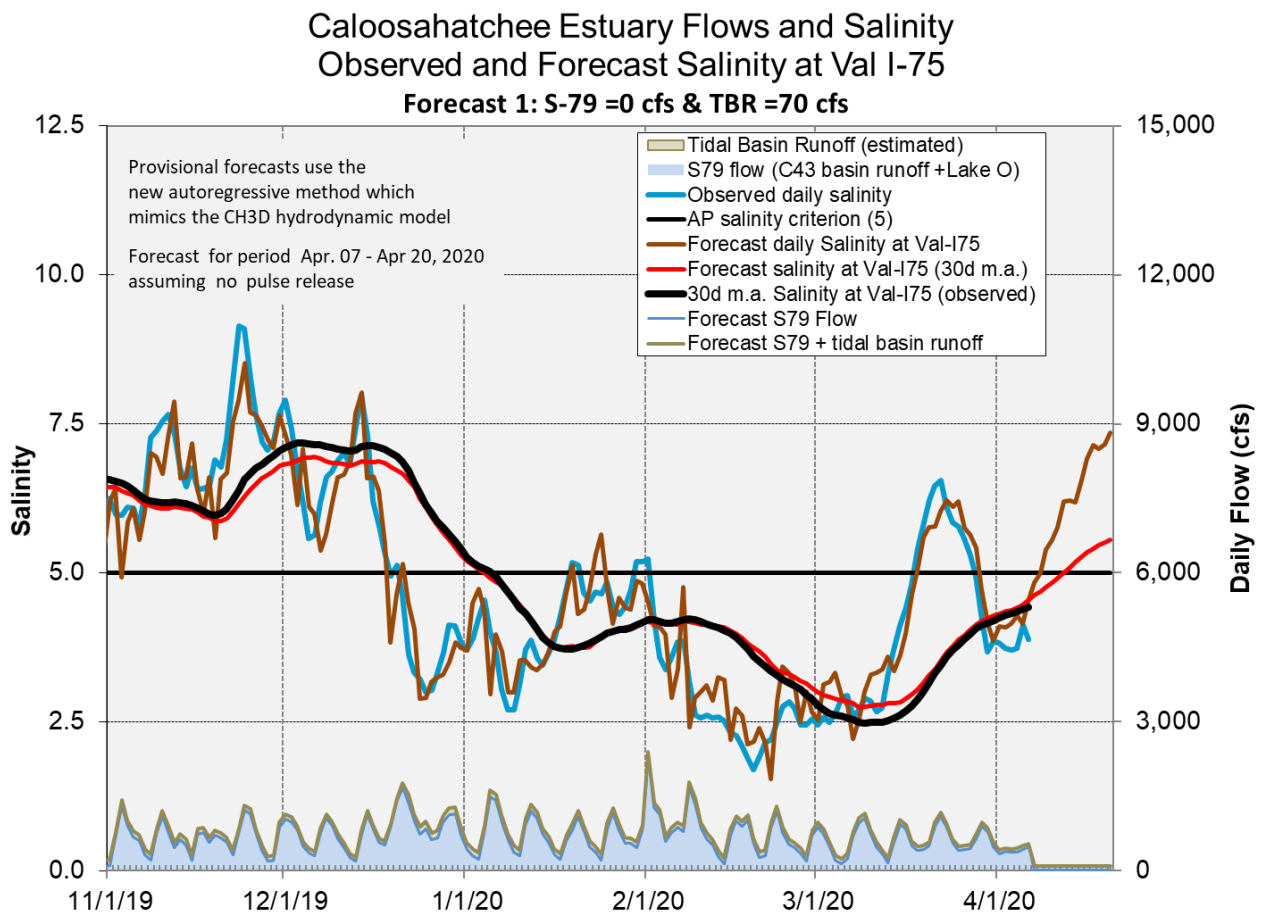
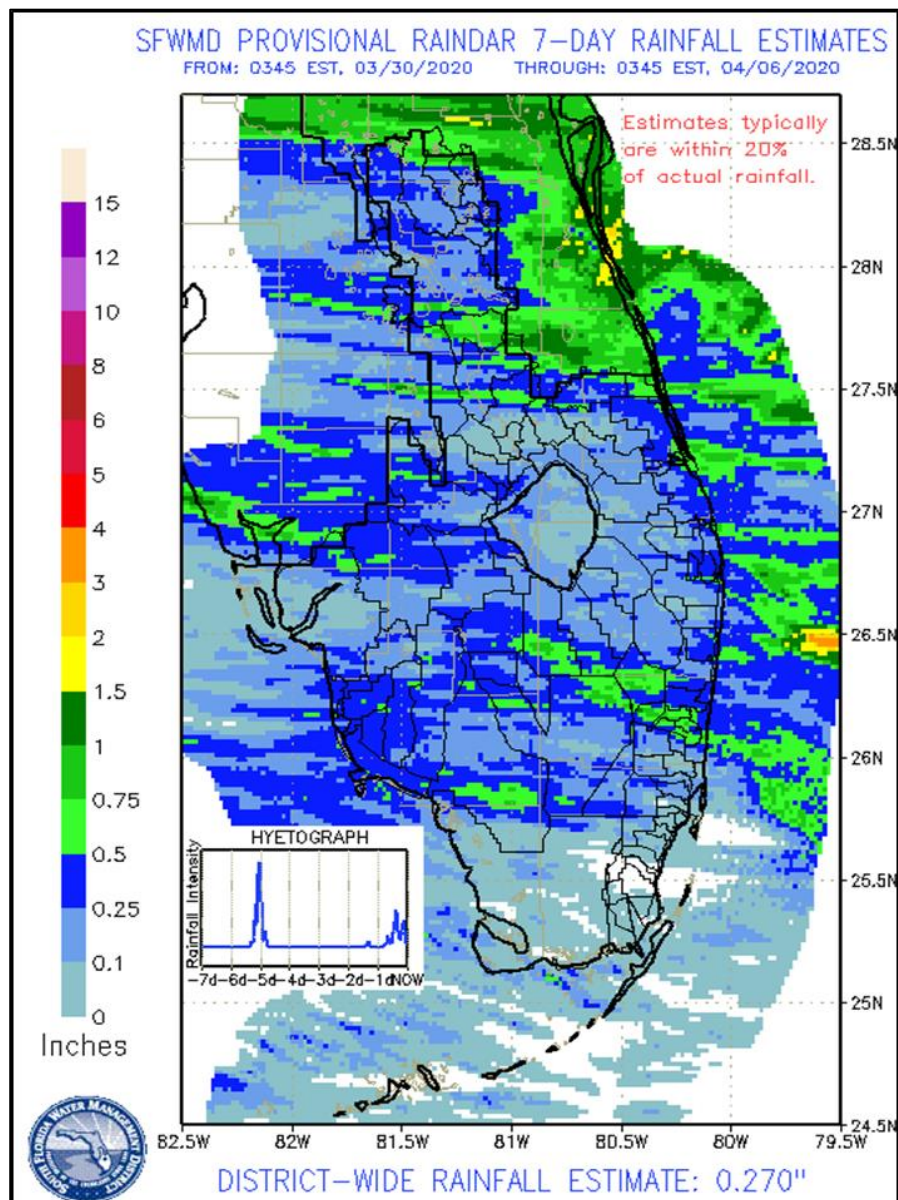


Figure 10. Forecasted Val I-75 surface salinity assuming no pulse release at S79.

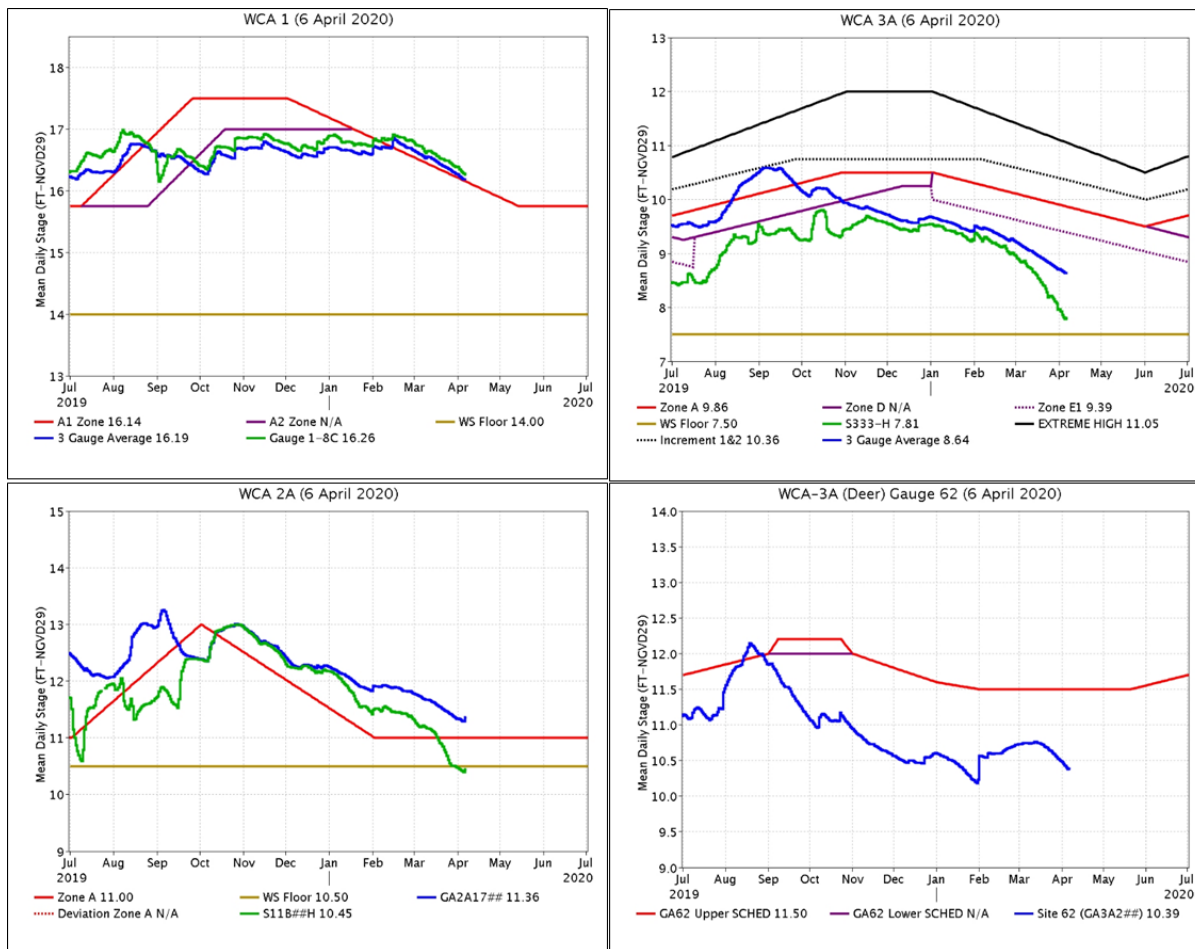
EVERGLADES

After two weeks of near zero rainfall, all of the WCA's basins recorded precipitation with the most coming in a band across WCA-2A, 2B and northeastern WCA-3A. Very little rainfall occurred over the ENP. At the gauges monitored for this report stages fell on average 0.13 feet last week, the same as the week prior. Evaporation was estimated at 1.87 inches last week (an increase of 0.20 inches).

Everglades Region	Rainfall (Inches)	Stage Change (feet)	
WCA-1	0.19	-0.09	Good
WCA-2A	0.55	-0.03	Fair
WCA-2B	0.62	-0.18	Fair
WCA-3A	0.31	-0.11	Fair
WCA-3B	0.26	-0.14	Fair
ENP	0.07	-0.30	Poor



Regulation Schedules: WCA-1: Stage at the 1-8C Gauge remains in parallel to the falling regulation line last week, currently 0.12 feet above the Zone A1 line. WCA-2A: Stage at Gauge S11-B follows the water supply floor of the regulation schedule, currently 0.05 feet below. WCA-3A: The Three Gauge Average stage continues to trend down and away from the falling Zone E1 regulation line last week, presently 0.75 feet below. WCA-3A at gauge 62 (Northwest corner): Stage returns to trending down and away from the stable Upper Schedule now 1.11 feet below the regulation line.

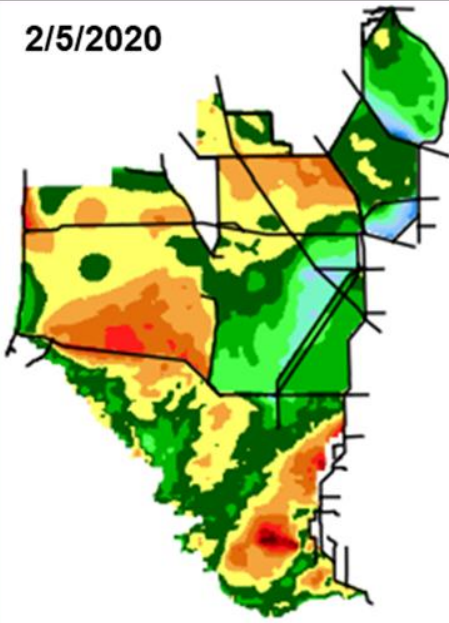


Water Depths: The WDAT tool for spatial interpolation of depth monthly snapshots indicate depths significantly below ground across most of WCA-3A North, and more than a foot below in the extreme northeastern region. The interior of WCA-2A is drying down to ground surface, with the northern sections along the L-39 now below ground. WCA-1 depths look stable and drawing down slowly. The sloughs in ENP have all dried down to ground surface or near. Comparing WDAT water levels from present, over the last month there was a significant recession in all the WCAs, the most rapid in northern WCA-2A along the L-39 canal and the northwestern corner of WCA-3A North. Looking back one year the stage difference patterns are similar and more significant. The entirety of WCA-3A and 2A are significantly lower in stage. WCA-2A is most dramatically lower in stage in the northeastern regions of that basin and WCA-3A in the northwest and in the northern reaches of the L-67 canals. WCA-1 stages are similar to a year ago. The WDAT model indicates a much drier condition in the western basins compared to a month and a year ago.

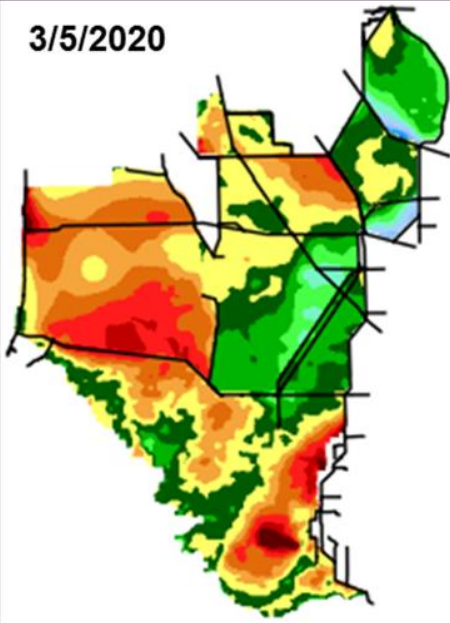


SFWDAT Water Depth Monthly Snapshots

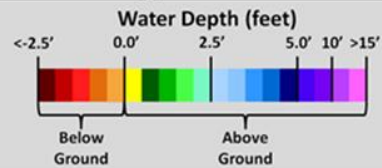
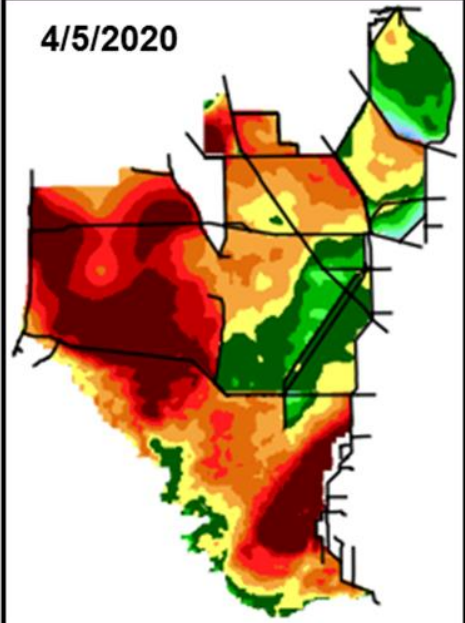
2/5/2020



3/5/2020



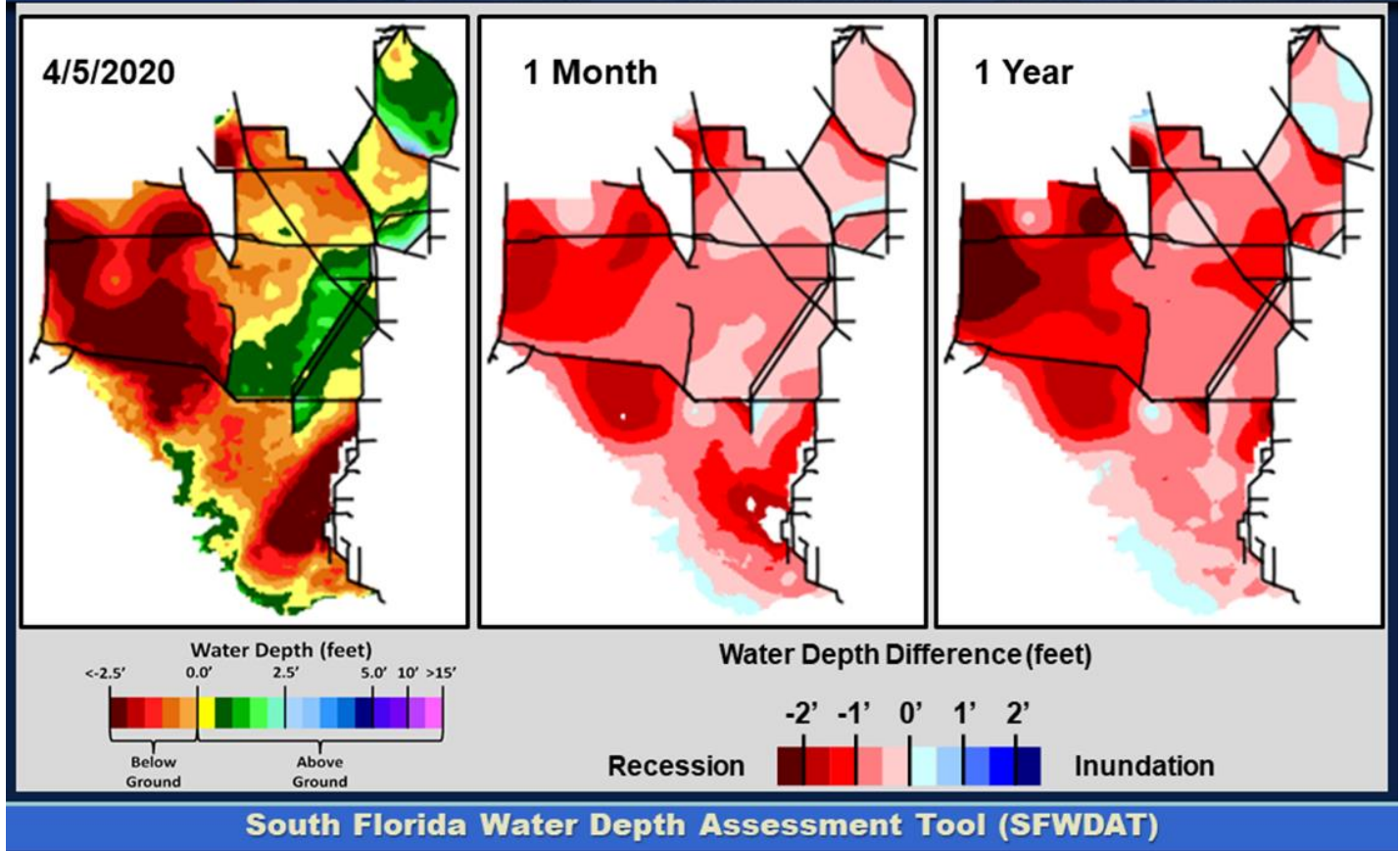
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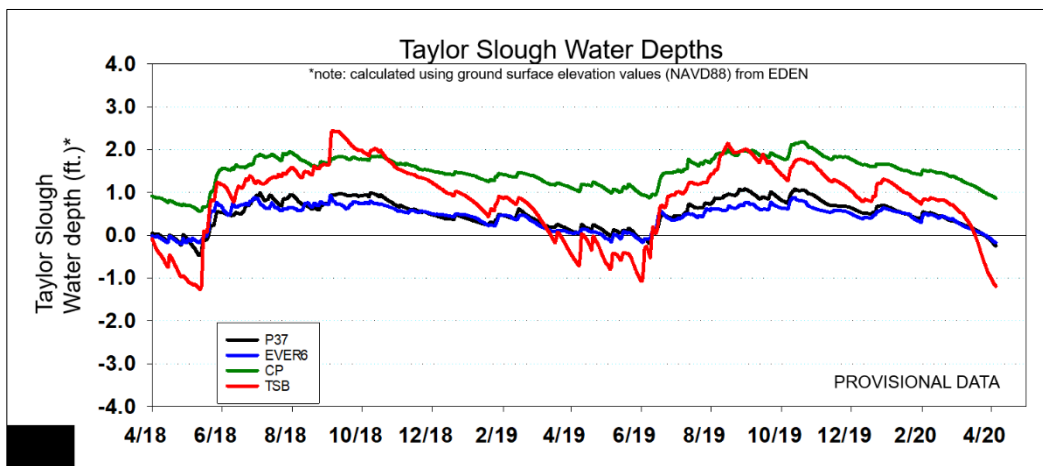
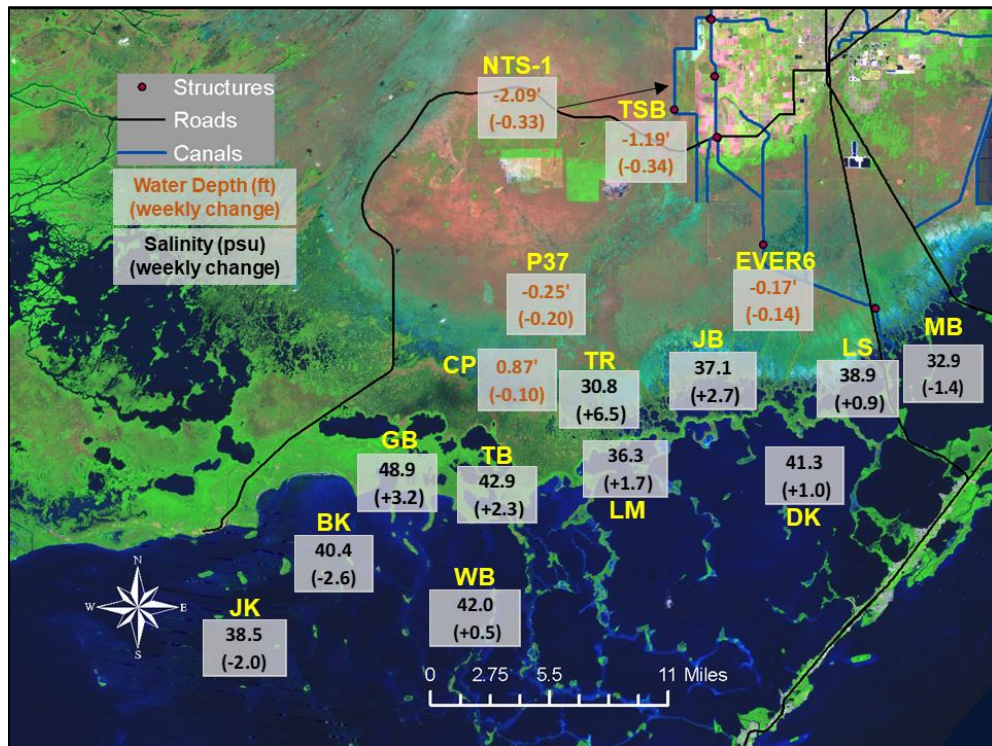
South Florida Water Depth Assessment Tool (SFWDAT)

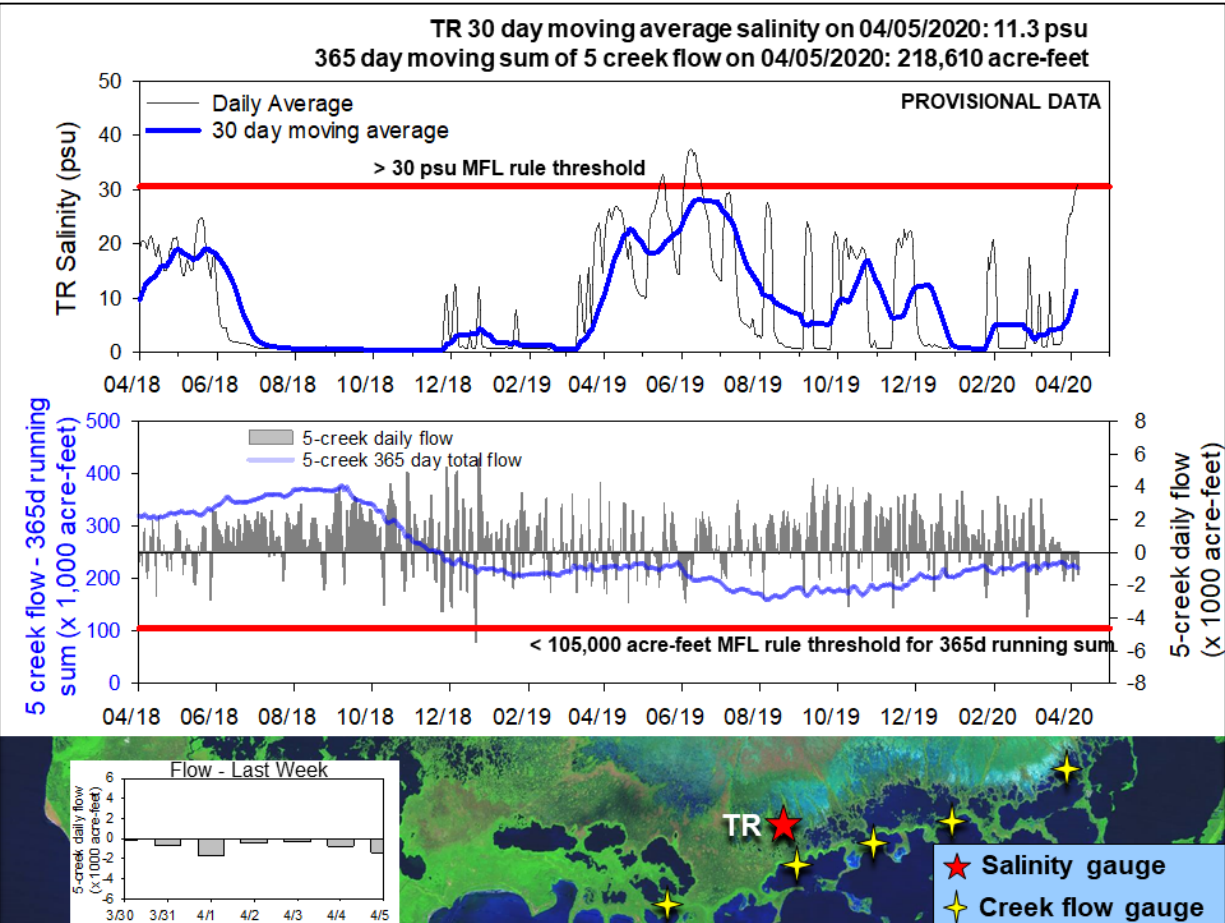
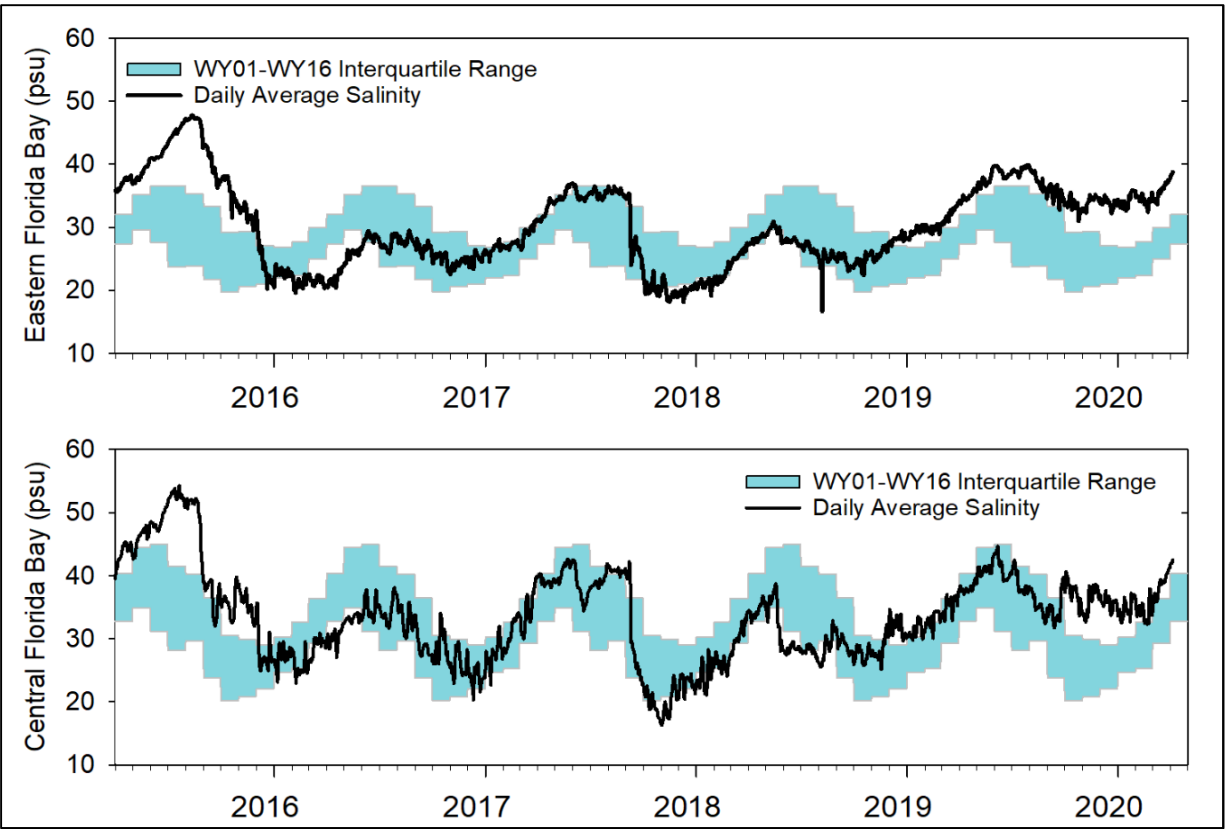


SFWDAT Everglades Difference Maps (Present – Past)



Taylor Slough Water Levels: An average of 0.075 inches of rain fell over Taylor Slough and Florida Bay this last week and stages decreased an average of 0.22 feet. The northern parts of the slough decreased the most rapidly as westward water movements have stopped and temperatures are rising. After being a foot or more higher than the historical average for the dry season up until now, the Upper Taylor Slough region is now 10 inches below average.





Florida Bay Salinities: Average salinity in Florida Bay increased 1 psu this week. Florida Bay average salinity is 8 psu higher than the historical average for this time of year. We are at the time of year when salinities will increase more rapidly due to evaporation and lack of rain and freshwater flow until wet season rains start.

Florida Bay MFL: Salinity at the TR station in the mangrove zone (tracked for the Florida Bay MFL) increased rapidly to 31 psu over the last week. The 30-day moving average increased 5.5 psu to end at 11.3 psu. Weekly flow from the 5 creeks identified by yellow stars on the map totaled almost -5,600 acre-feet last week with negative flows all last week again. The 365-day moving sum of flow from the five creeks (tracked as part of the Florida Bay MFL criteria) decreased 3,000 acre-feet this week to end at 218,610 acre-feet, between the 25th percentile (192,885 acre-feet) and the median (249,091 acre-feet). Creek flow are provisional USGS data.

Water Management Recommendations

Current stages in northeastern WCA-3A are low for this time of year and salinities are high in Florida Bay. Conserving water within the WCA-3A and moving low nutrient water south has many ecological benefits, these benefits are unrealized when flows are lost to tide. Discharges into historically over drained northeastern WCA-3A have the potential to maintain saturated soils and protect these over-drained portions of the Everglades. The ecological benefits include conserving peat and lowering the risk of muck fires. Any available water sent through the S-150 into Northeastern WCA-3A would have greater ecological value than the same amount of water discharged in Northwestern 3A.

Flows towards Taylor Slough and Florida Bay freshen salinity conditions within the nearshore areas of Florida Bay and decrease the currently stressful conditions for seagrasses and fauna as nearshore salinities remain elevated, decreasing the estuarine gradient within the bay.

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