Objectives

- Describe new satellite products
- Applications of satellite data products in FKNMS Rezoning Effort
  - Ecological Research and Monitoring (W.33)
  - Florida Bay influences (W.24)
  - Researching Water Quality Issues (W.32)
- Provide FKNMS with satellite data products
- Discussion
  - Assess utility of data products as part of FKNMS Rezoning Effort
In situ water clarity measurements

- April 2011, August 2012
- HyperPRO – hyperspectral $K_d$
- 26 stations, 53 profiles
- 33 profiles passed QA
- 10 concurrent with satellite
Validation of satellite water clarity

\[ R^2 = 0.91 \]
Status & Trends: average condition
Status & Trends: regional

Distance from Shore

0 – 4 km
4 – 8 km
8 – 12 km

(from Boyer, WQMP)
Status & Trends: seasonal variation

Amplitude of Seasonal Cycle
Episodic events: Monthly mean
Episodic events: Monthly anomaly
Florida Bay Influences

November 23, 2005
Monitoring: track water masses

December 20, 2003
(two weeks later)
Ecological Research and Monitoring

Looe Key CREMP Station

[Graph showing trends in Stony Coral % Cover and Kd(488) ± Std Err over time (years) from 2001 to 2011]
Other remote sensing data sources

- Temperature (MODIS, AVHRR)
  - Satellite overpasses several times daily
- Chlorophyll, CDOM concentrations
  - Satellite algorithms in validation stage
Distribution mechanisms
Station Name: SU 22

Latitude: 29.3878133054
Longitude: -83.4573115914

Current Imagery:
http://optics.marine.usf.edu/cgi-bin/optics_data?role=BIGBEND&current=1

This graph shows mean monthly Kd(488) for a 2km² region with the station at the center. Data are derived from the entire time series of MODIS/Aqua measurements (2002-present). A new data point is added on the 5th day of each month, characterizing the mean water clarity condition for the previous month. Error bars represent one standard error above and below the mean.

The climatology shown is a static monthly mean of all MODIS/Aqua Kd(488) monthly data from 2002-2011. This represents the normal condition, and large deviations from this climatology represent anomalous events. The trendline shows the linear best fit of the monthly mean data.

If you would like to see the data expressed in a more real-time basis, click the "Kd488 Weekly Mean" tab above.

Monthly mean values for Kd488 at this site are shown above. These estimates have been extracted from Modis satellite imagery. You may click on the image to open it in a separate tab or window.
Discussion

- **Use for zoning decision making**
  - Temporal zoning
    - Based upon seasonal events
  - Zone specific regulations
    - Size, resource protection
  - Protect and preserve coral reefs
  - Minimize adverse socioeconomic impacts

- **Socioeconomic considerations**
  - Provide water clarity for divers

- **Assess rezoning performance results based upon data products provided**
  - Solicit feedback from WQPP, SAC