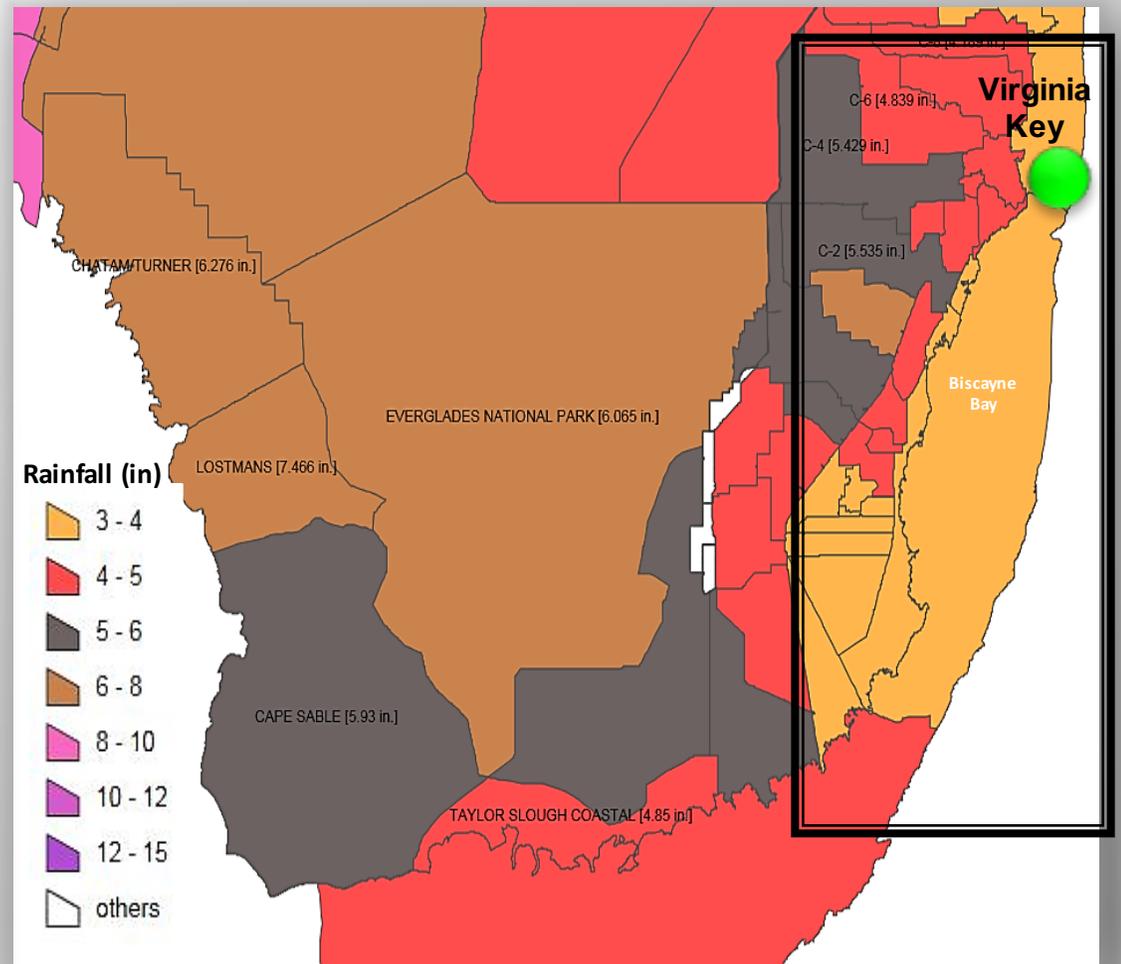


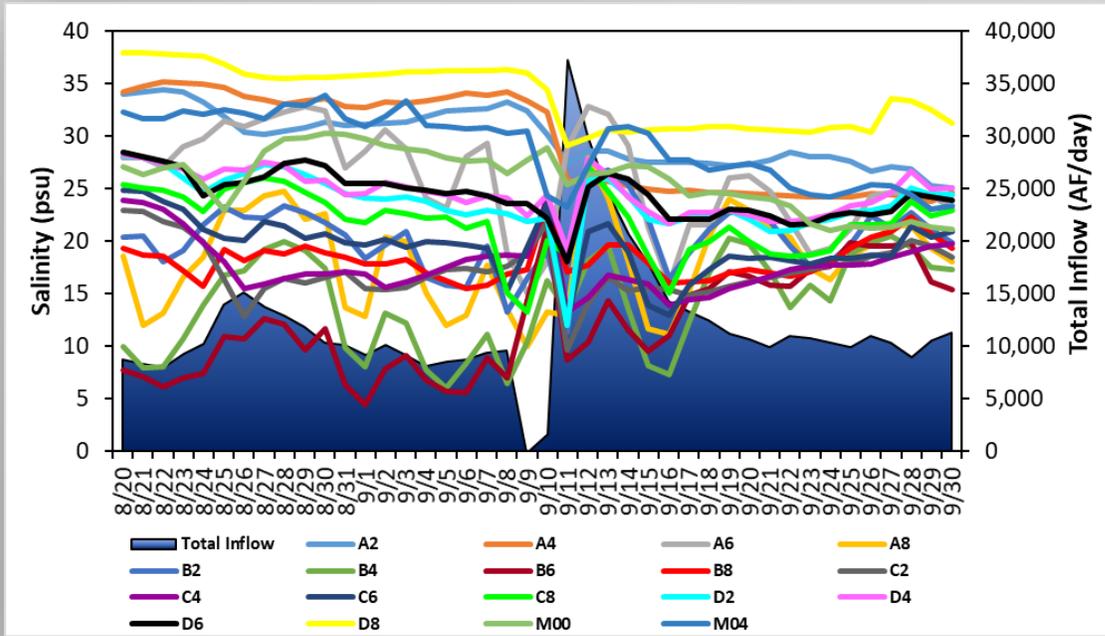
# Wind, Precipitation & Temperature Patterns



Rainfall across South Florida on Sept. 10, 2017 (Source: NEXRAD) & the location of the NOAA's wind & temp. station in Virginia Key

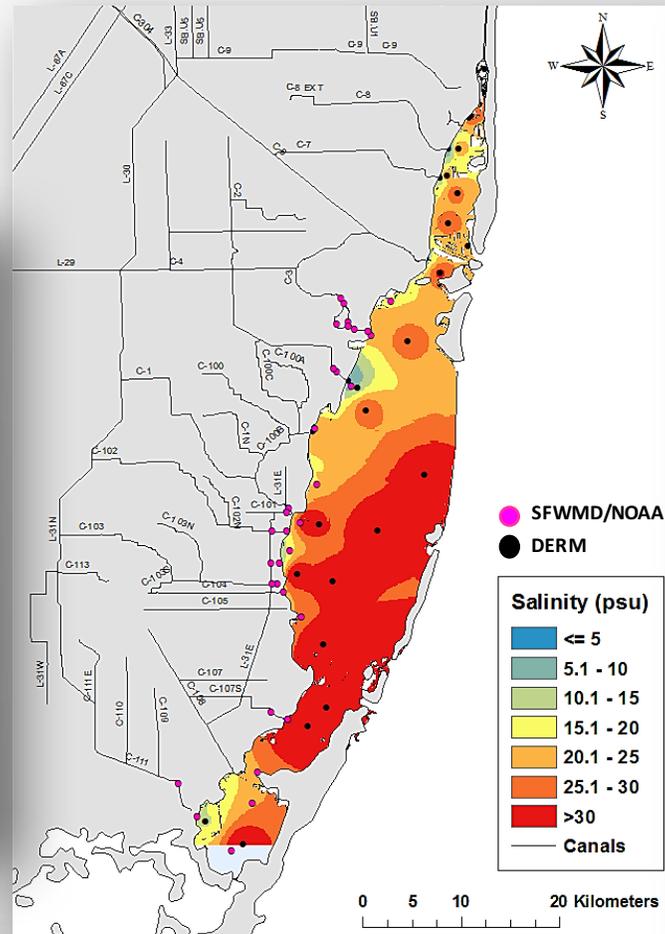
# Hurricane-Related Spatial & Temporal Changes in Salinity

- Salinity near shore dropped during the peak of freshwater inflows
- Water column became strongly stratified as a result of freshwater inflows & rainfall

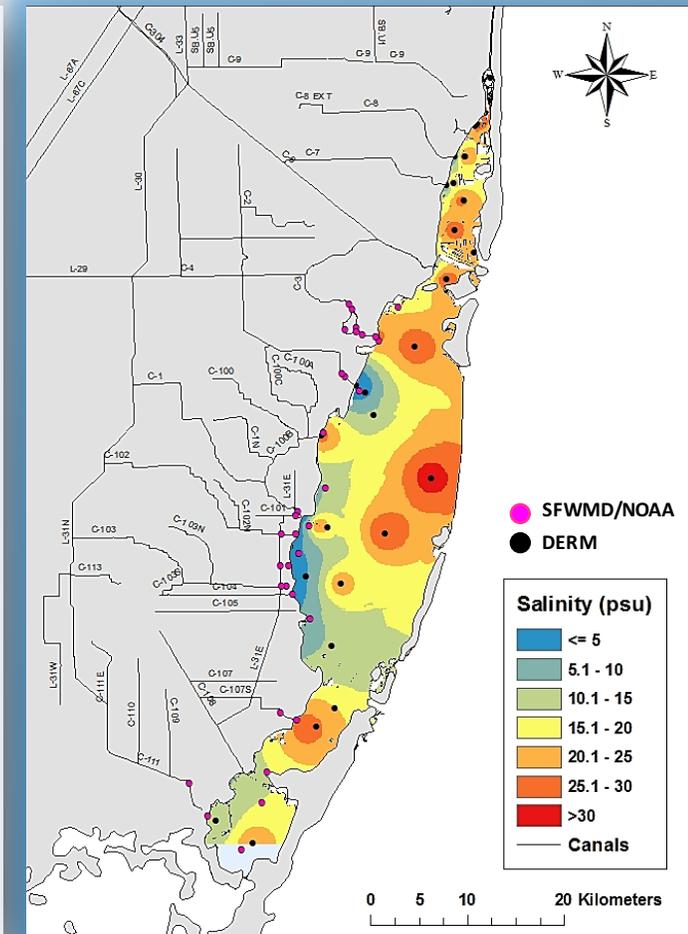


Changes in bottom salinity at near shore locations and freshwater discharges from the canals (Source: SFWMD/NPS)

August 2017  
(3 weeks before Hurricane Irma)



September 2017  
(2 weeks after Hurricane Irma)



# Hurricane-Related Spatial & Temporal Changes in Water Temperature

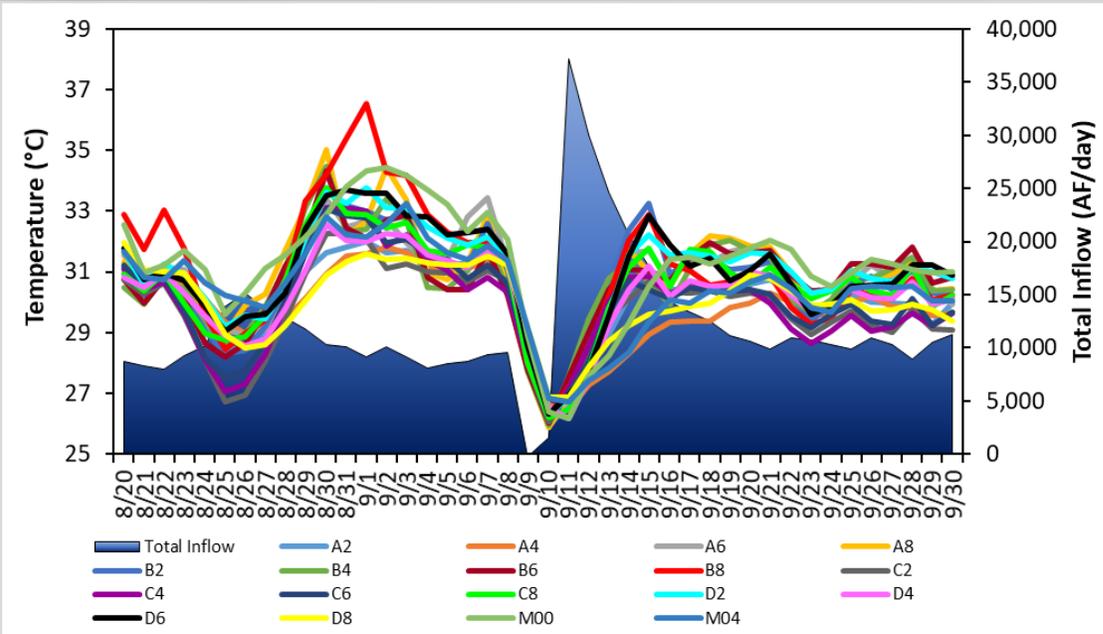
August 2017

(3 weeks before Hurricane Irma)

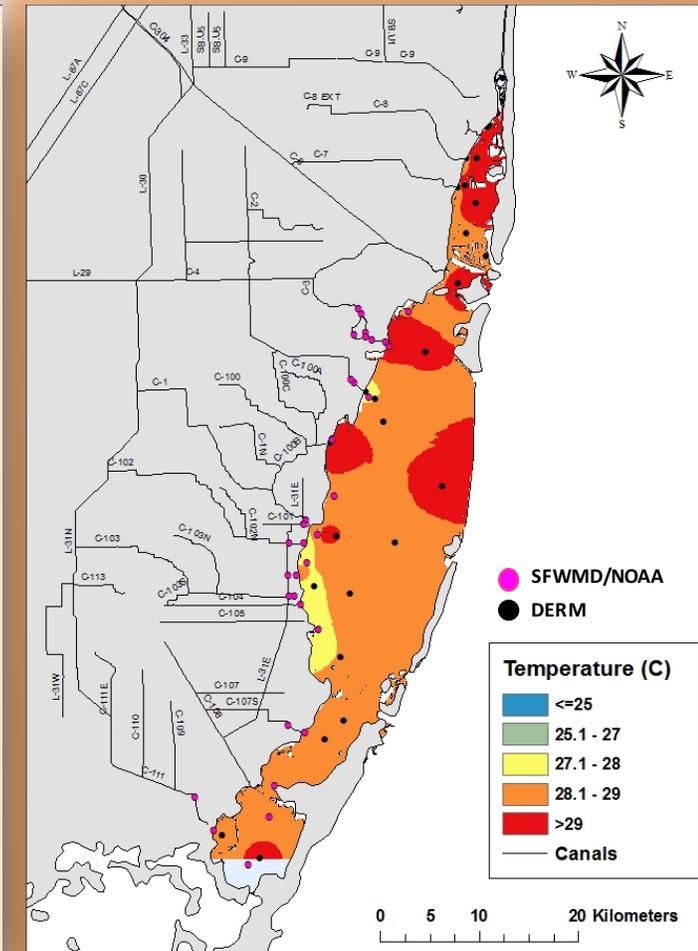
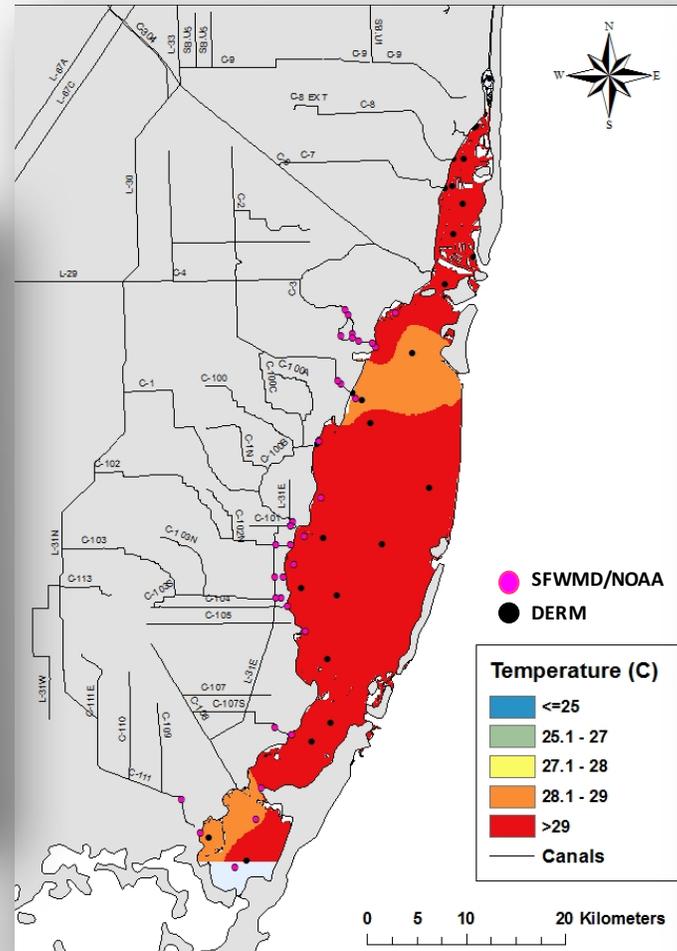
September 2017

(2 weeks after Hurricane Irma)

- Water temperature dropped by up to 6-7 °C near shore during the peak of freshwater inflows



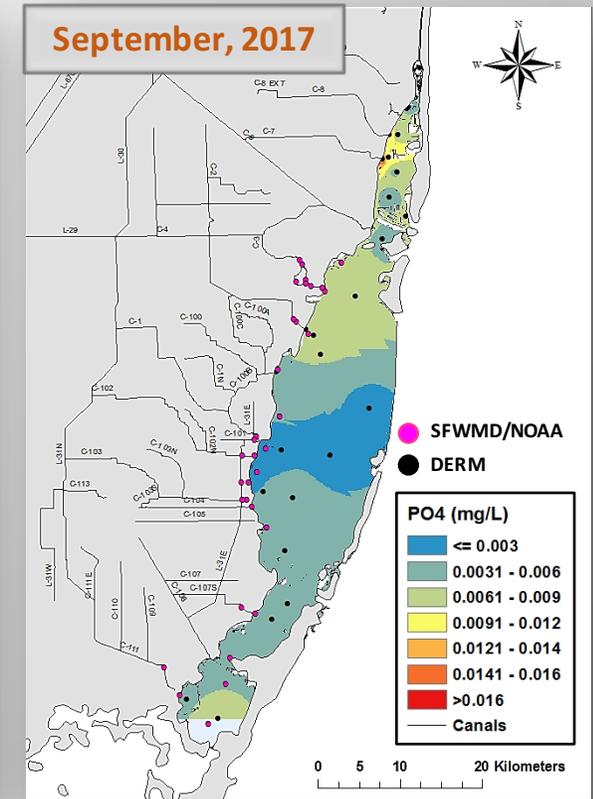
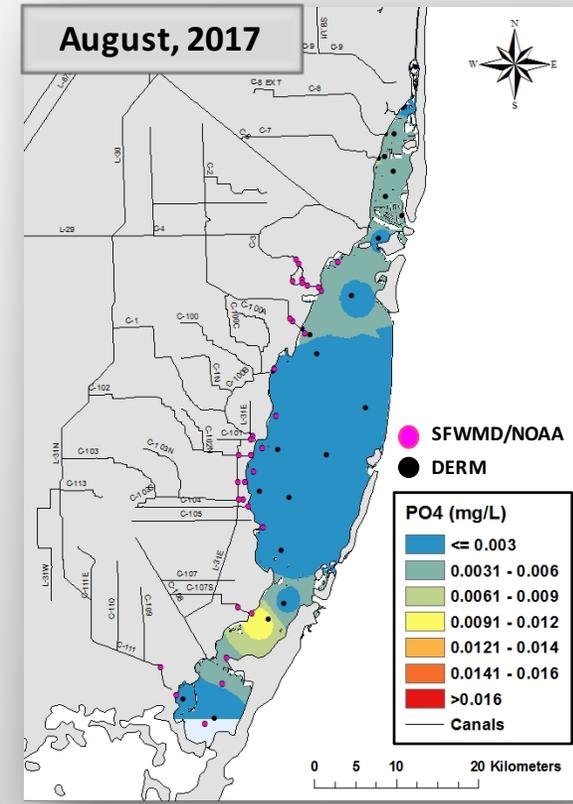
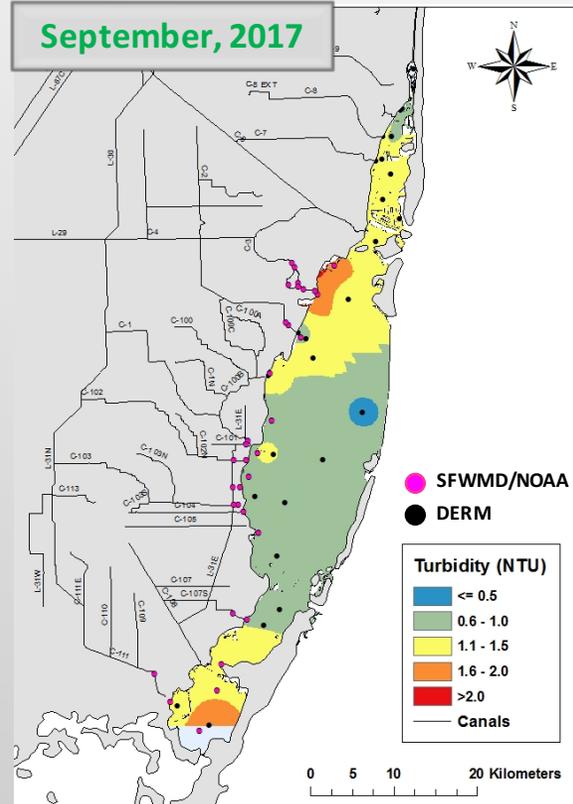
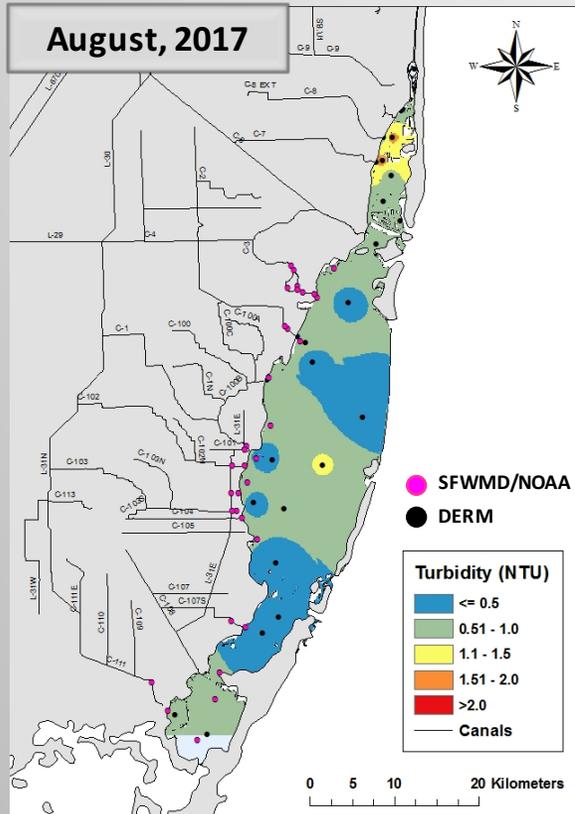
Changes in bottom water temperature at near shore locations and freshwater discharges from the canals (Source: SFWMD/NPS)



# Hurricane-Related Spatial & Temporal Changes in Turbidity & Ortho-Phosphate Concentration

## Turbidity

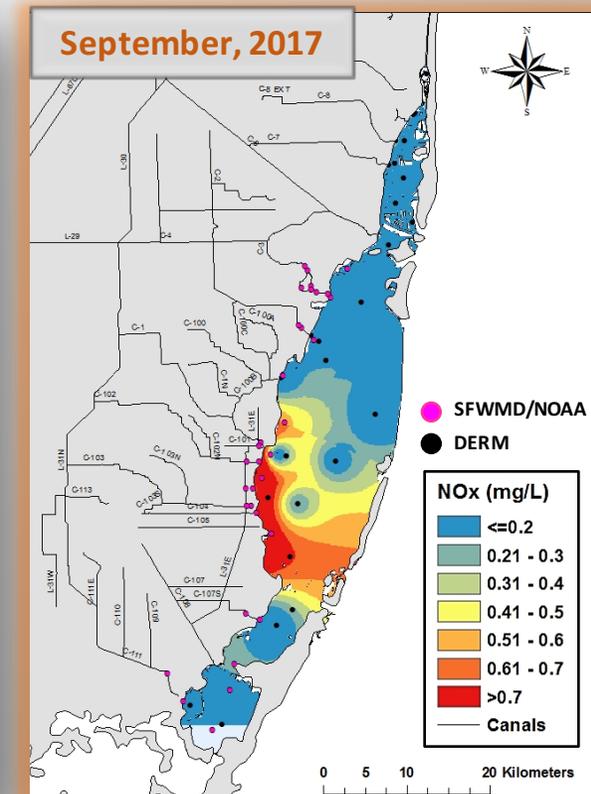
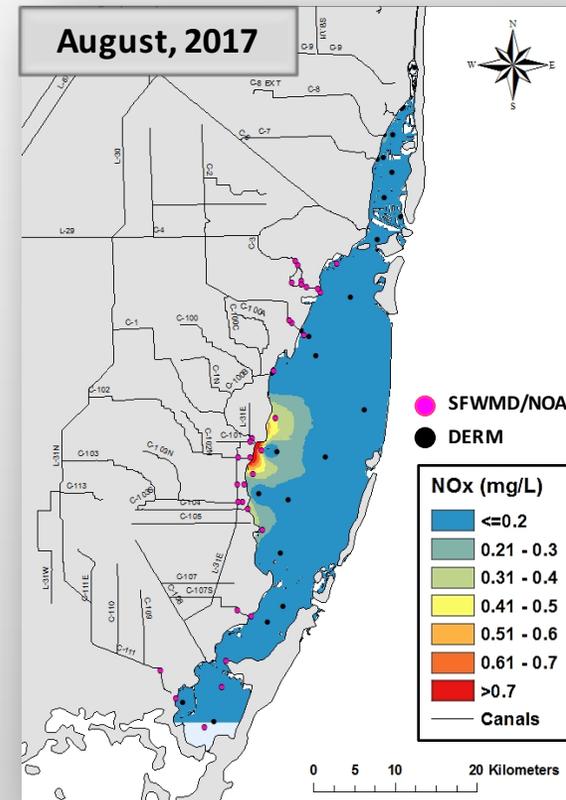
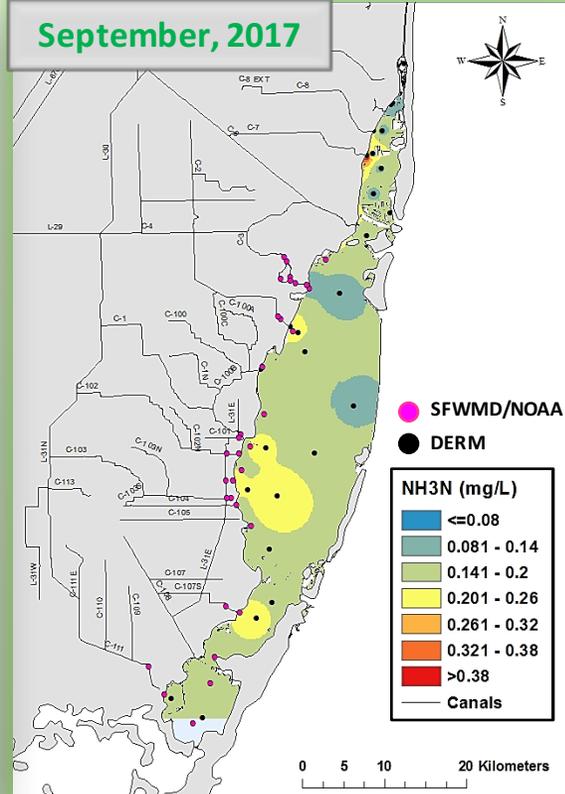
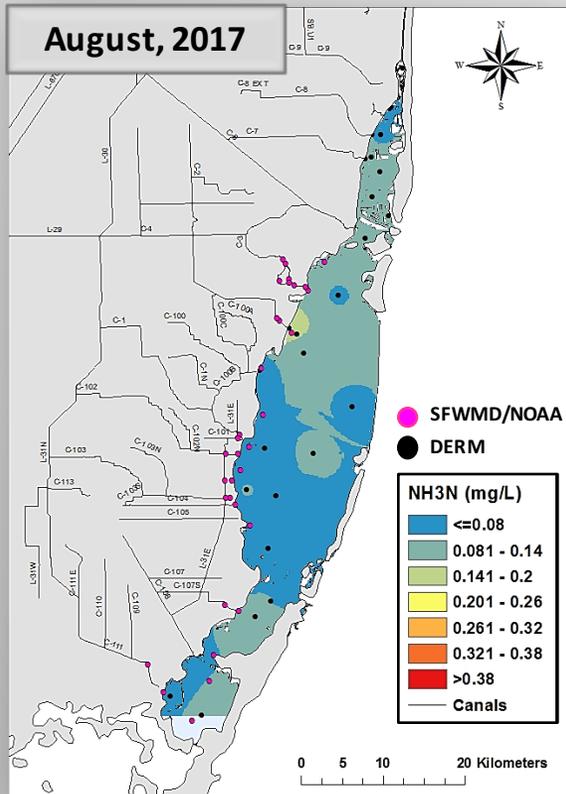
## Ortho-Phosphate



# Hurricane-Related Spatial & Temporal Changes in Nitrogen Concentration

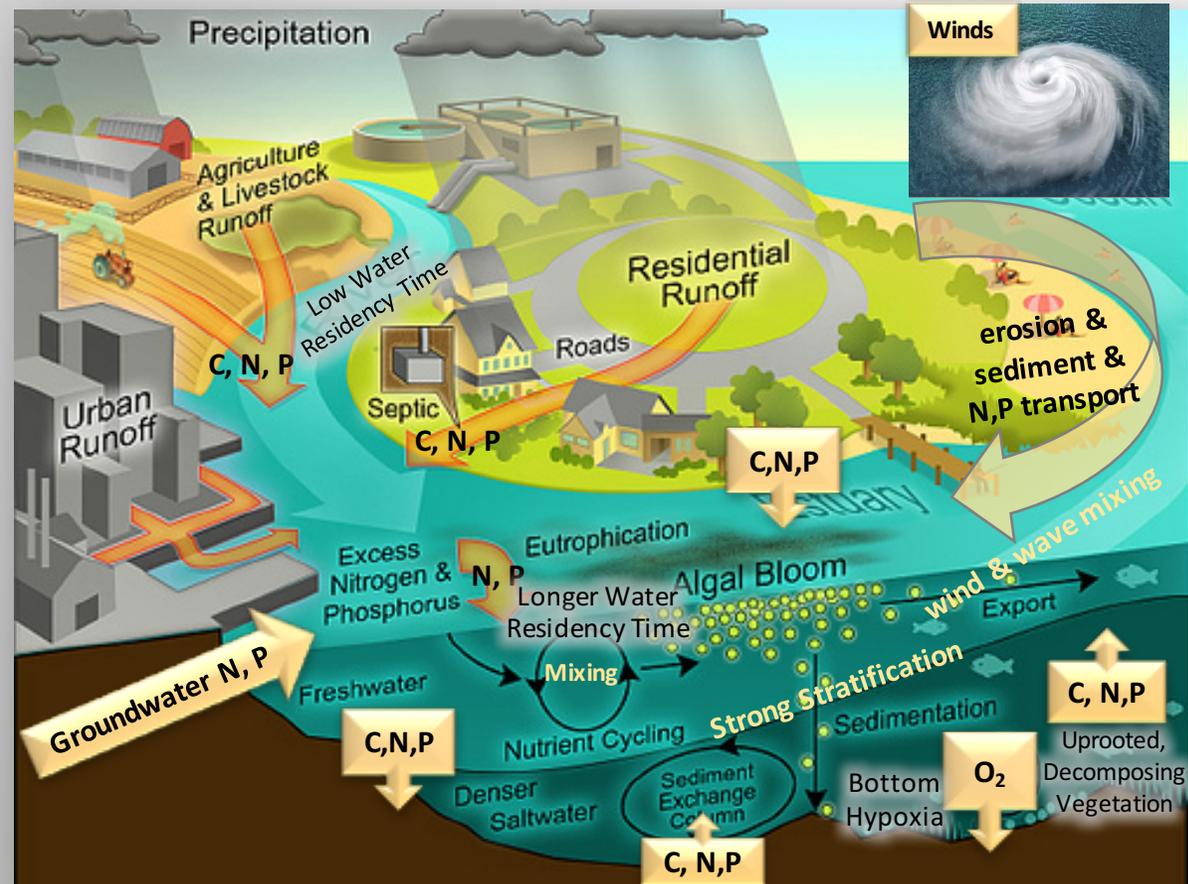
## Ammonia

## Nitrate & Nitrite

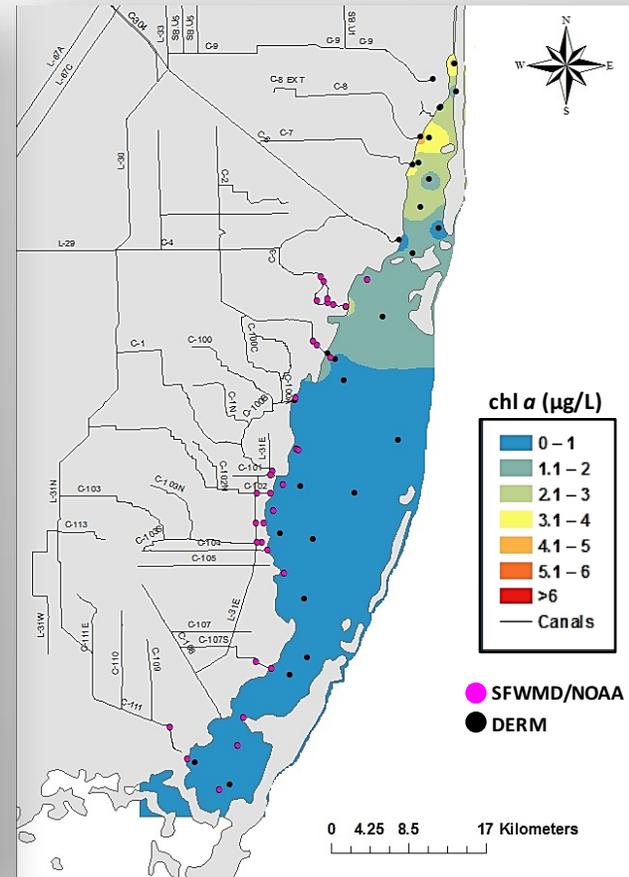


# Post-Hurricane Eutrophication of the Bay

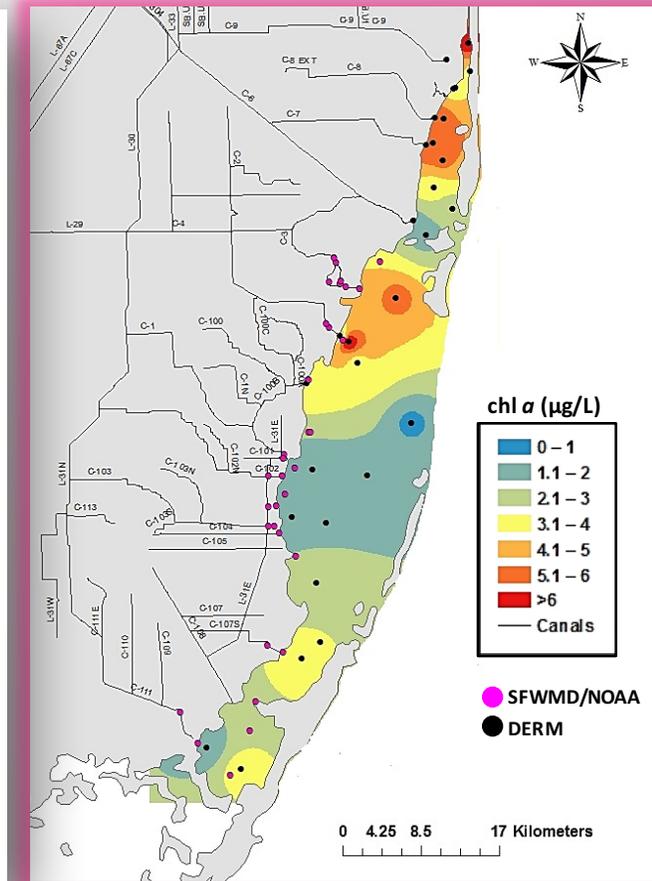
## Functional Linkages Between Hydrology, Nutrient Inputs & Phytoplankton Blooms After the Hurricane



**August 2017**  
(3 weeks before Hurricane Irma)

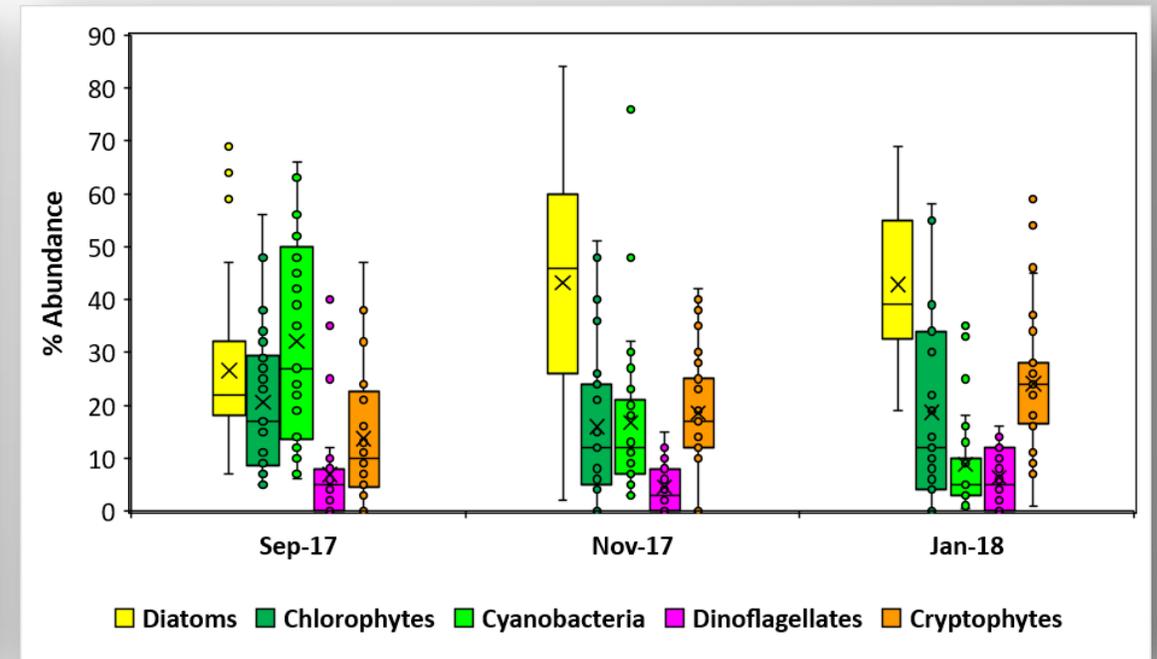
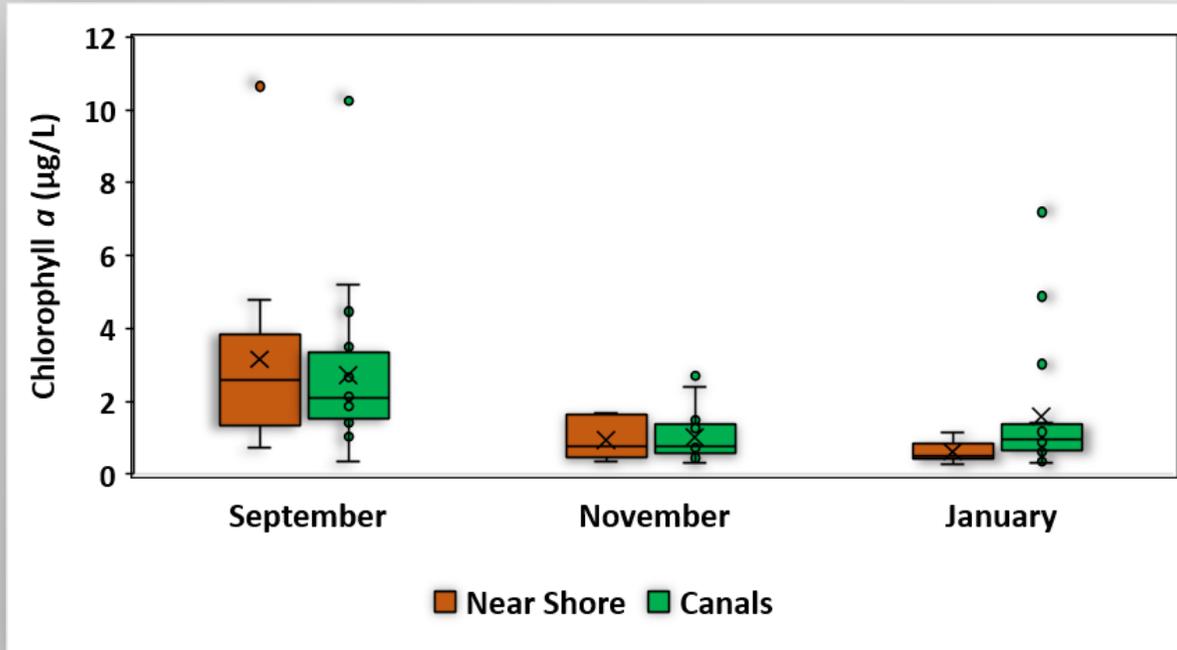


**September 2017**  
(2 weeks after Hurricane Irma)



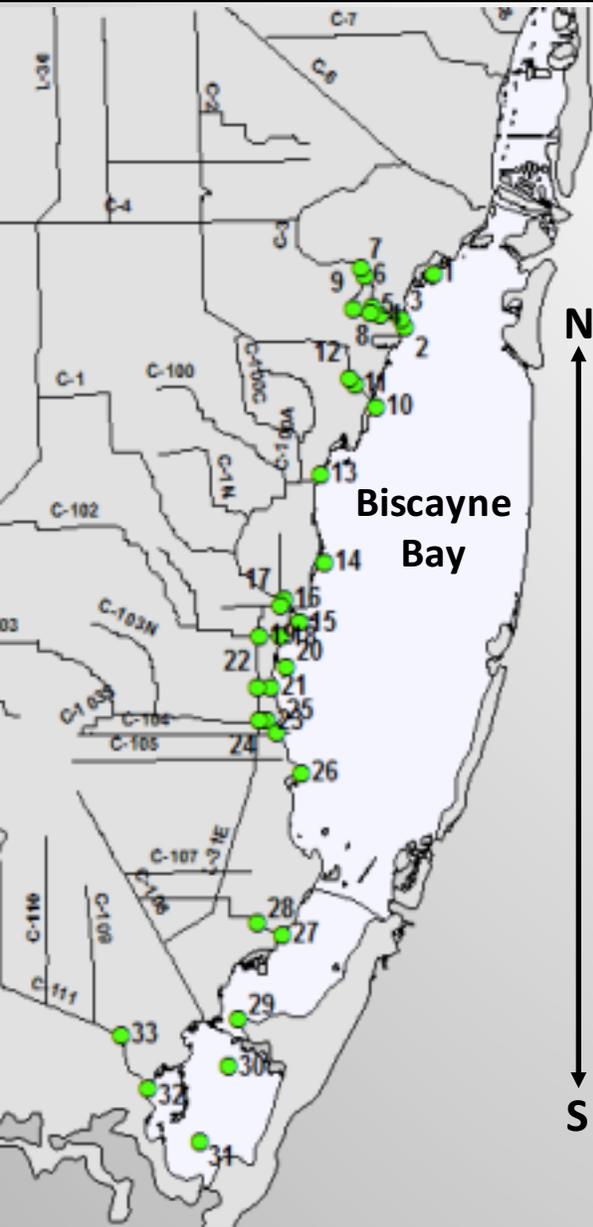
Modified from Pearl (2006)

# Spatial & Temporal Changes in Algal Dynamics Near Shore

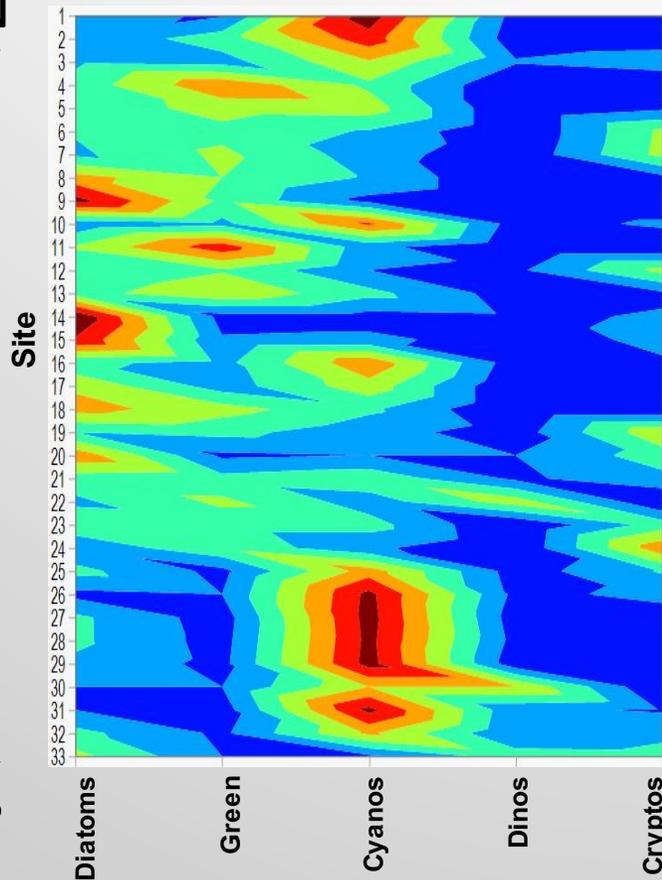


- Algal biomass was significantly higher in September compared to November & January
- Cyanobacteria were most abundant in September, but they were outcompeted by diatoms & green algae (in the canals) in the following months

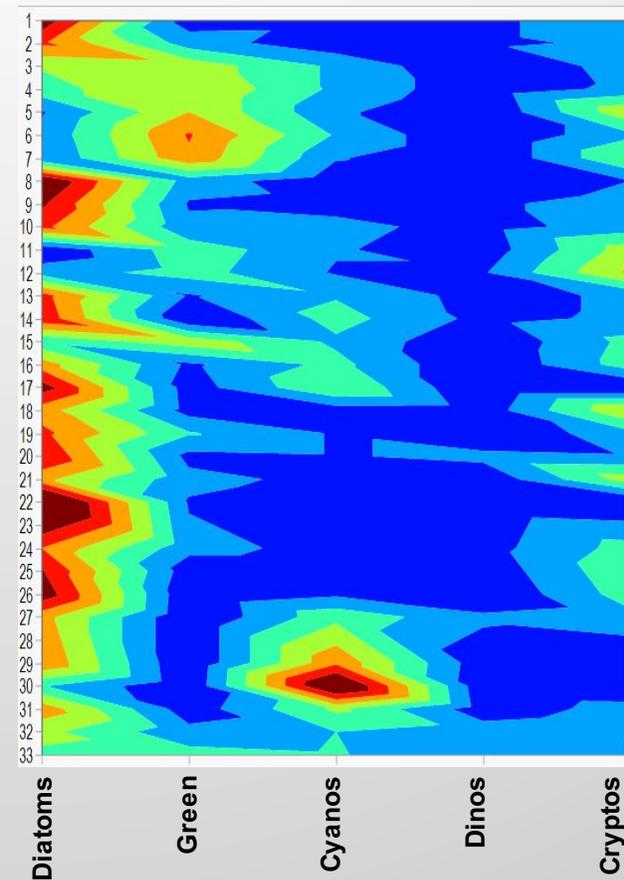
# Changes in Relative Abundance of Phytoplankton Classes in Canals & Near Shore



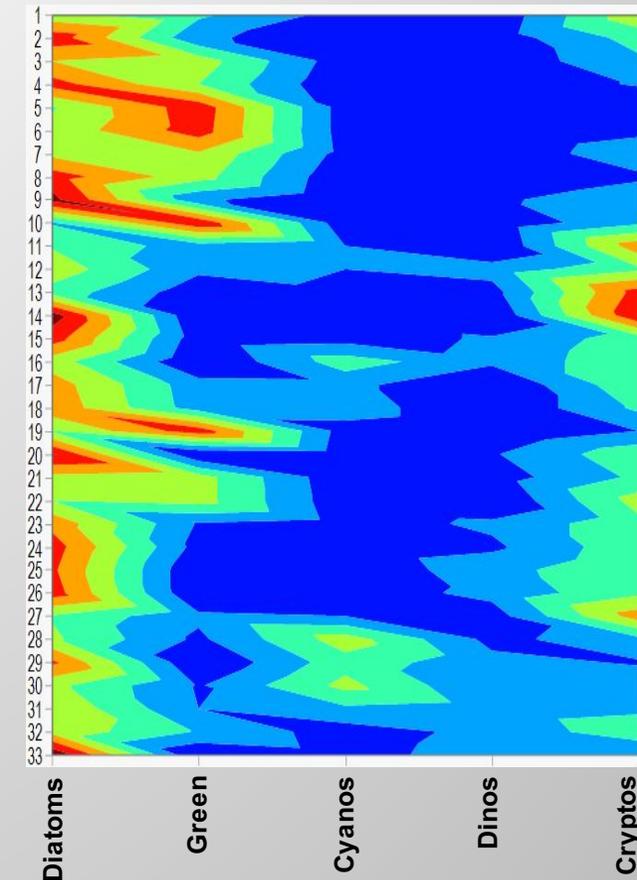
**September 2017**  
(2 weeks after Hurricane Irma)



**November 2017**  
(9 weeks after Hurricane Irma)



**January 2018**  
(18 weeks after Hurricane Irma)

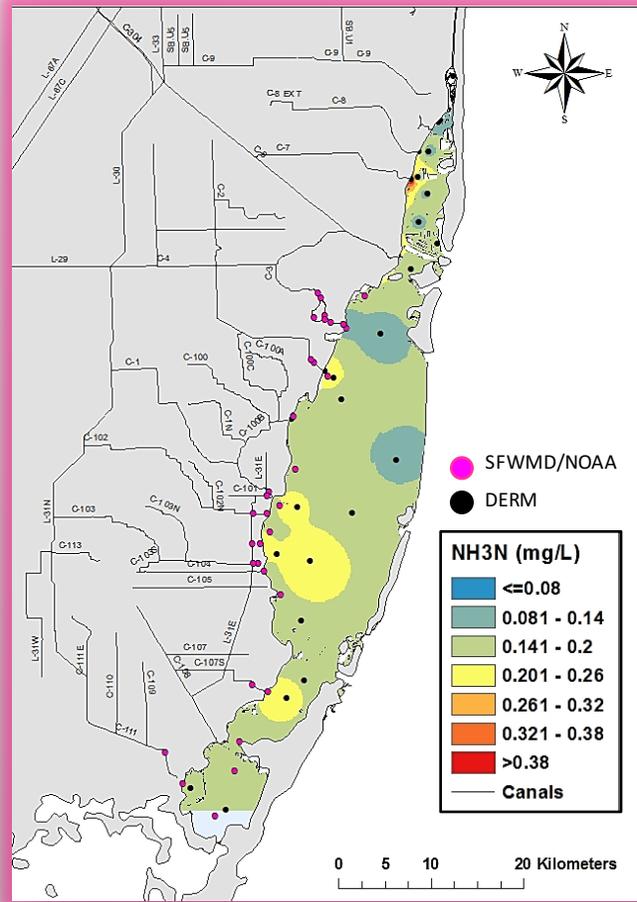


Relative Abundance

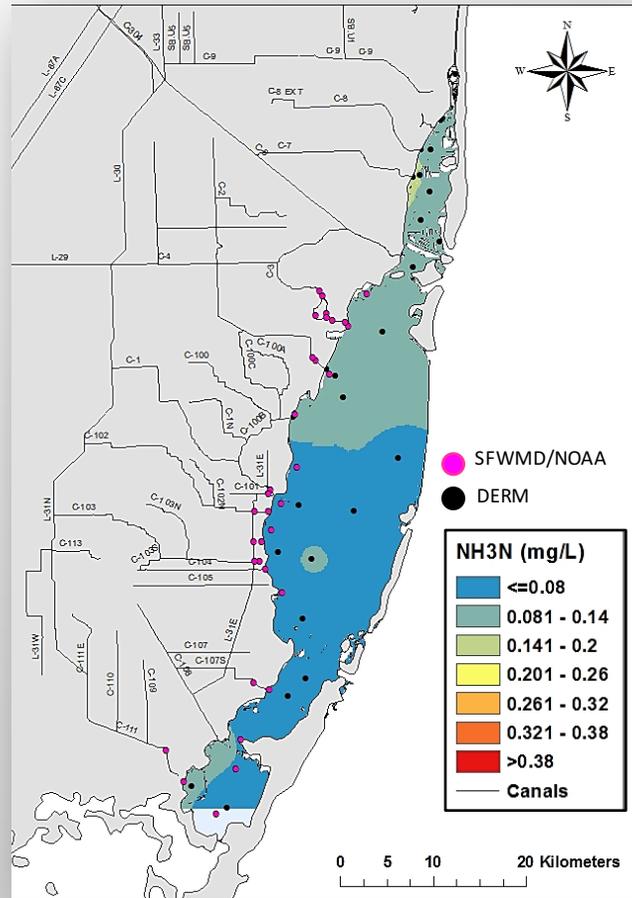


# Changes in Ammonia Concentration

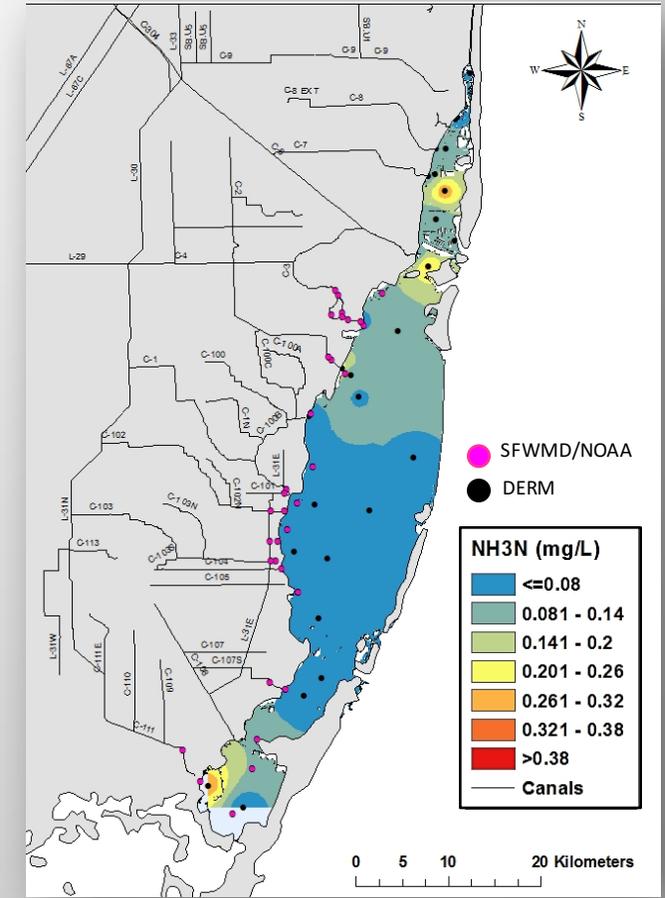
**September 2017**  
(2 weeks after Hurricane Irma)



**November 2017**  
(9 weeks after Hurricane Irma)

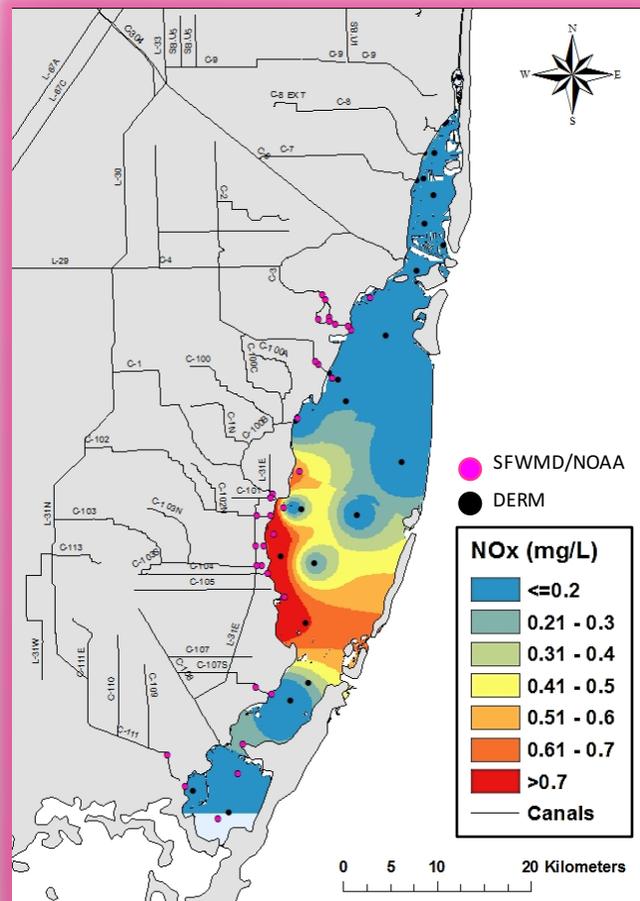


**January 2018**  
(18 weeks after Hurricane Irma)

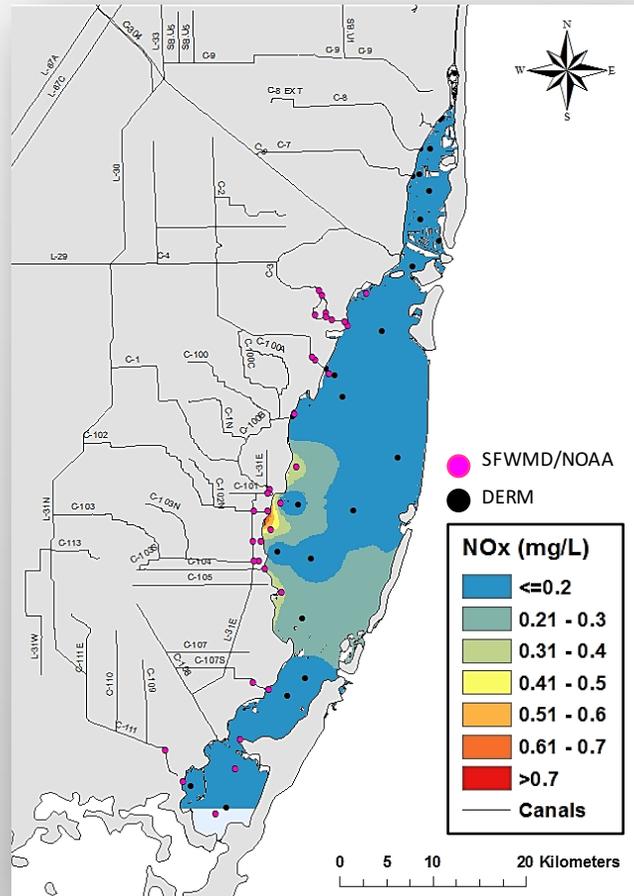


# Changes in Nitrate & Nitrite Concentration

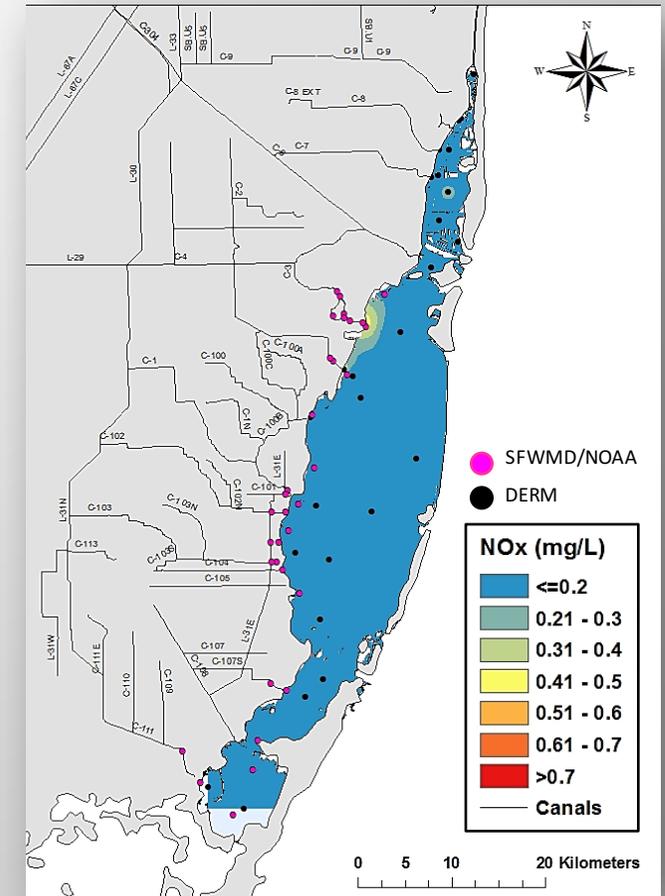
September 2017  
(2 weeks after Hurricane Irma)



November 2017  
(9 weeks after Hurricane Irma)

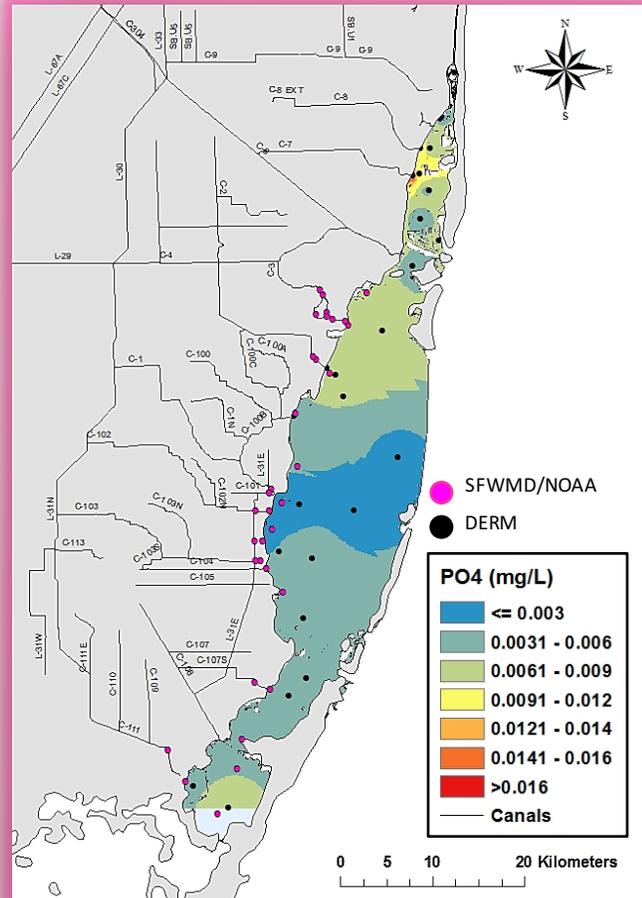


January 2018  
(18 weeks after Hurricane Irma)

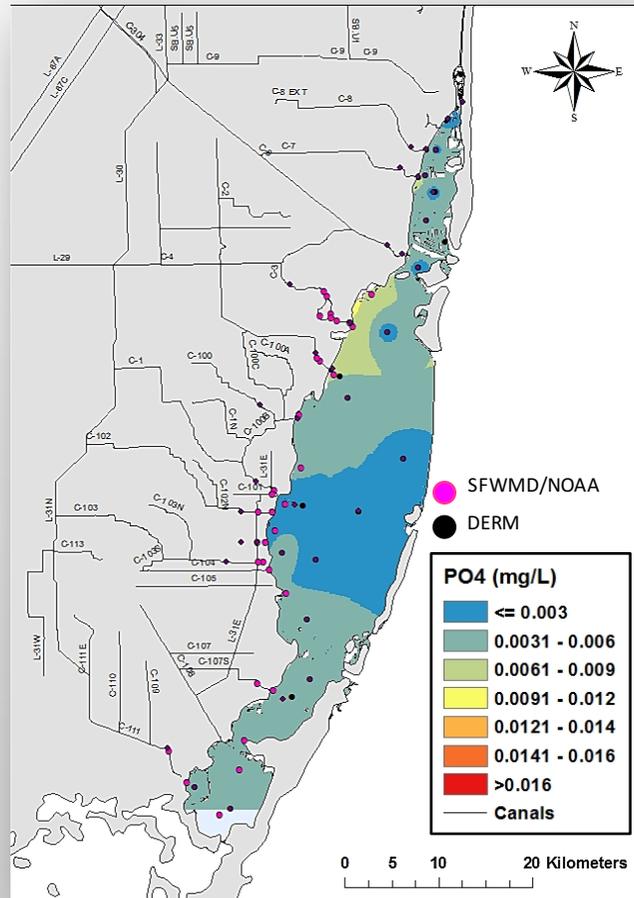


# Changes in Ortho-Phosphate Concentration

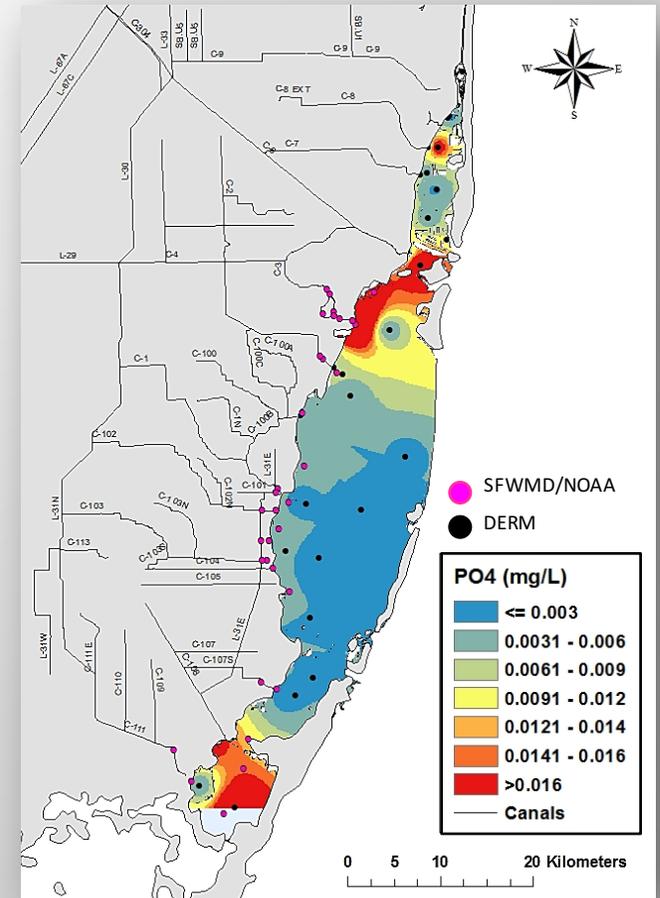
September 2017  
(2 weeks after Hurricane Irma)



November 2017  
(9 weeks after Hurricane Irma)

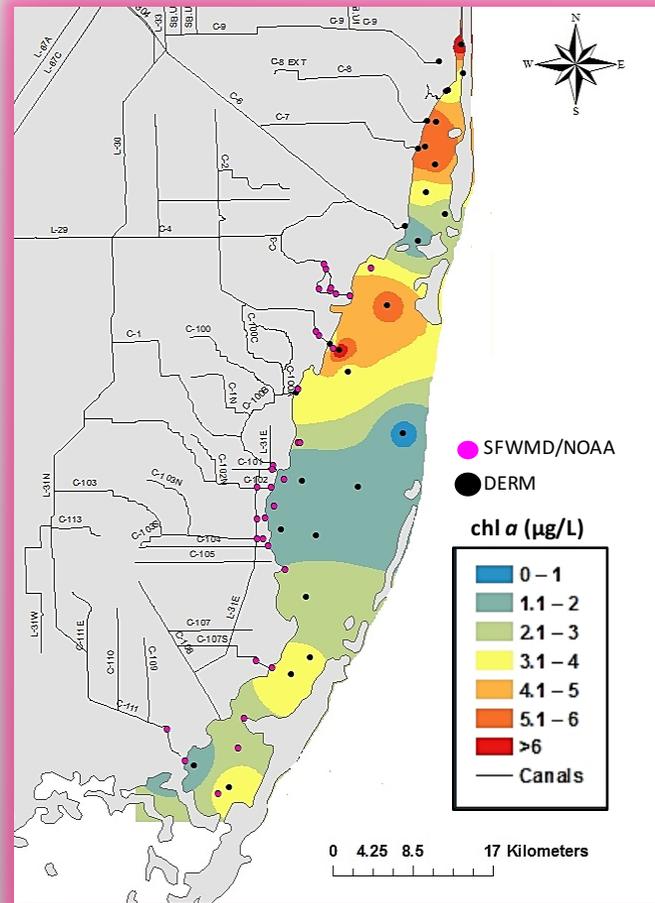


January 2018  
(18 weeks after Hurricane Irma)

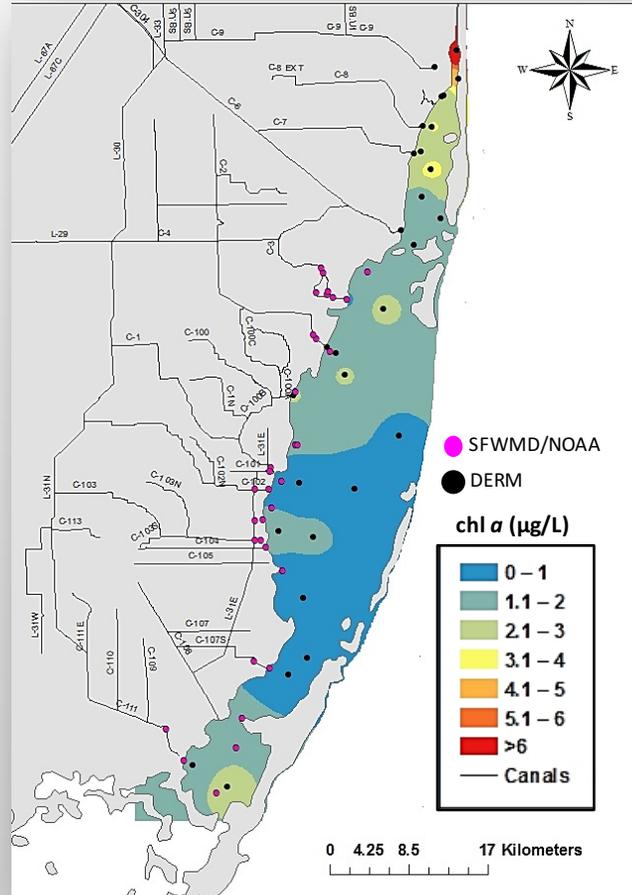


# Changes in Algal Biomass

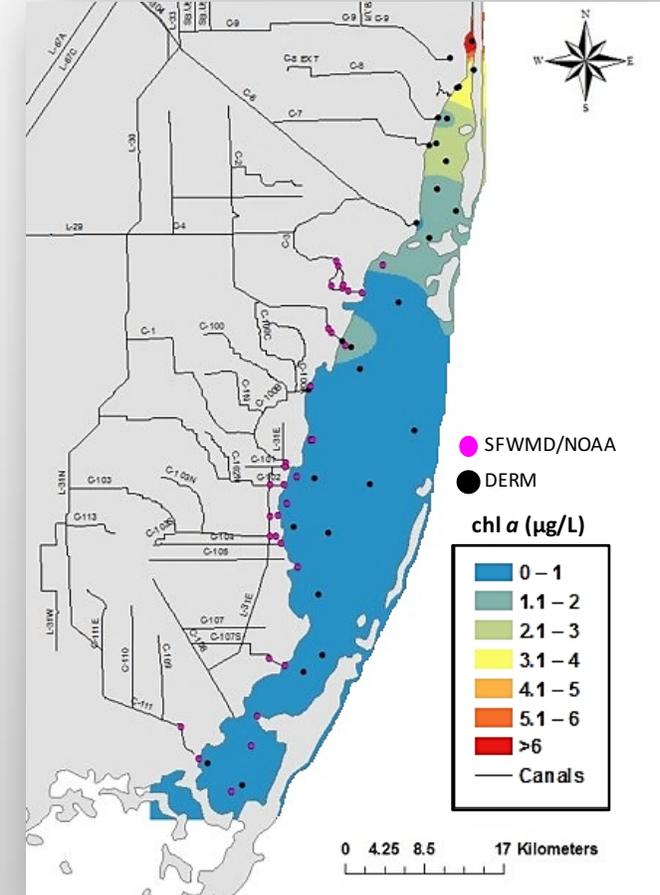
**September 2017**  
(2 weeks after Hurricane Irma)



**November 2017**  
(9 weeks after Hurricane Irma)



**January 2018**  
(18 weeks after Hurricane Irma)



## Conclusions

- Freshwater inflows from the mainland, sediments resuspension and decomposition of organic materials resulted in nutrient enrichment of the Bay
- Storm surge & high, post-hurricane freshwater discharges from canals resulted in short-term, sharp salinity & temperature changes near shore
- Algal biomass significantly increased near shore in the weeks following the Hurricane as freshwater inflows subsided and water residency time increased
- Algal biomass in the canals increased in the months following the Hurricane, when freshwater discharges subsided
- Cyanobacteria abundance increased significantly after the Hurricane, but they were outcompeted by diatoms & green algae (in canals) in the following months
- No evidence of a long-term water quality decline or hurricane-induced algal blooms was observed