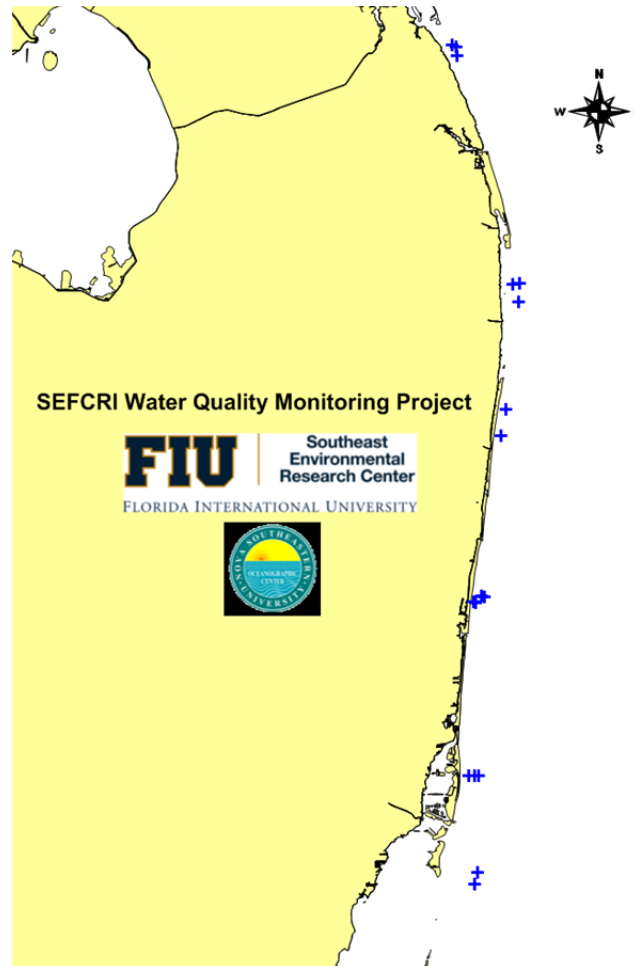


# **2011 ANNUAL REPORT**

## **OF THE WATER QUALITY MONITORING PROJECT**

### **FOR THE SOUTHEAST FLORIDA CORAL REEF INITIATIVE (SEFCRI)**



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## **EXECUTIVE SUMMARY**

This report serves as a summary of our efforts to date in the execution of the Water Quality Monitoring Project for the Southeast Florida Coral Reef Initiative (SEFCRI). The period of record for this report is Dec. 2009 – Sep. 2011 and includes data from 8 quarterly sampling events at 22 stations along the coast including Miami-Dade, Broward, Palm Beach, and Martin Counties.

Field parameters measured at each station include salinity (practical salinity scale), temperature ( $^{\circ}\text{C}$ ), dissolved oxygen (DO,  $\text{mg l}^{-1}$ ), turbidity (NTU), and light attenuation ( $K_d$ ,  $\text{m}^{-1}$ ). Water quality variables include the dissolved nutrients nitrate ( $\text{NO}_3^-$ ), nitrite ( $\text{NO}_2^-$ ), ammonium ( $\text{NH}_4^+$ ), dissolved inorganic nitrogen (DIN), and soluble reactive phosphate (SRP). Total unfiltered concentrations include those of nitrogen (TN), organic nitrogen (TON), organic carbon (TOC), phosphorus (TP), silicate ( $\text{SiO}_2$ ) and chlorophyll *a* (CHLA,  $\mu\text{g l}^{-1}$ ). All values are reported in ppm unless noted otherwise.

Although this project is relatively new, several important results have been realized so far. First, is documentation of differences in water quality among regions as clustered by county. Ongoing quarterly sampling of 22 stations in the SEFCRI has provided us with the ability to explore the spatial component of water quality variability in the region. By stratifying the sampling stations according to county we report some interpretations as to the relative importance of external vs. internal factors on the ambient water quality within the SEFCRI. The general consensus, for only 8 sampling event, is that the overall water quality is very good but that there are large excursions from the median due to events. Sites off Martin County were slightly elevated in DIN, TP, and CHLA but lower in salinity. We ascribe these localized effects to terrestrial freshwater inputs from the Loxahatchee River.

Trend analysis was not performed as there were only 8 sampling events spread over 2 years. However, seasonal differences were pronounced in some variables due to differences in water patterns and precipitation/terrestrial inputs between wet and dry periods.

The large scale of this monitoring program has allowed us to assemble a much more holistic view of broad physical/chemical/biological interactions occurring over the South Florida hydroscape.

Much information has been gained by inference from this type of data collection program in a sister program, the Florida Keys National Marine Sanctuary: major nutrient sources have been confirmed, relative differences in geographical determinants of water quality have been demonstrated, and large scale transport via circulation pathways have been elucidated. In addition we have shown the importance of looking "outside the box" for questions asked within. Rather than thinking of water quality monitoring as being a static, non-scientific pursuit it should be viewed as a tool for answering management questions and developing new scientific hypotheses. We expect that continued monitoring of SEFCRI will answer some of these same questions.

We continue to maintain a website (<http://serc.fiu.edu/wqmnetwork/>) where data and reports from the SEFCRI Project are available.