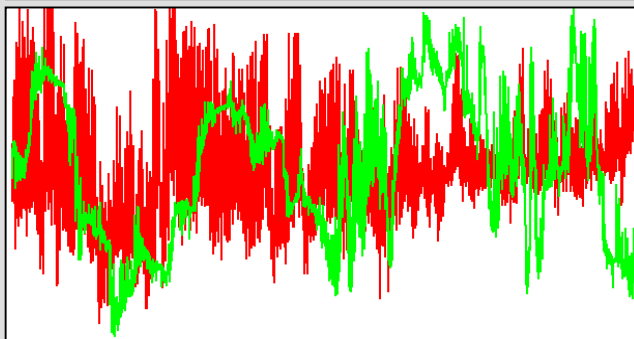


The Indian River Lagoon Observatory Network of Environmental Sensors

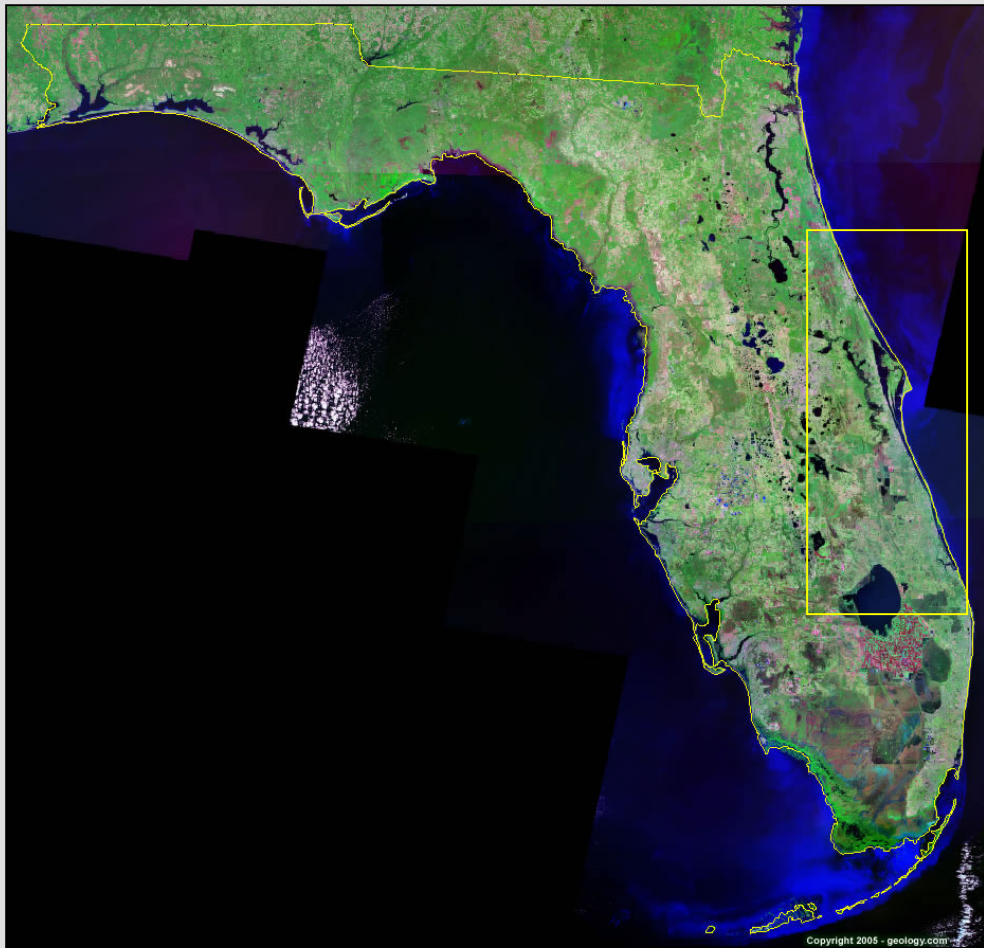


M. Dennis Hanisak and Kristen S. Davis
National Association of Marine Laboratories
Biennial Meeting October 12, 2015

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The Indian River Lagoon



Critical Issues Facing the IRL & SLE

- Excessive freshwater release
- Degradation of water quality
- Contaminant loading
- Loss of habitat
- Decline of fisheries
- Emerging diseases in marine mammals



The Indian River Lagoon Observatory (IRLO)



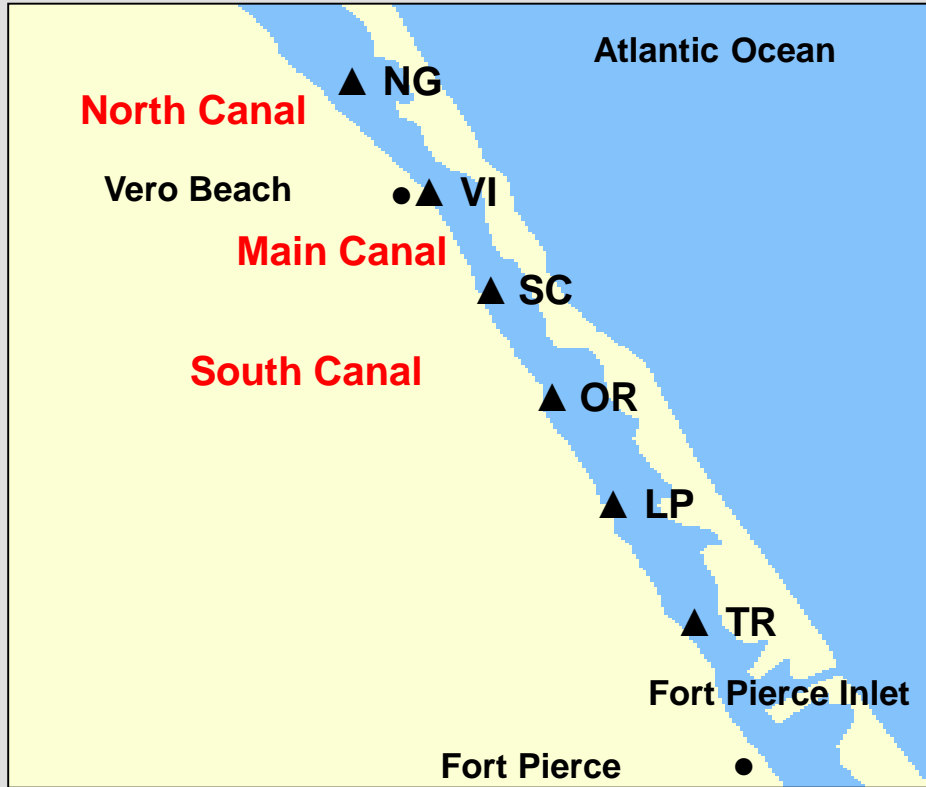
Goal: to acquire and disseminate data and knowledge on components of the IRL critical to its ecological function and its sustainable management

Key Elements of IRLO

- Long-term, multi-disciplinary, ecosystem-based approach
- Collaboration among organizations
- A network of advanced observing stations



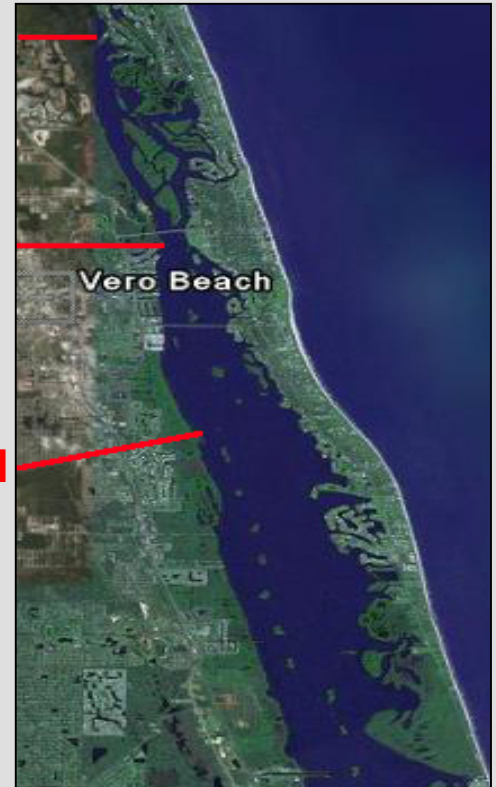
IRLO Time Series



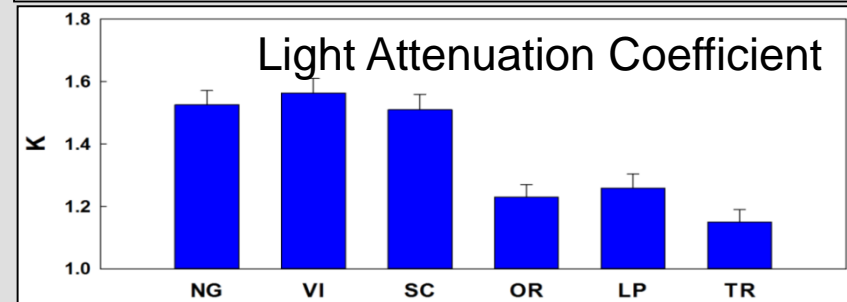
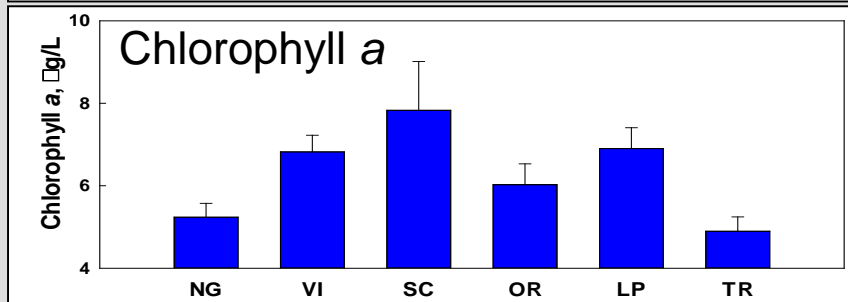
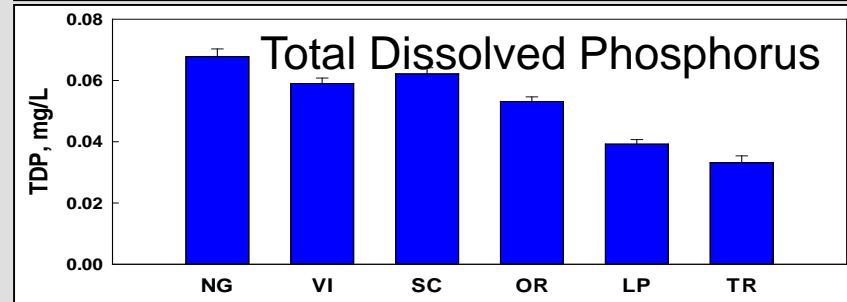
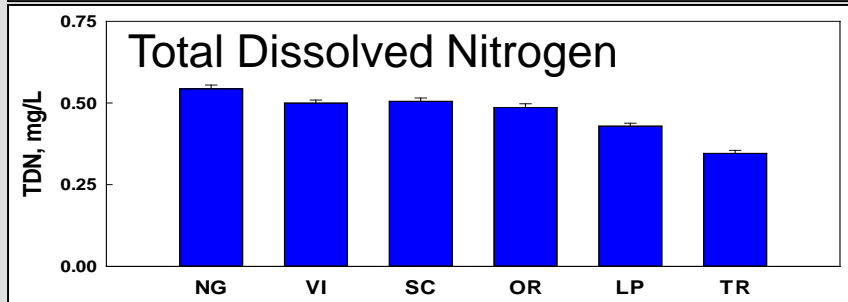
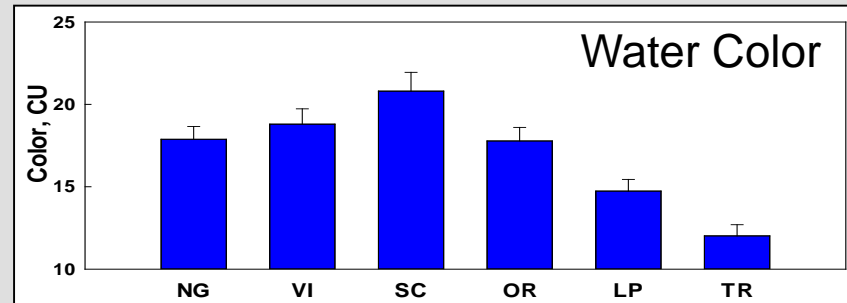
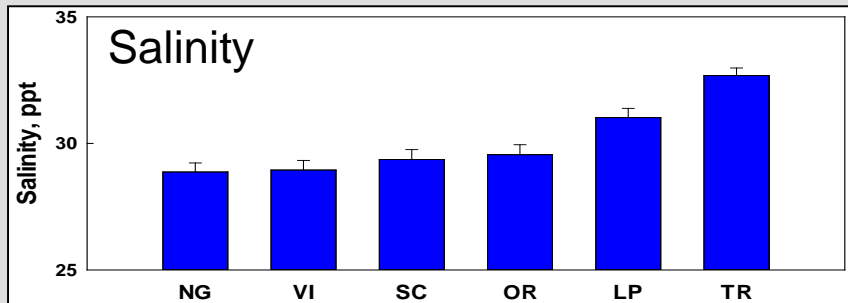
North Canal

Main Canal

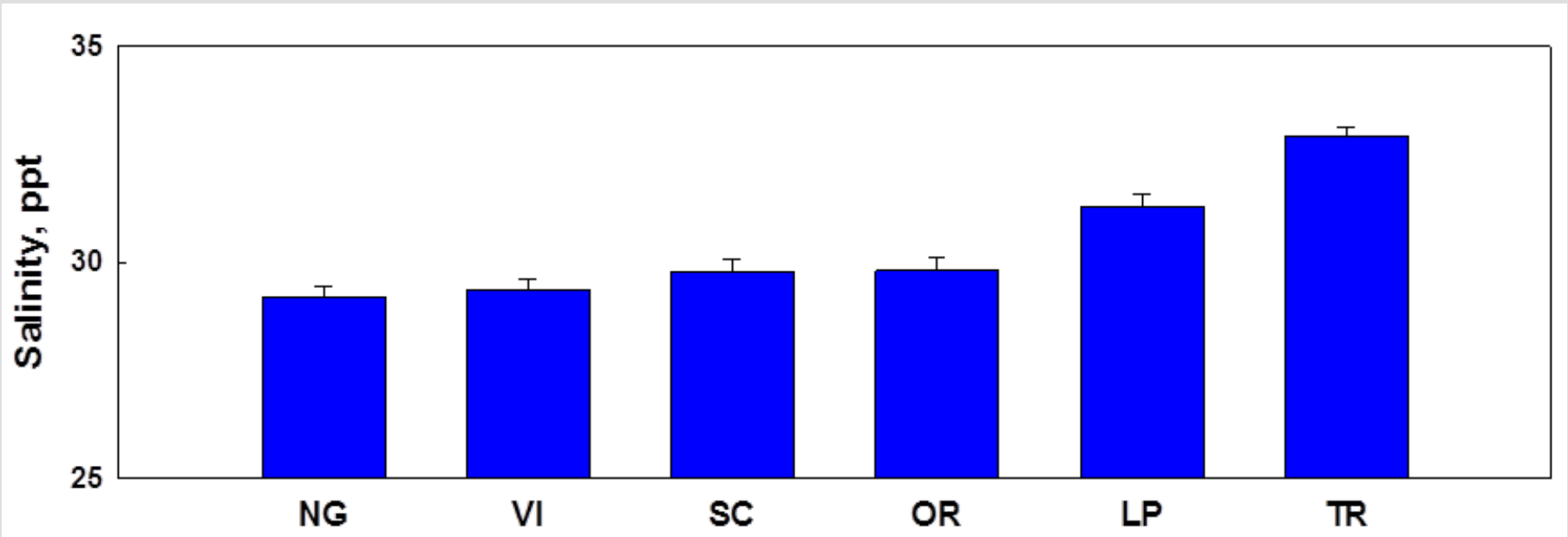
South Canal



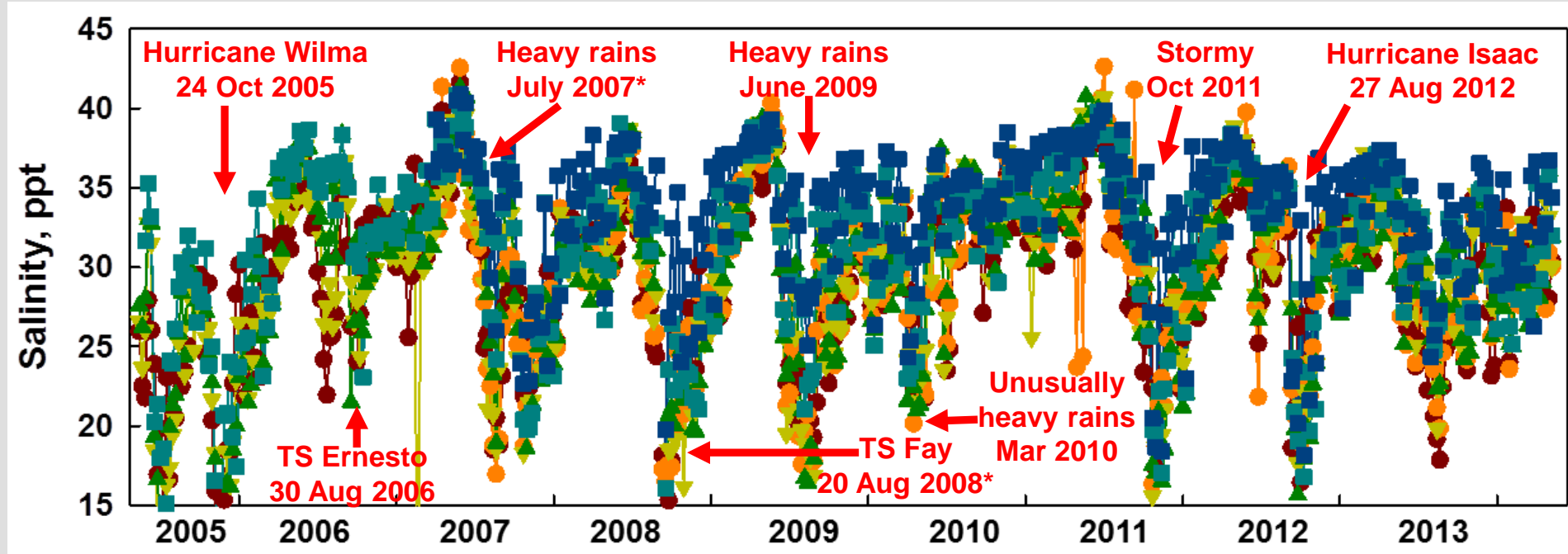
Water Quality Time Series



Salinity Time Series



Salinity Time Series



**Long Term: On average, the IRL is brushed or hit by a named storm every 2.5 yrs.
The IRL watershed has been in an extended drought during this period.**

Land/Ocean Biogeochemical Observatories (LOBOs)

Establishing a network of advanced observing stations



LOBO Overview

Launch a LOBO estuarine observation and prediction network in the IRL that will provide real-time, high-accuracy and high-resolution water quality data through a dedicated interactive website

High-resolution measurements for:

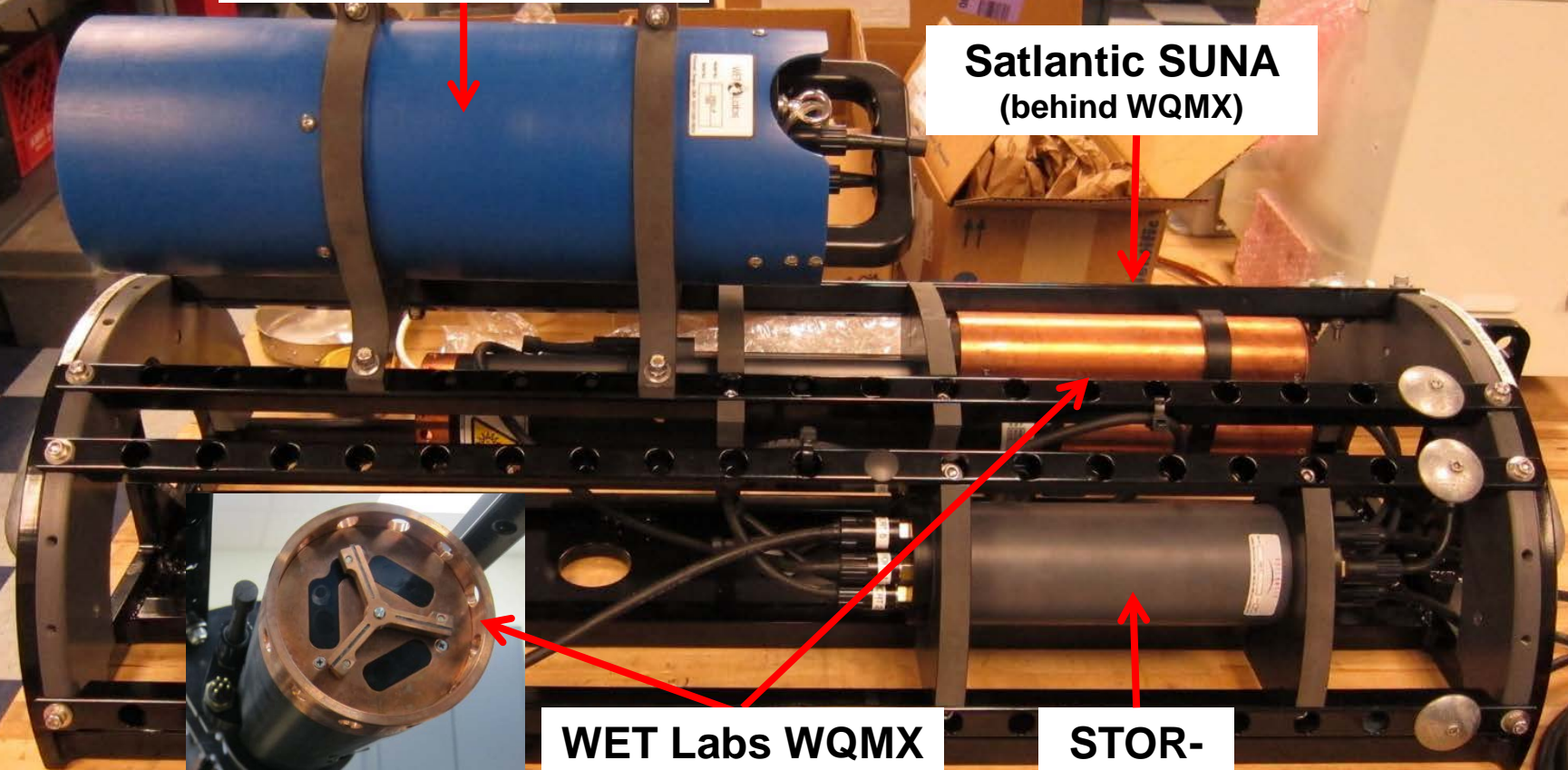
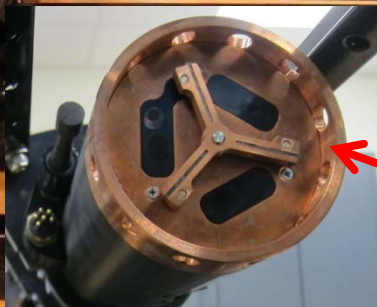
- Temperature
- Salinity
- Depth
- Current speed and direction
- Dissolved oxygen
- Turbidity
- Chromophoric dissolved organic matter (water color)
- Chlorophyll *a*
- Nitrate
- Phosphate

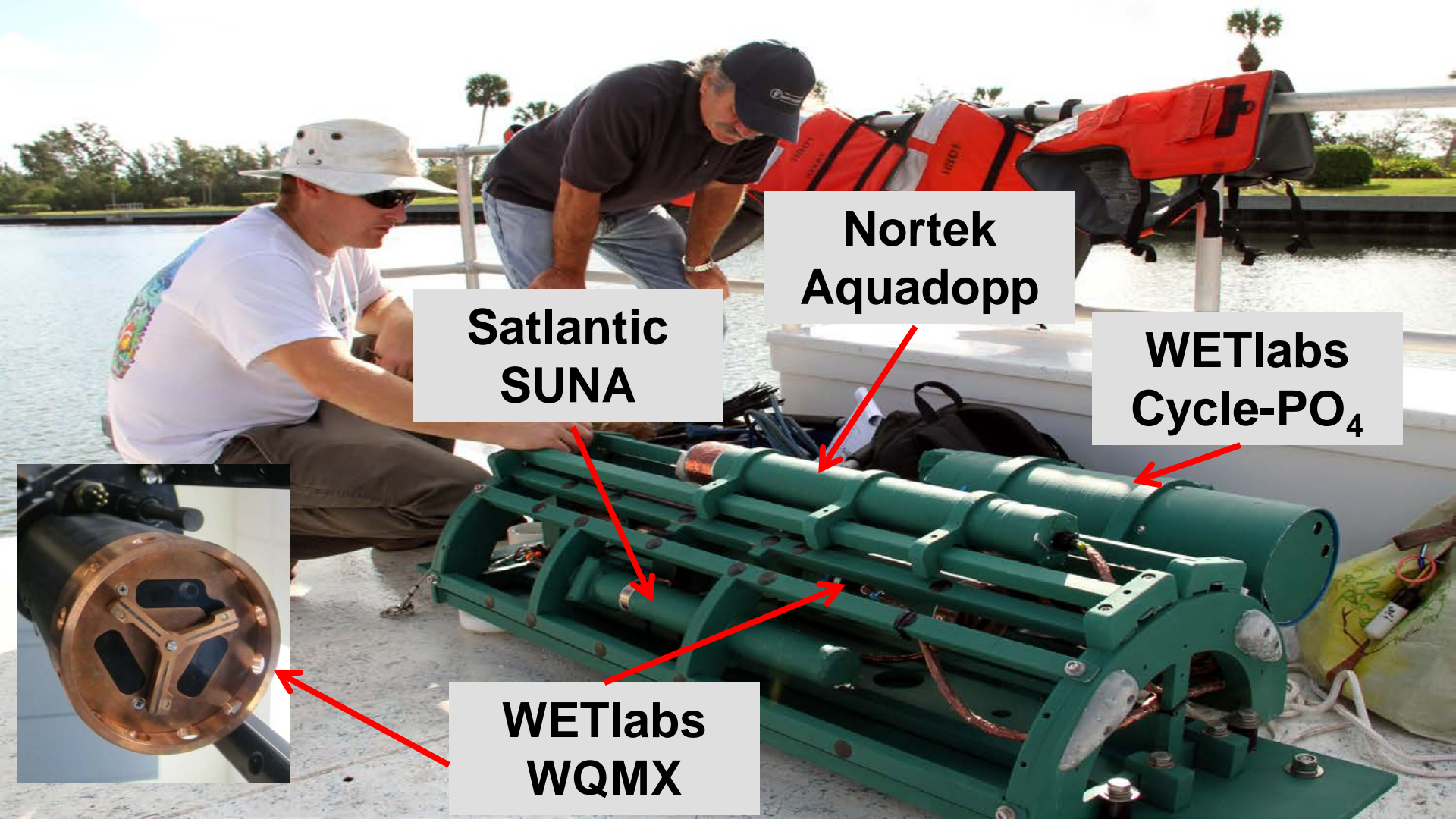
WET Labs Cycle-PO₄

Satlantic SUNA
(behind WQMX)

WET Labs WQMX

**STOR-
X**





**Nortek
Aquadopp**

**Satlantic
SUNA**

**WETlabs
Cycle-PO₄**

**WETlabs
WQMX**





Data Access

<http://fau.loboviz.com/>

Continuous real-time, high-accuracy and high-resolution observatory data available to all through a dedicated interactive website to better quantify and model relationships between environmental factors and biological processes in the IRL

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LOBO Land/Ocean Biogeochemical Observatory

HOME LOBOVIZ CGI QA/QC WIRELESS GE ABOUT CONTACT

Latest. *Click site name for data.*

Weather
IRL-LP Indian River Lagoon - Link Port
2015-05-19 17:00:00 EST [Q](#)

IRL-LP Indian River Lagoon - Link Port
2015-05-19 17:00:00 EST [Q](#)


IRL-FP Indian River Lagoon - Fort Pierce
2015-05-19 17:00:00 EST [Q](#)

IRL-VB Indian River Lagoon - Vero Beach
2015-05-19 17:00:00 EST [Q](#)

IRL-SB Indian River Lagoon - Sebastian
2015-05-19 17:00:00 EST [Q](#)

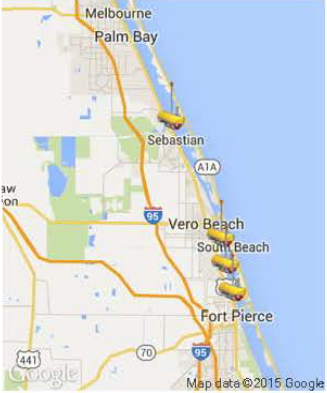
[Google EARTH](#)
[WAP Device](#)

FAU Harbor Branch Indian River Lagoon Observatory



The Indian River Lagoon is situated along 156 miles of Florida coast. The Indian River Lagoon Observatory (IRLO) Program was established by FAU's Harbor Branch to facilitate research as a long-term, multi-disciplinary, ecosystem-based approach to monitoring and studying one of Florida's most significant assets.

The Land/Ocean Biogeochemical Observatory (LOBO) network enables researchers to follow environmental changes in the IRL, assist resource and planning managers to make informed decisions, model and correlate environmental data to biological, chemical and physical phenomena, and contribute to education and public outreach on the lagoon. LOBO 1 is located in the IRL near the mouth of the Harbor Branch Channel (Link Port).

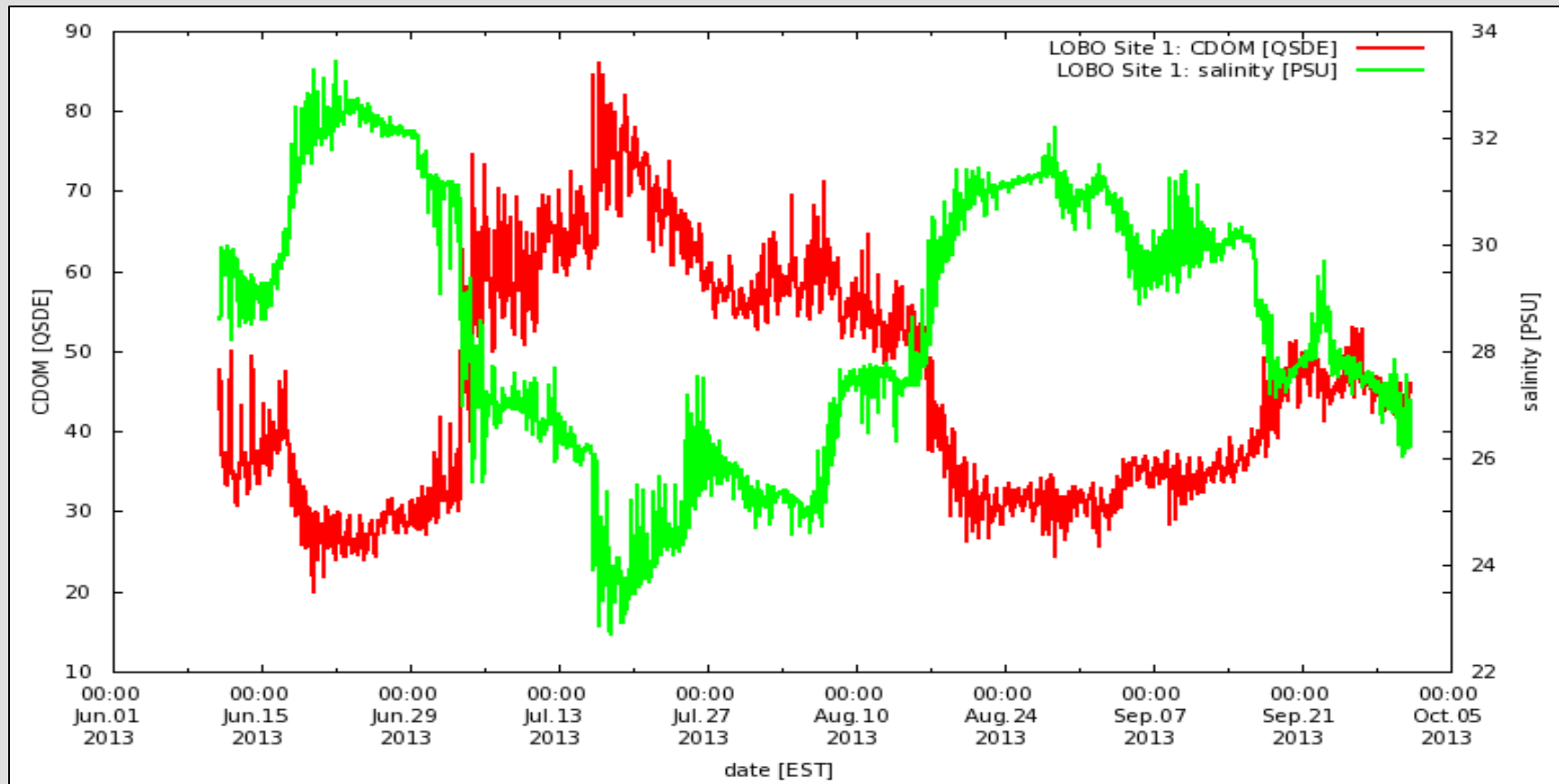


Archived Data

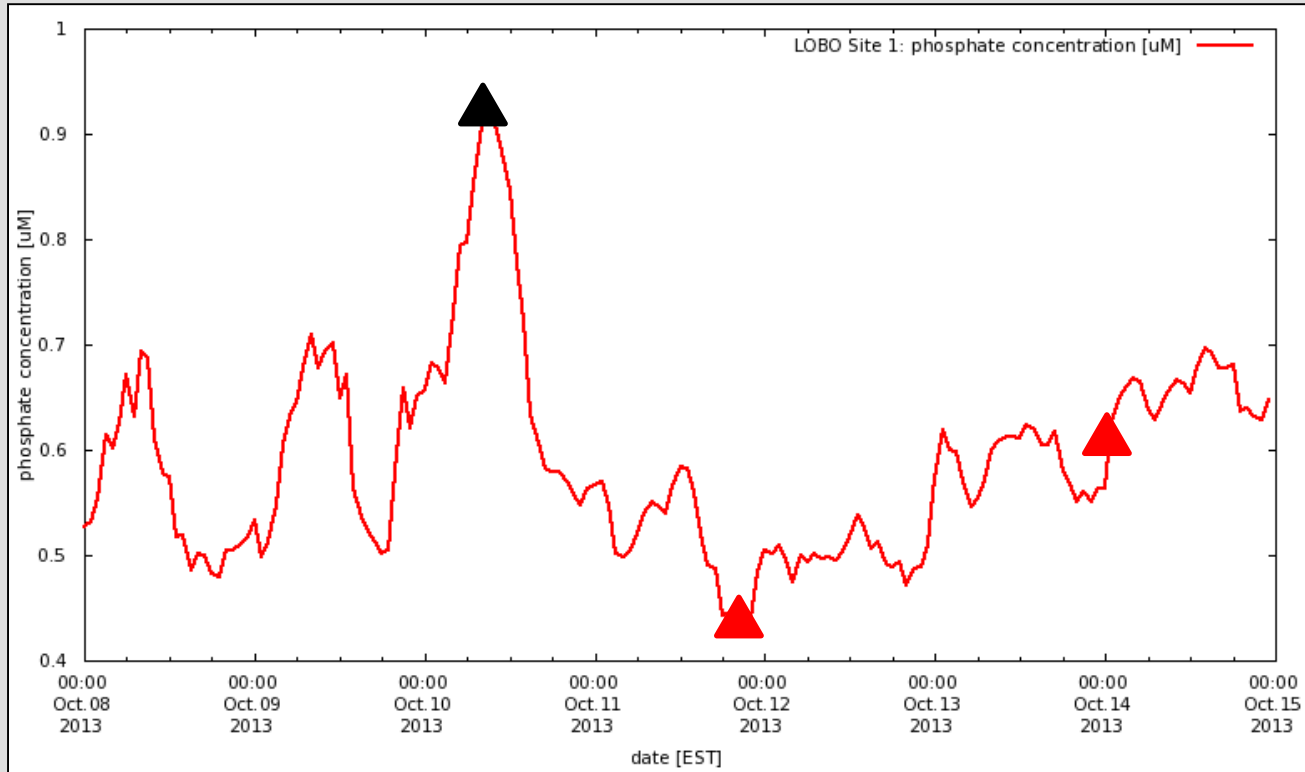
Use **LOBOViz** to graph and download archived data from this LOBO node.

LOBO Time Series

Salinity & Water Color (CDOM)

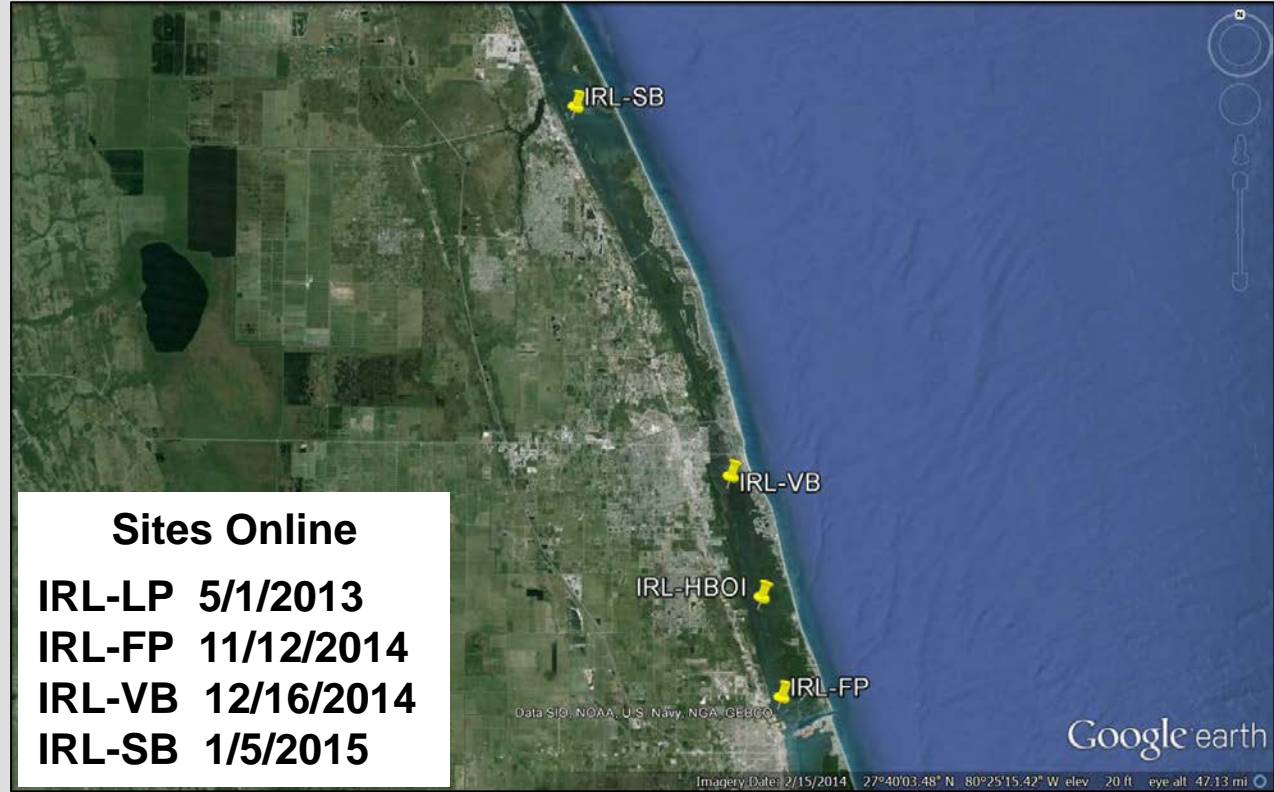
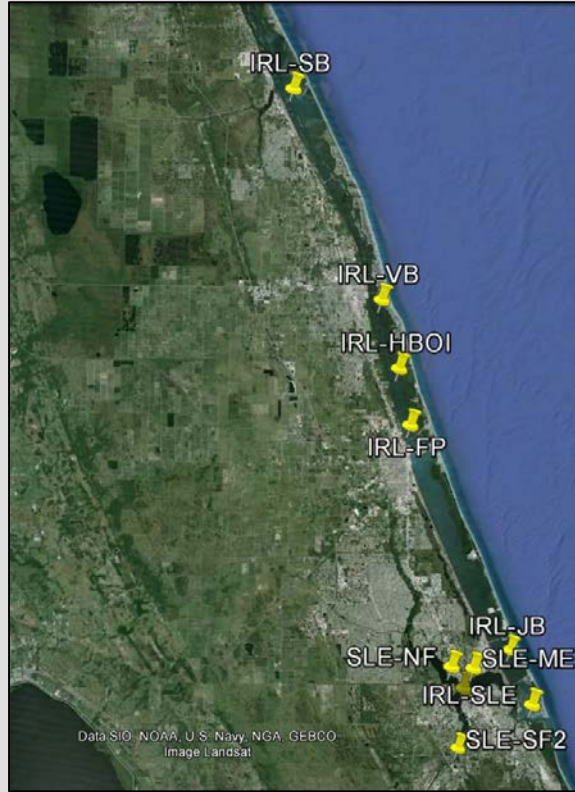


LOBO Time Series

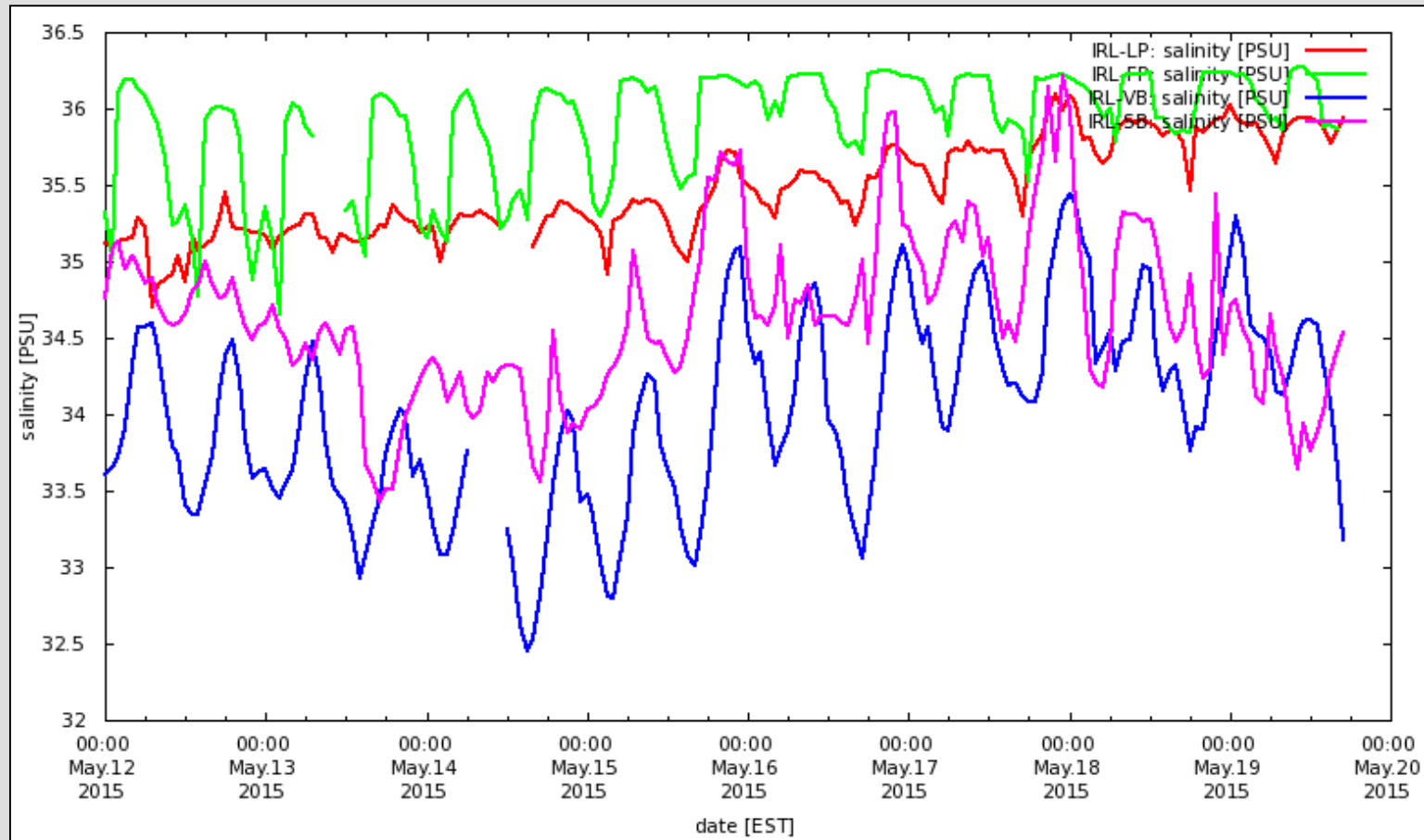


High frequency monitoring provides much more data and captures events missed by discrete sampling

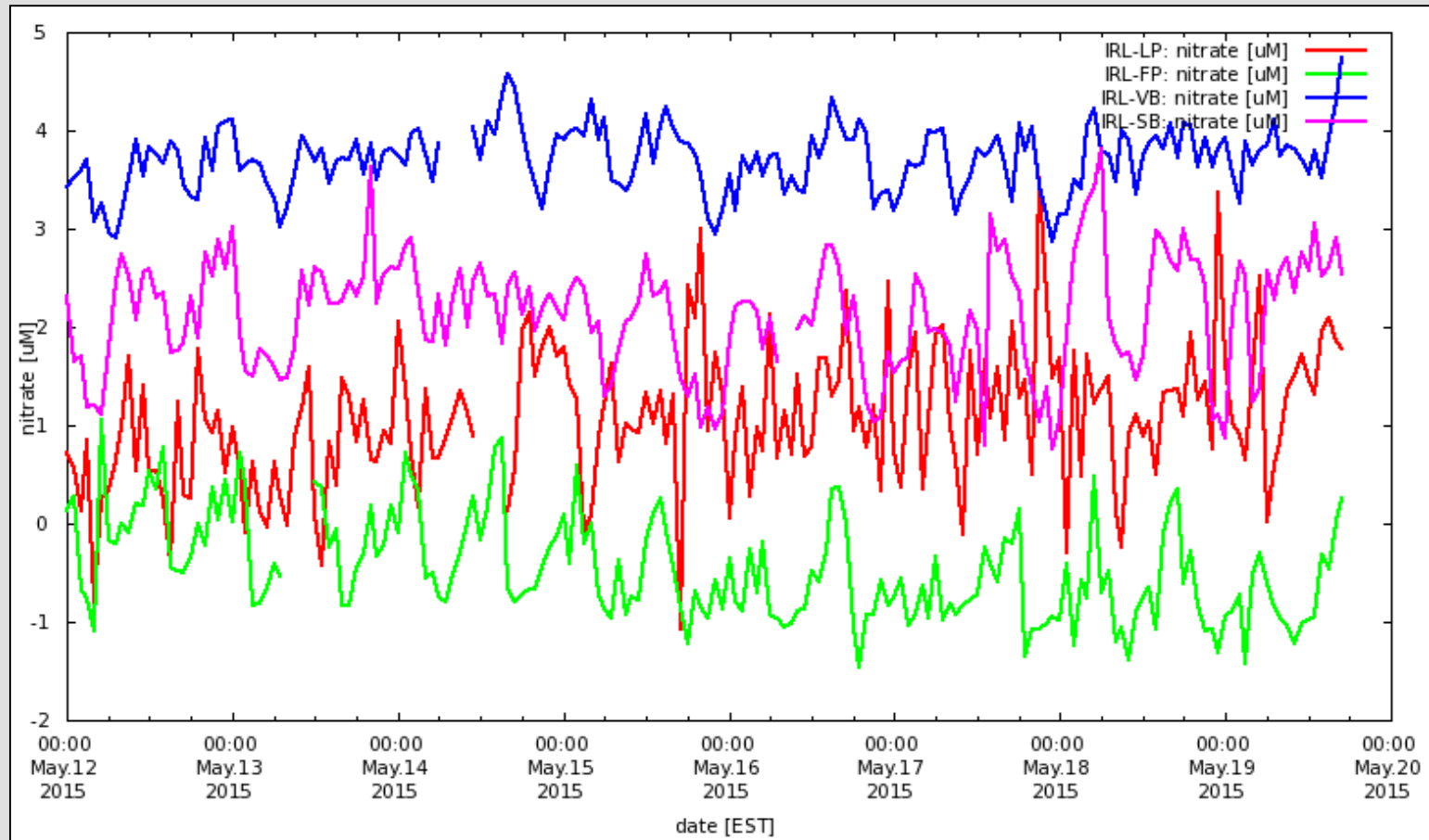
IRLO Network



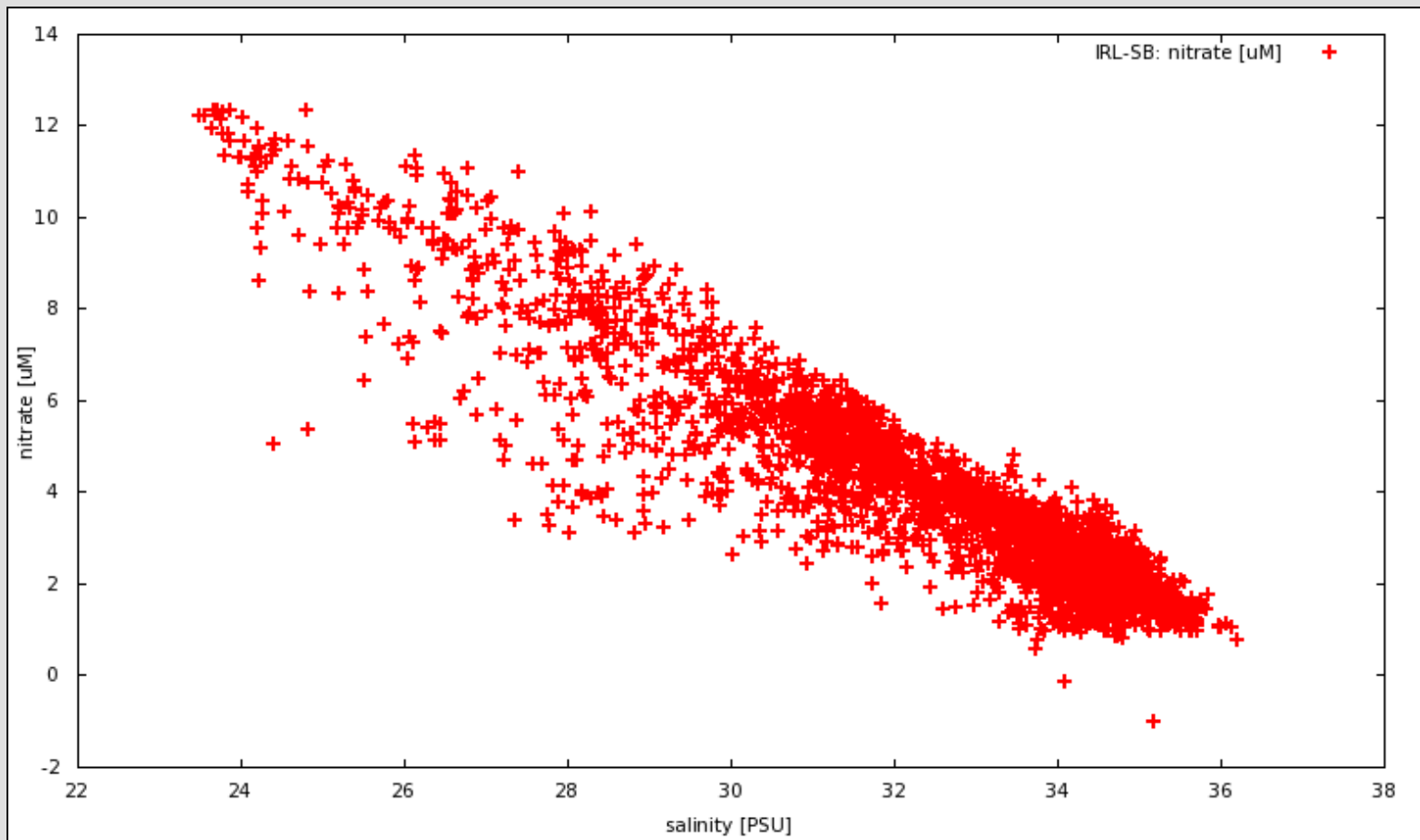
Spatial and Temporal Variability – Salinity



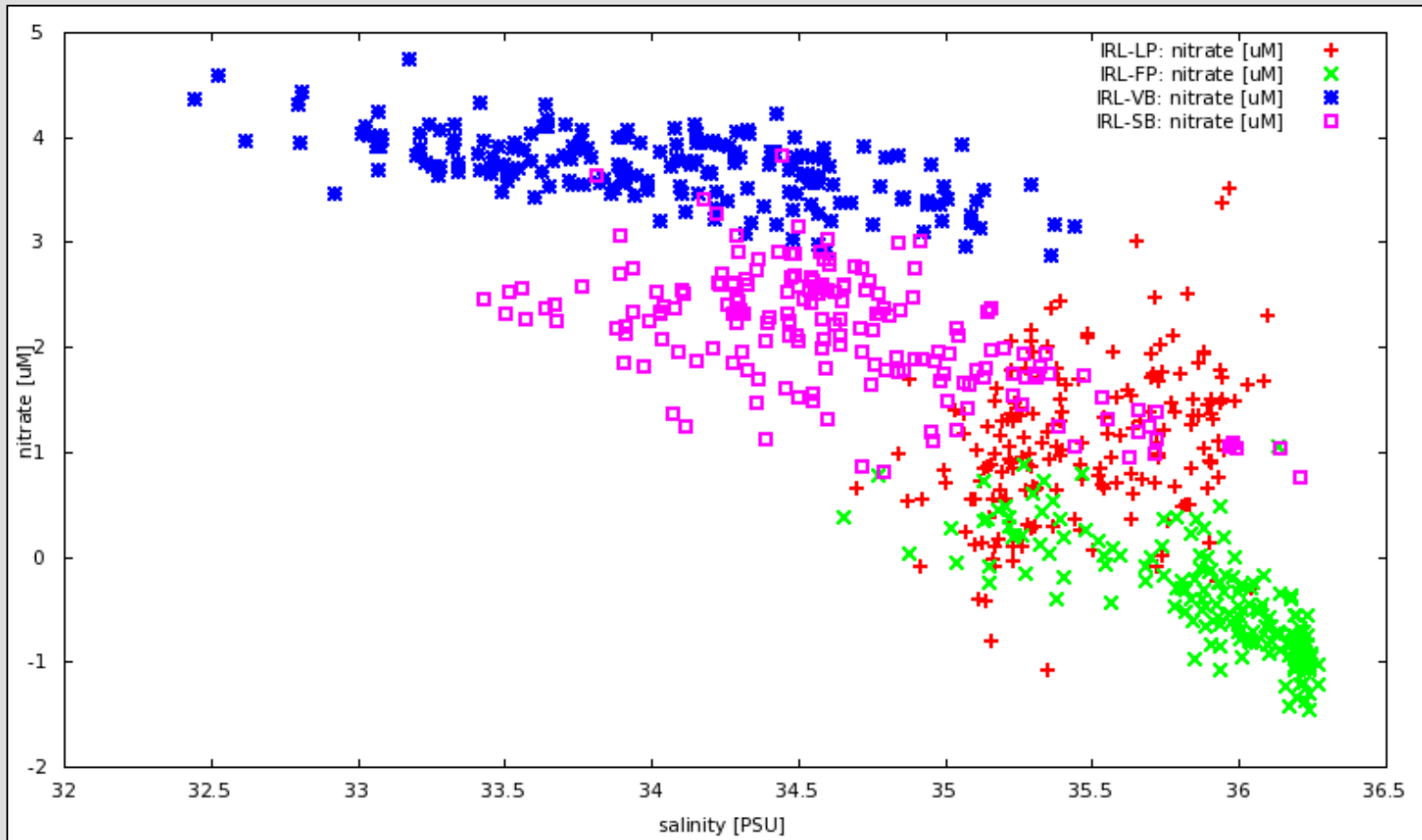
Spatial and Temporal Variability – Nitrate



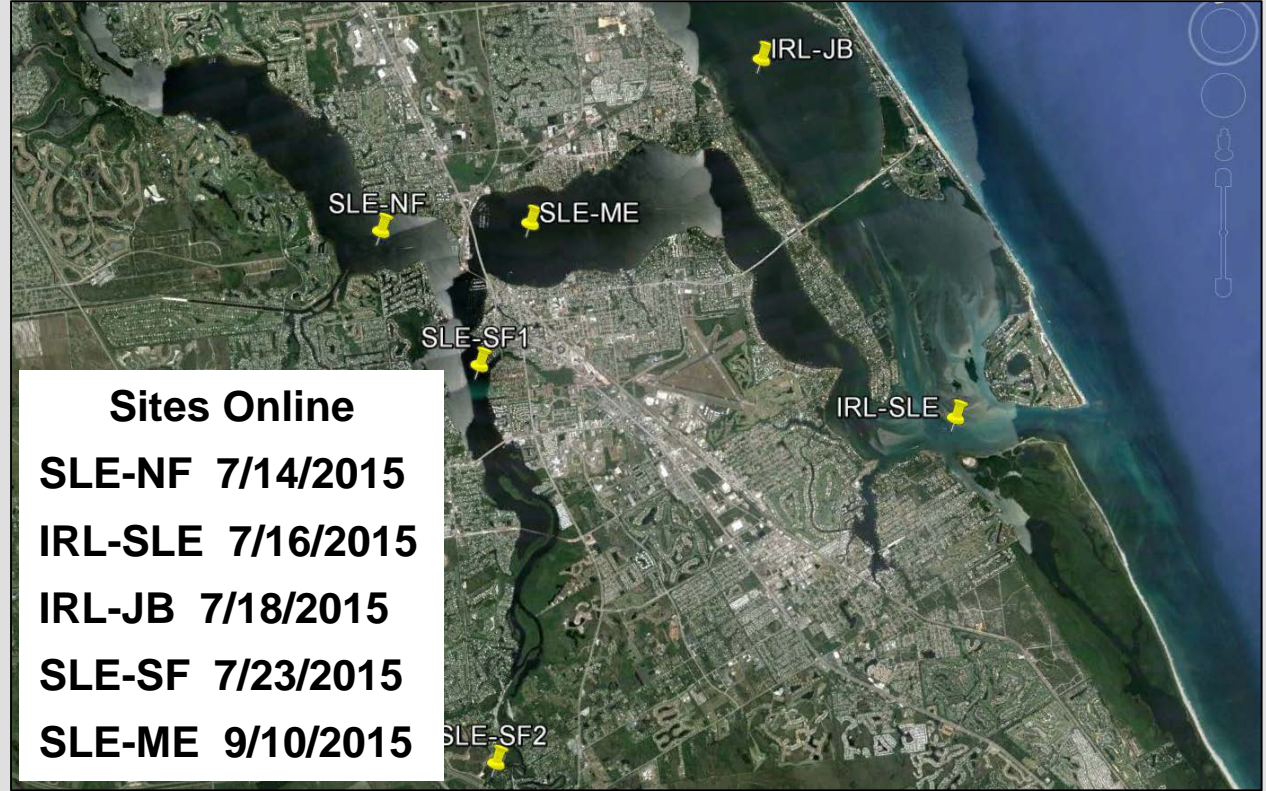
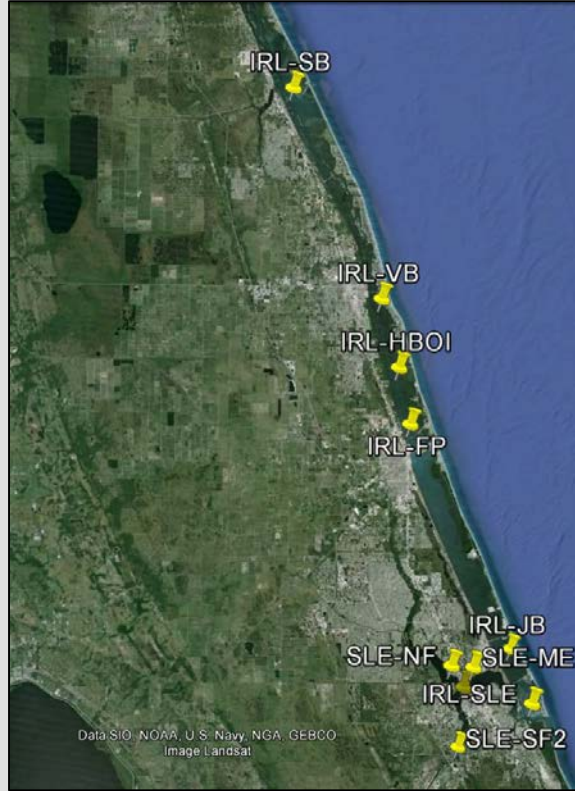
Nitrate vs. Salinity (SB)



Nitrate vs. Salinity (4 Stations)



IRLO Network



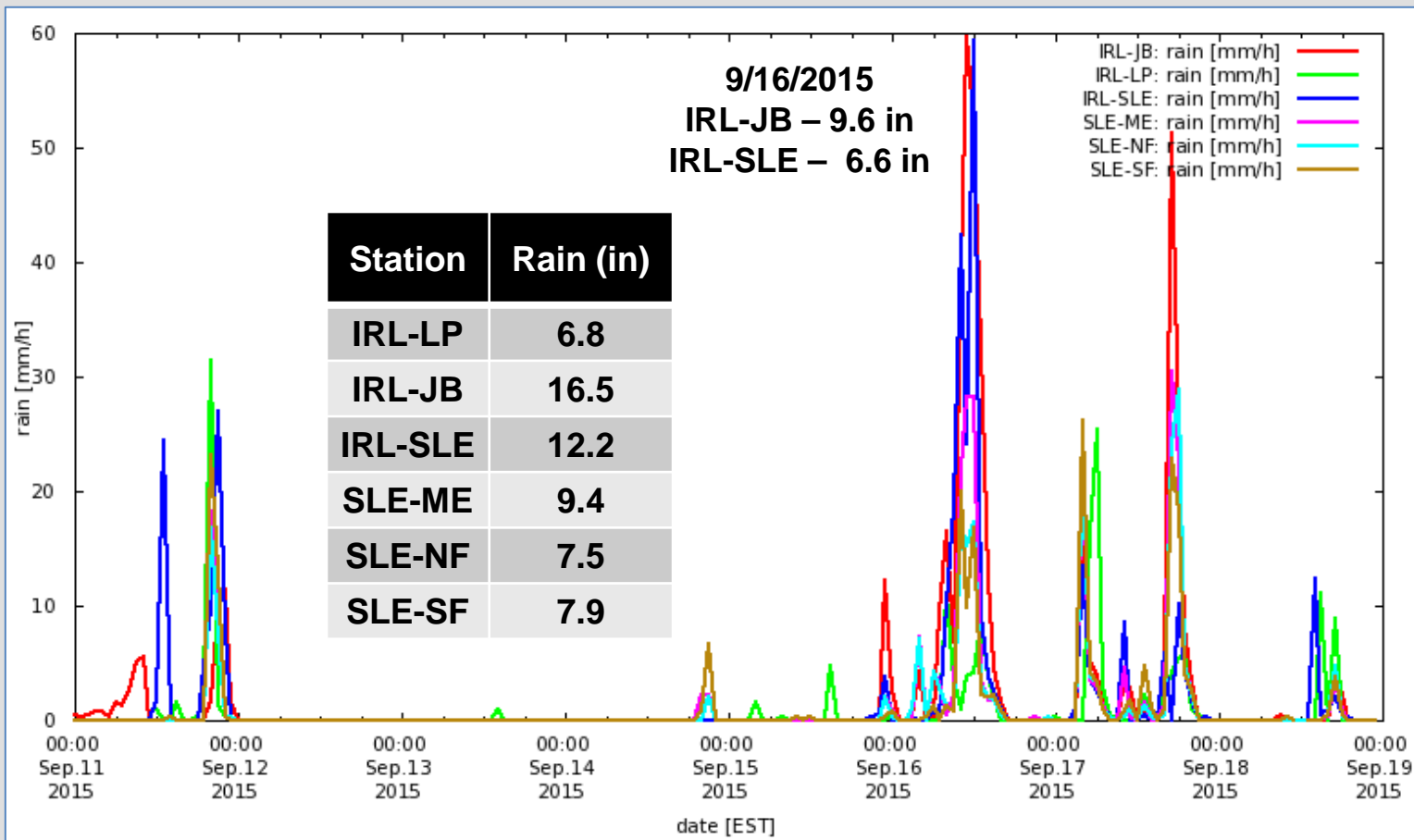
New pH Technology

Satlantic Safe Ocean pH Sensor

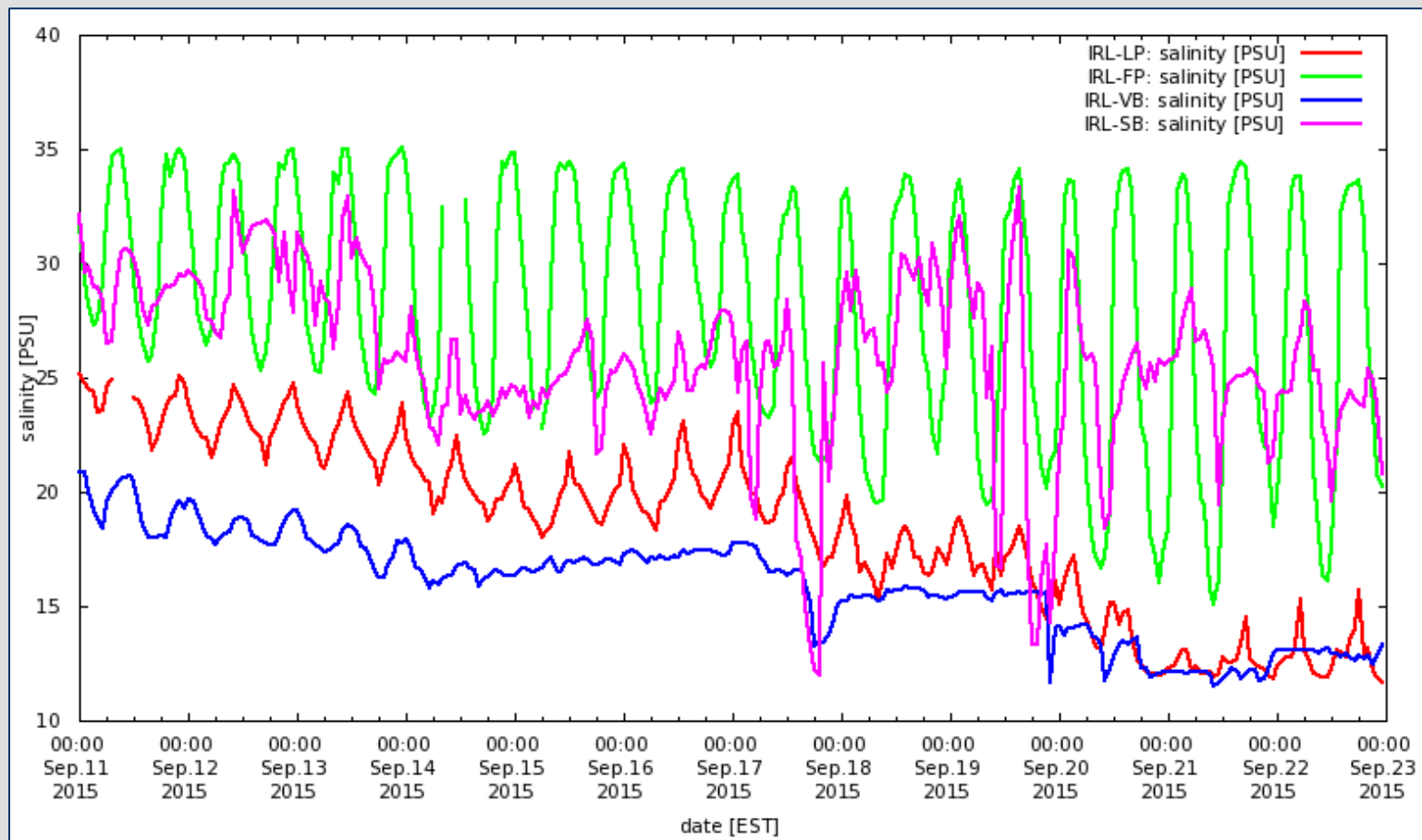


The SeaFET sensor measures pH with an ion-sensitive field effect transistor (ISFET). The advantages of the ISFET include robustness, stability, and precision that make it suitable for ocean pH measurement at low pressure.

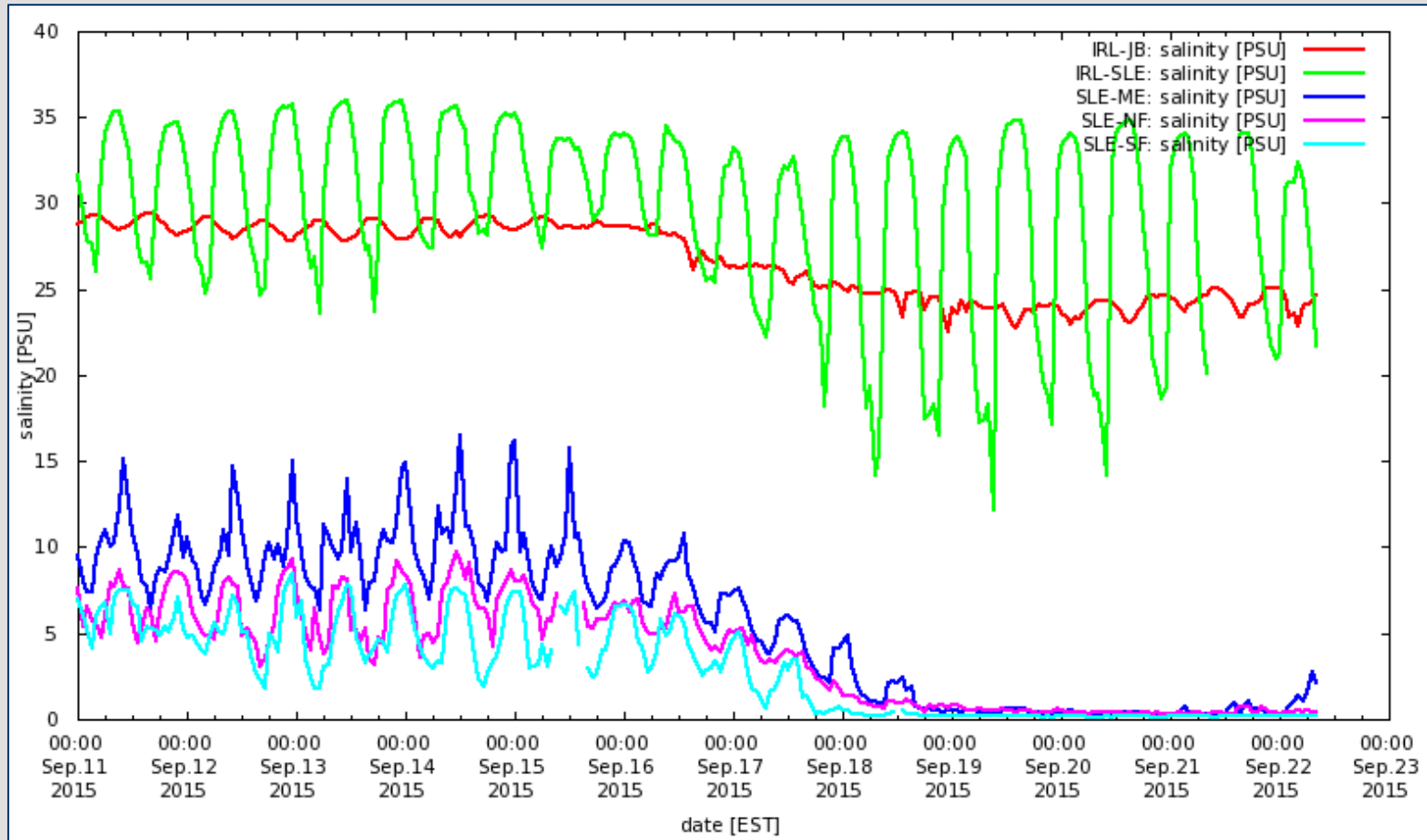
LOBO Weekly Rainfall (9/11-9/18/2015)



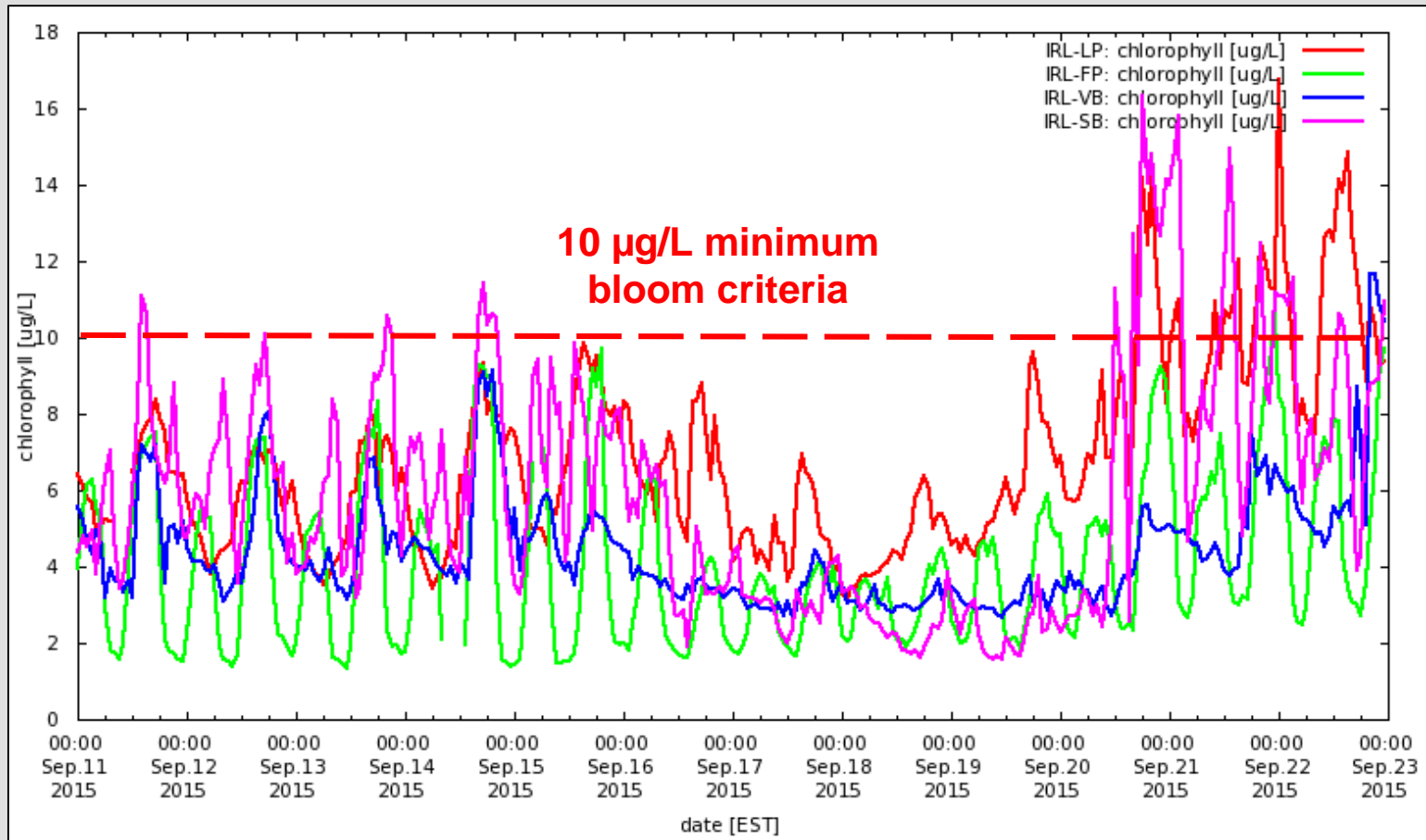
IRLO Northern Network – Salinity



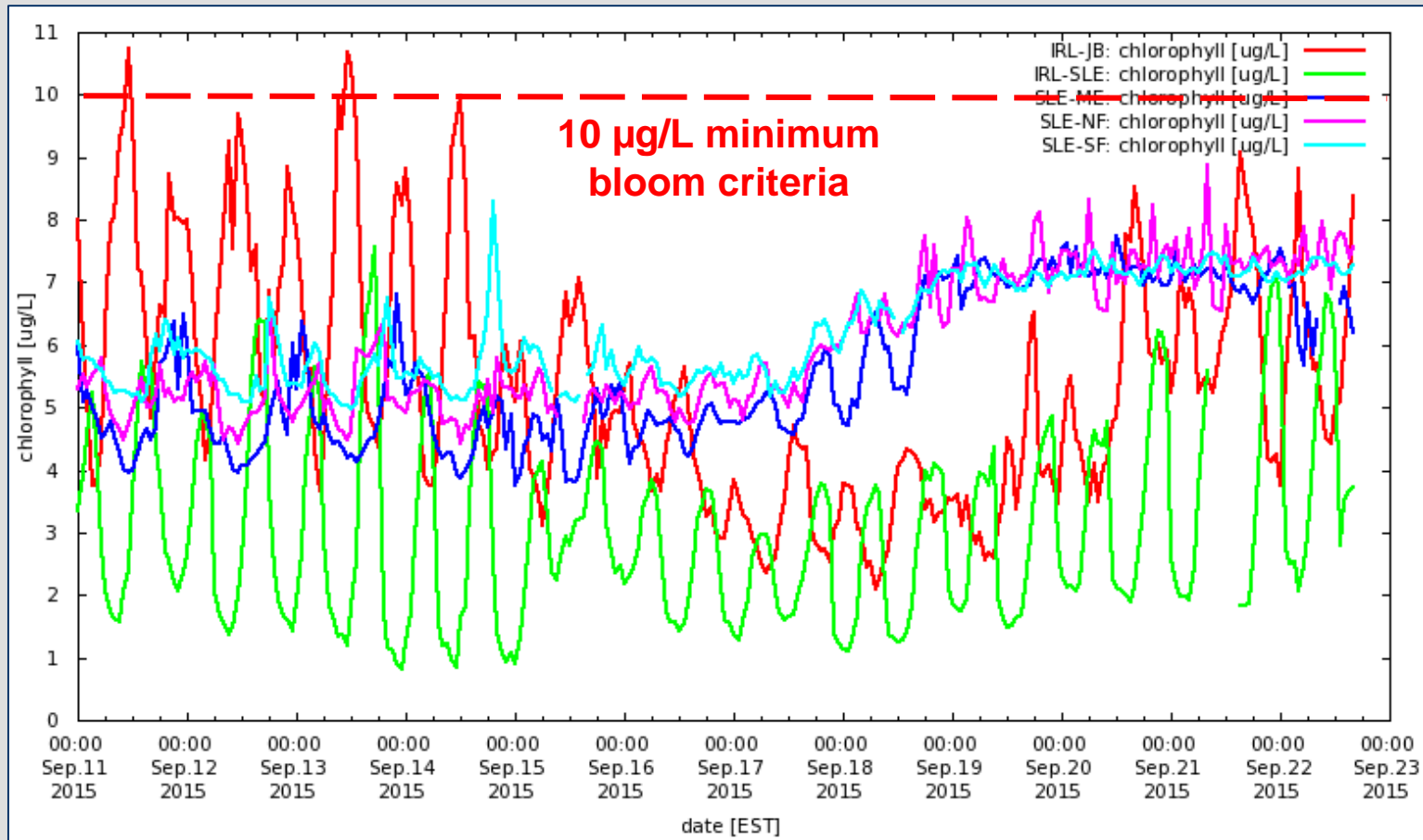
IRLO Southern Network – Salinity



IRLO Northern Network – Chlorophyll



IRLO Southern Network – Chlorophyll



Benefits to IRL & SLE

LOBO technology will provide researchers, governmental agencies, students, and the public unprecedented IRL & SLE environmental data

- Provide real-time environmental data via a publicly accessible website**
- Enable researchers to follow environmental changes in these estuaries and create the ability to do comparative studies on the east and west coasts of Florida**
- Assist resource and planning managers to make informed decisions for the good of the IRL & SLE**
- Model and correlate environmental data to biological, chemical, and physical phenomena of the IRL & SLE**
- Create a platform for education and outreach activities**

Land/Ocean Biogeochemical Observatories (LOBOs)

Establishing a network of advanced observing stations



Stay Tuned!

IRLO/LOBO Contact:
dhanisak@hboi.fau.edu

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