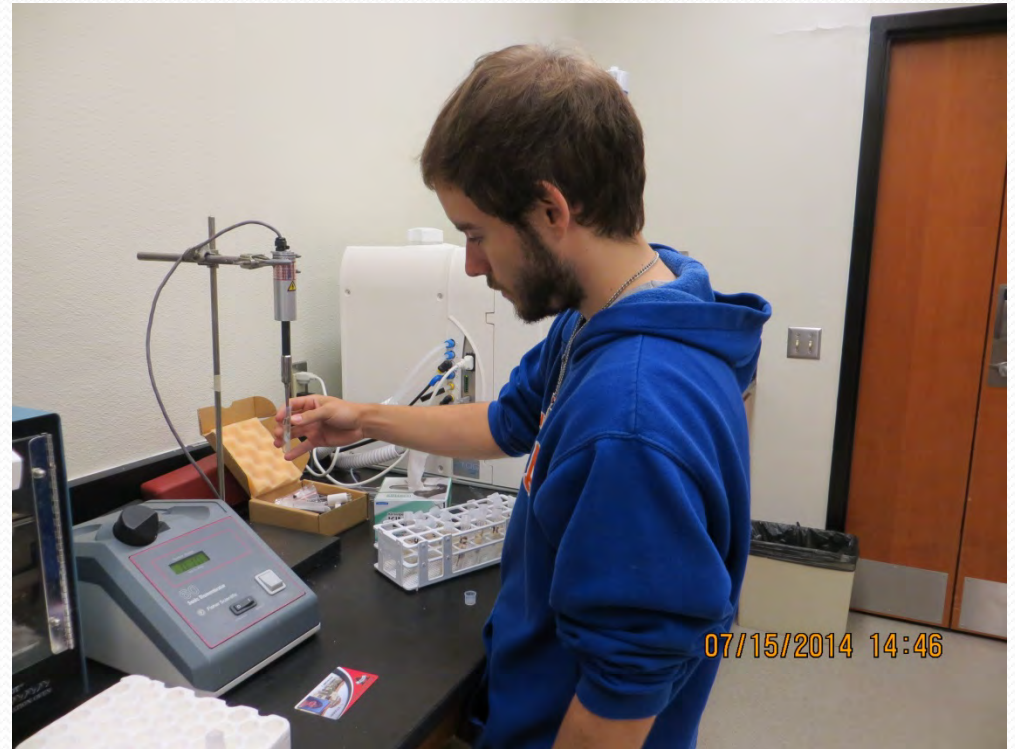


A photograph of a large, multi-story university building with a central dome and arched windows. In the foreground, there is a fountain with several water jets. A low wall in front of the fountain has the university's name engraved on it. The image is overlaid with a semi-transparent blue and white decorative graphic at the top.

# Phytoplankton Associations in the Northeastern Gulf of Mexico

**Mentor: Dr. James A. Nienow**

# About me...



**UF** | UNIVERSITY of  
**FLORIDA**

Major: Environmental Science (B.S.)

# About Dr. Nienow... He's great!



Expertise: Ecophysiology and systematics of algae

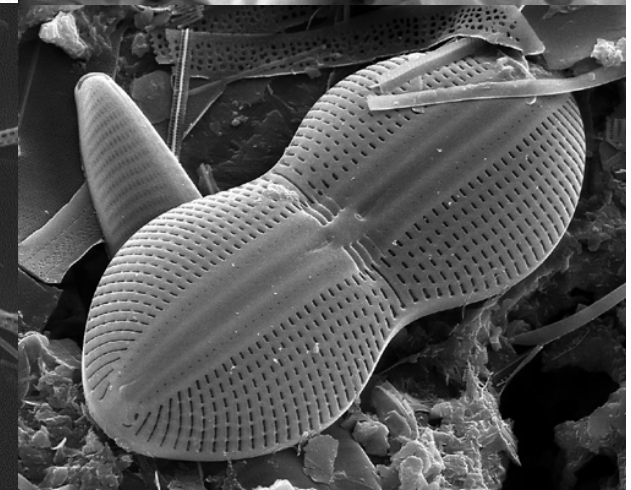
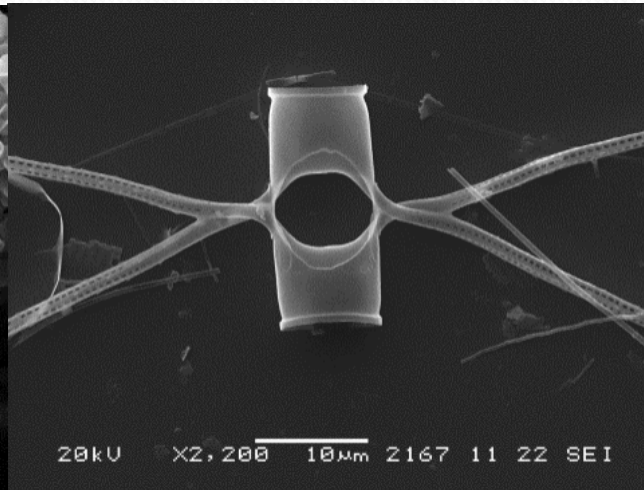
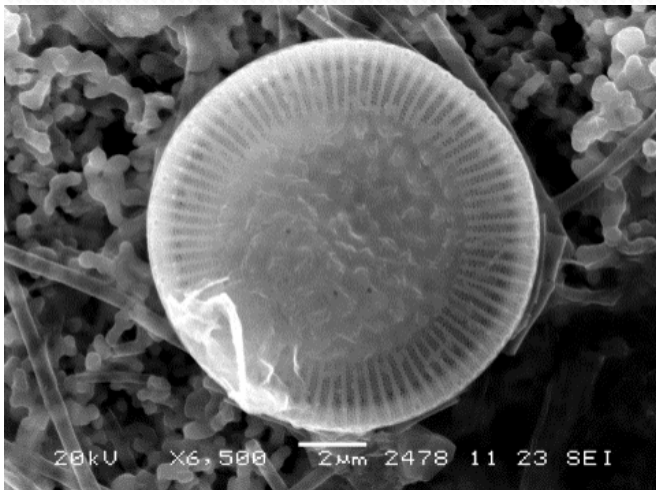
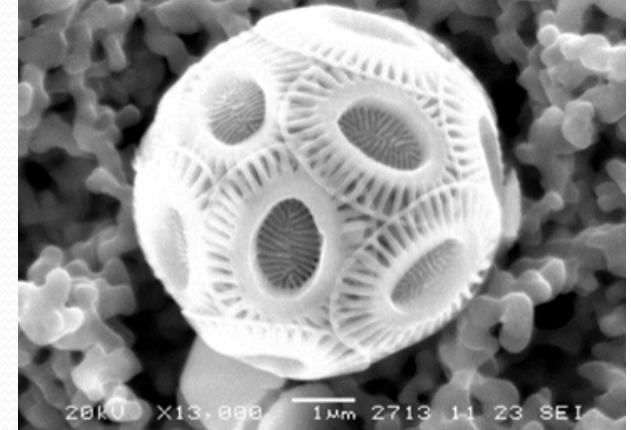
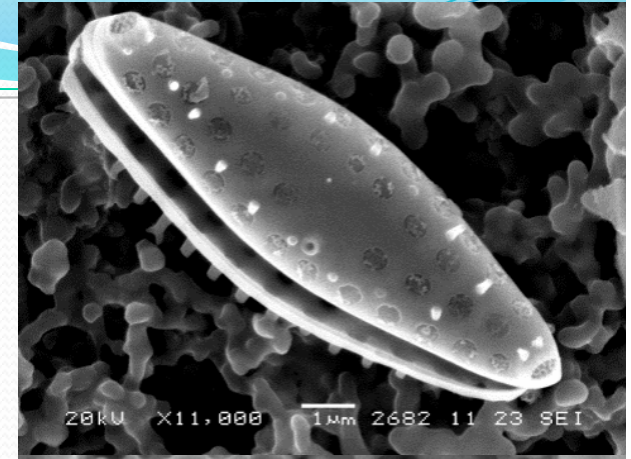
Affiliation: Valdosta State University,  
Biology Department

BA/MA Mathematics, UC San Diego

Ph.D. (Microbial Ecology) – Florida State University

# Diatoms

- Generally symmetrical
- Silicious frustules
- Phytoplankton (algae)
- Producers
- 45% global oceanic production



The Problem I studied...

Distribution

The Problem I studied...

Distribution

# The Problem I studied...

Patterns

'Norm'

Distribution

# The Problem I studied...

Patterns



Seasonality

'Norm'

Distribution

# The Problem I studied...

Patterns

Seasonality

'Norm'

Distribution

# The Problem I studied...

Patterns

Models

# Methods of sampling...

## Discrete whole water samples (using CTD)

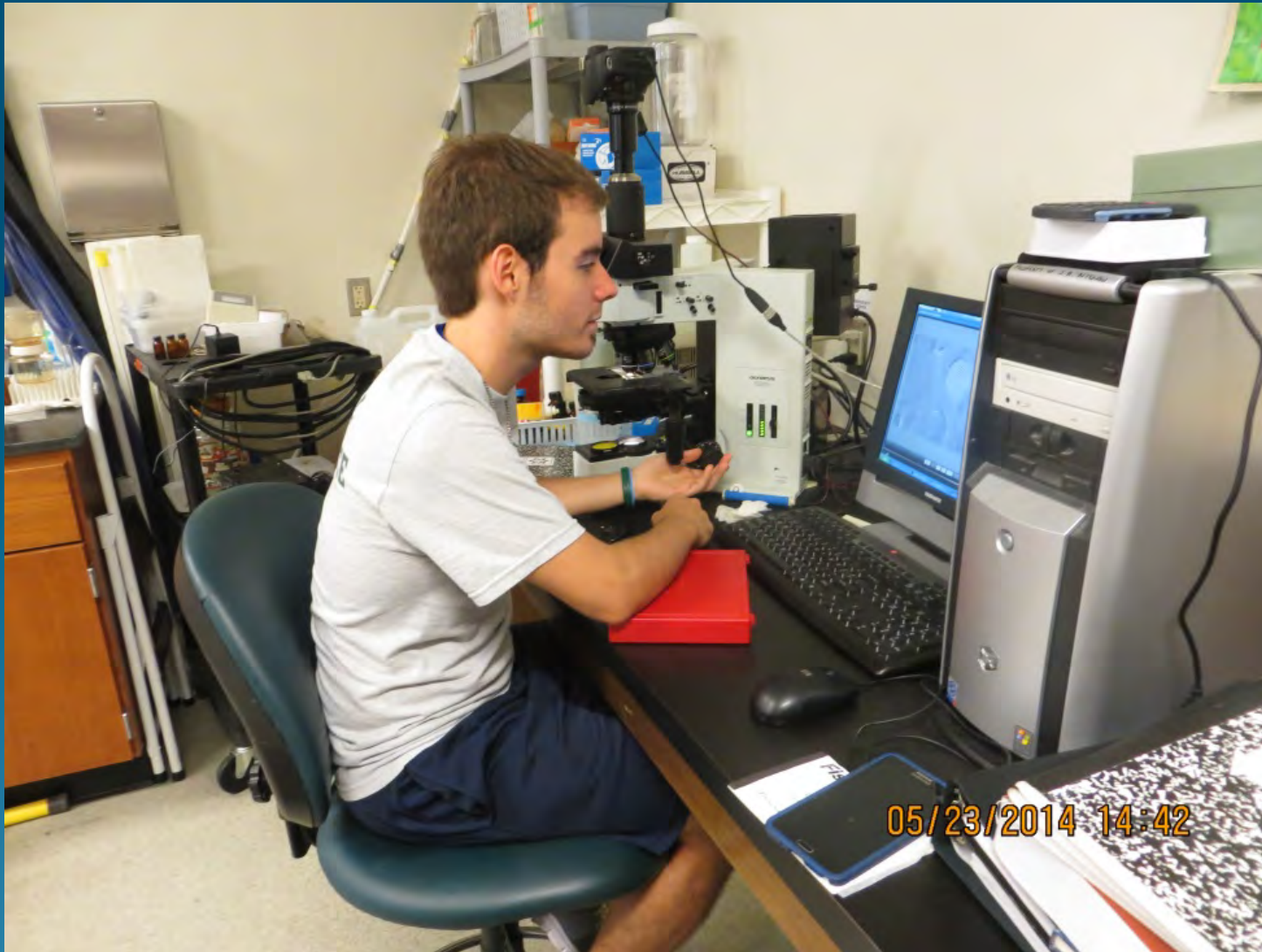


## Vertical Plankton Tows



# Analysis...

Light microscope



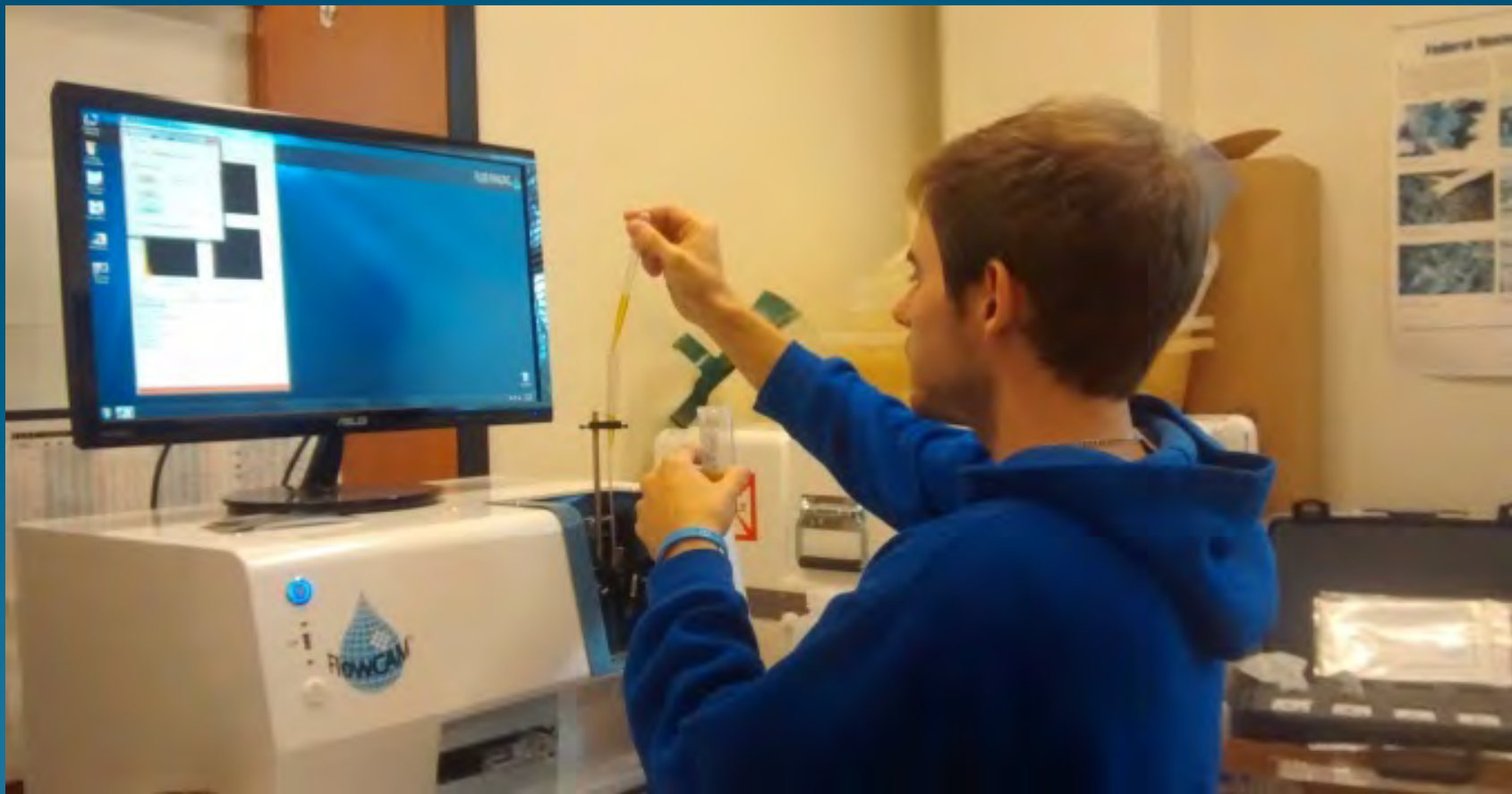
# Analysis...

## Pigment chromatography (for HPLC)



# Analysis...

Imaging flow cytometry (FlowCAM)



# Analysis...

## Scanning Electron Microscope



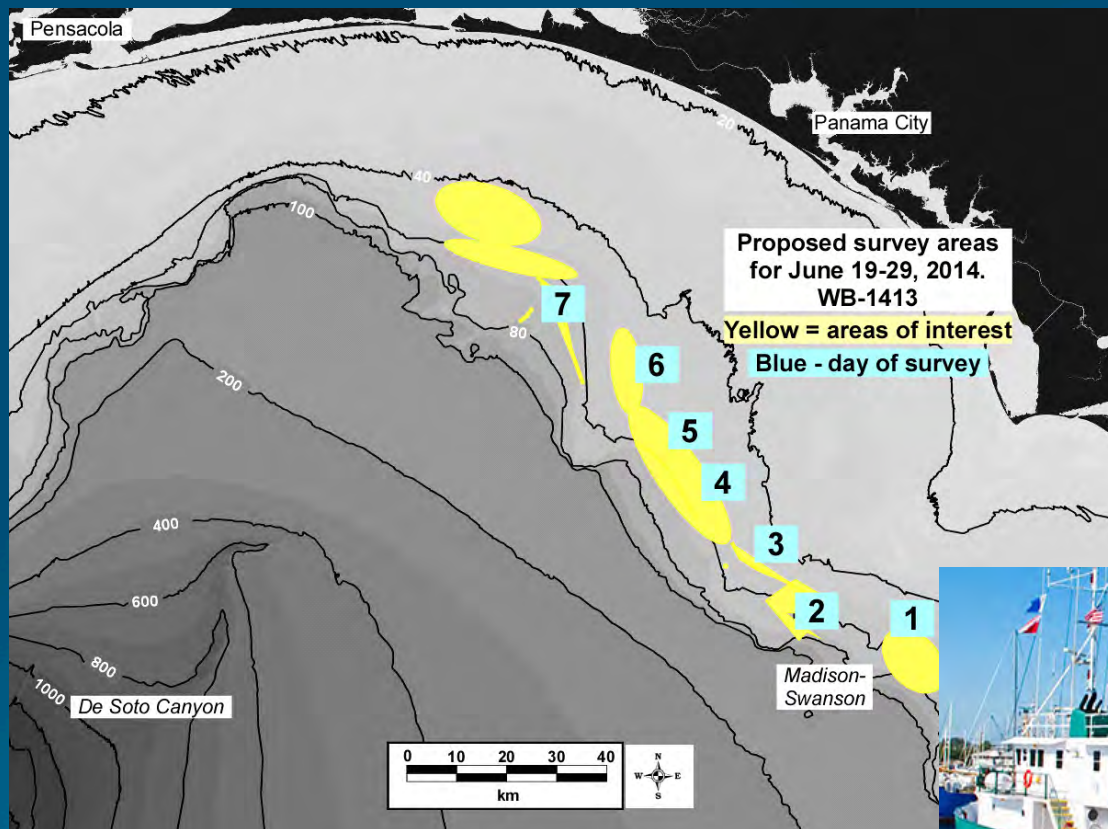
# What I did...

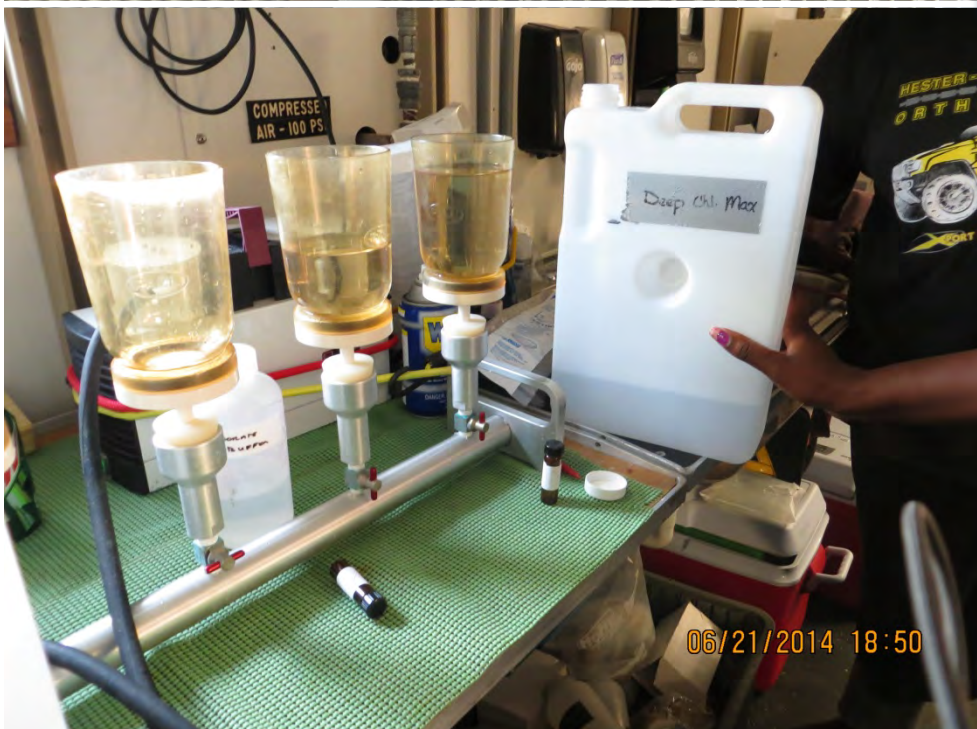
- A little bit of everything!
- Preparing samples
- Analyzing samples, mainly FlowCAM
- Synthesizing data
- Capturing samples (cruise!)





# R/V Weatherbird II June 19<sup>th</sup> – 28<sup>th</sup>





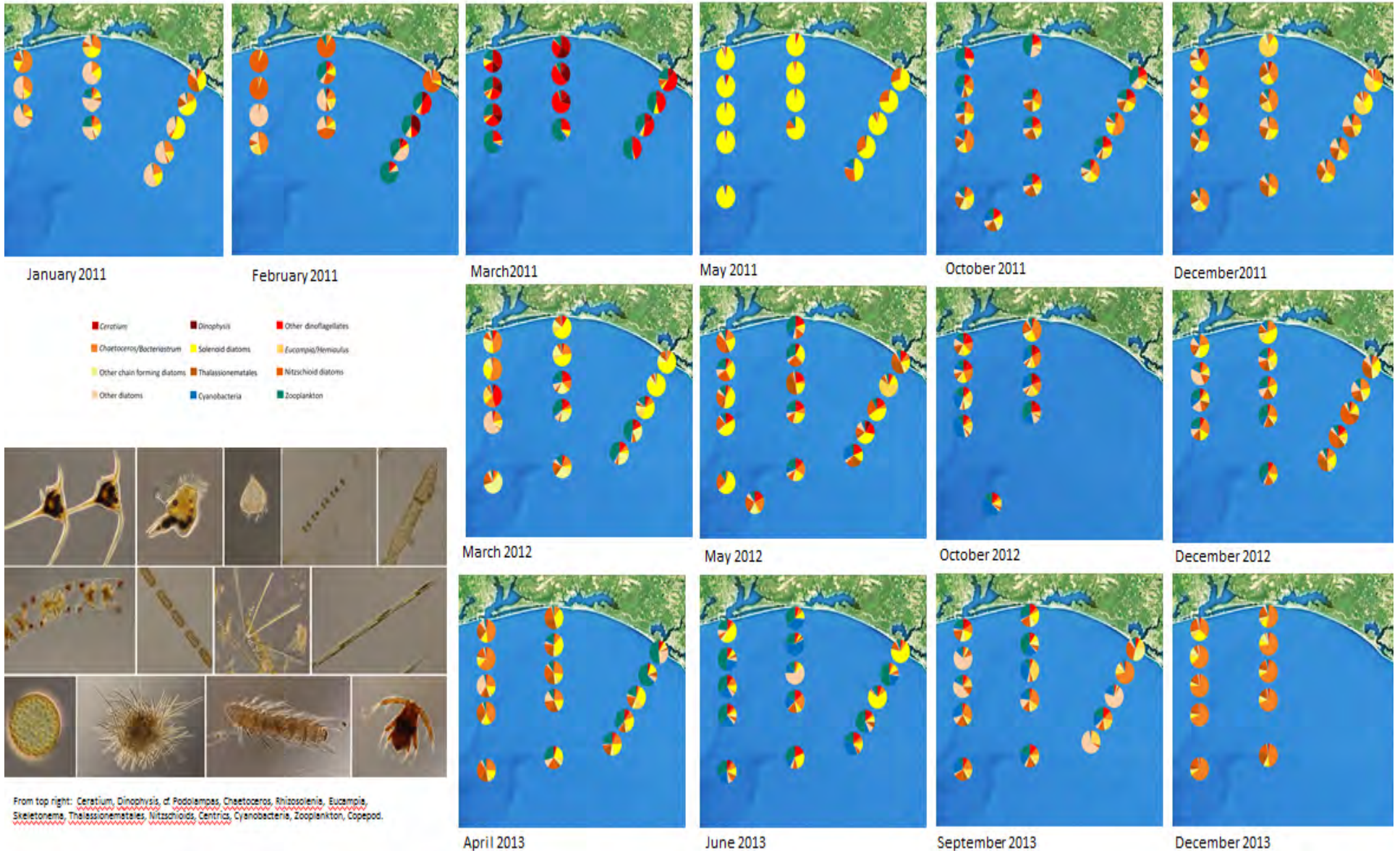


06/28/2014 19:39



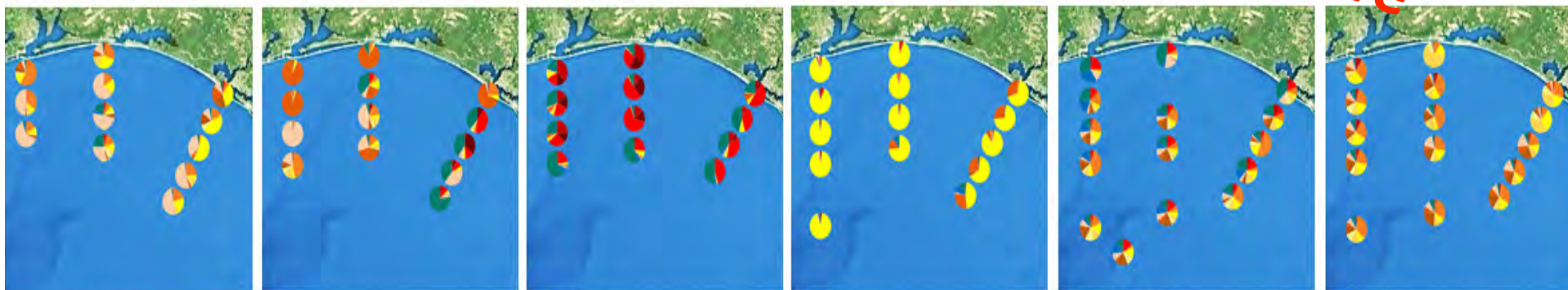
06/21/2014 07:04

# Results so far...



# Results so far...

Inconclusive



January 2011

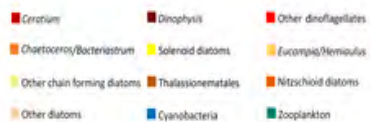
February 2011

March 2011

May 2011

October 2011

December 2011



March 2012

May 2012

October 2012

December 2012



April 2013

June 2013

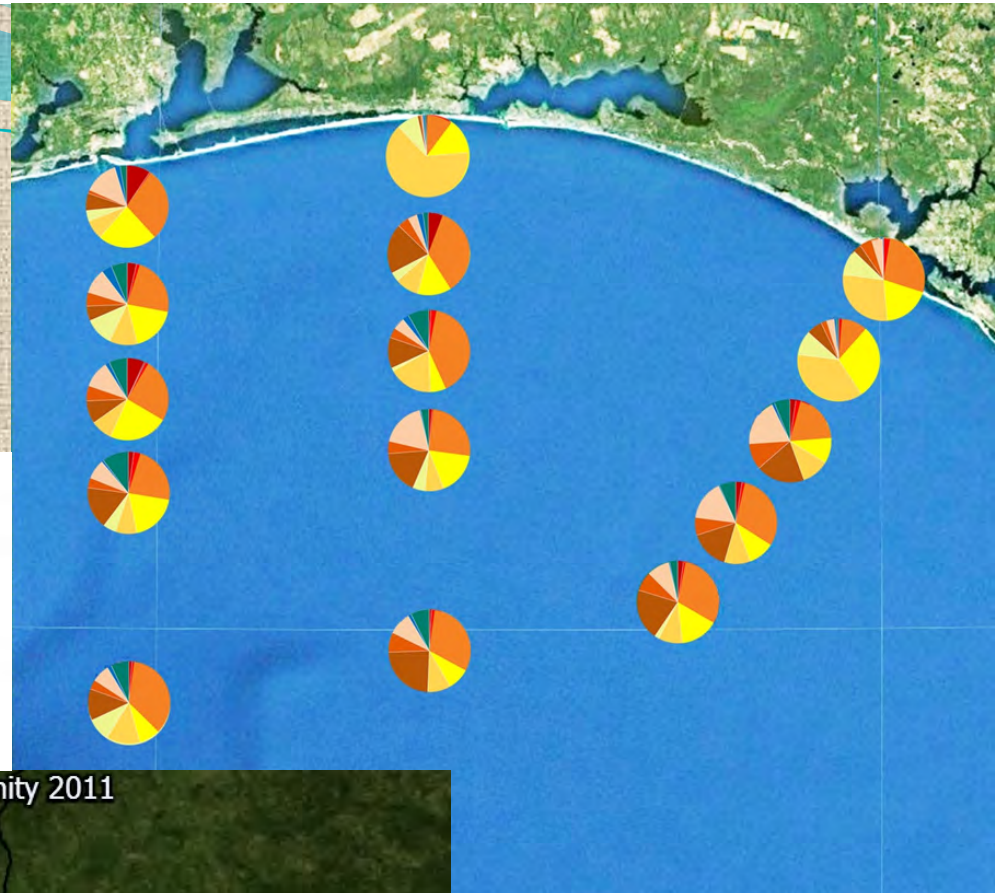
September 2013

December 2013

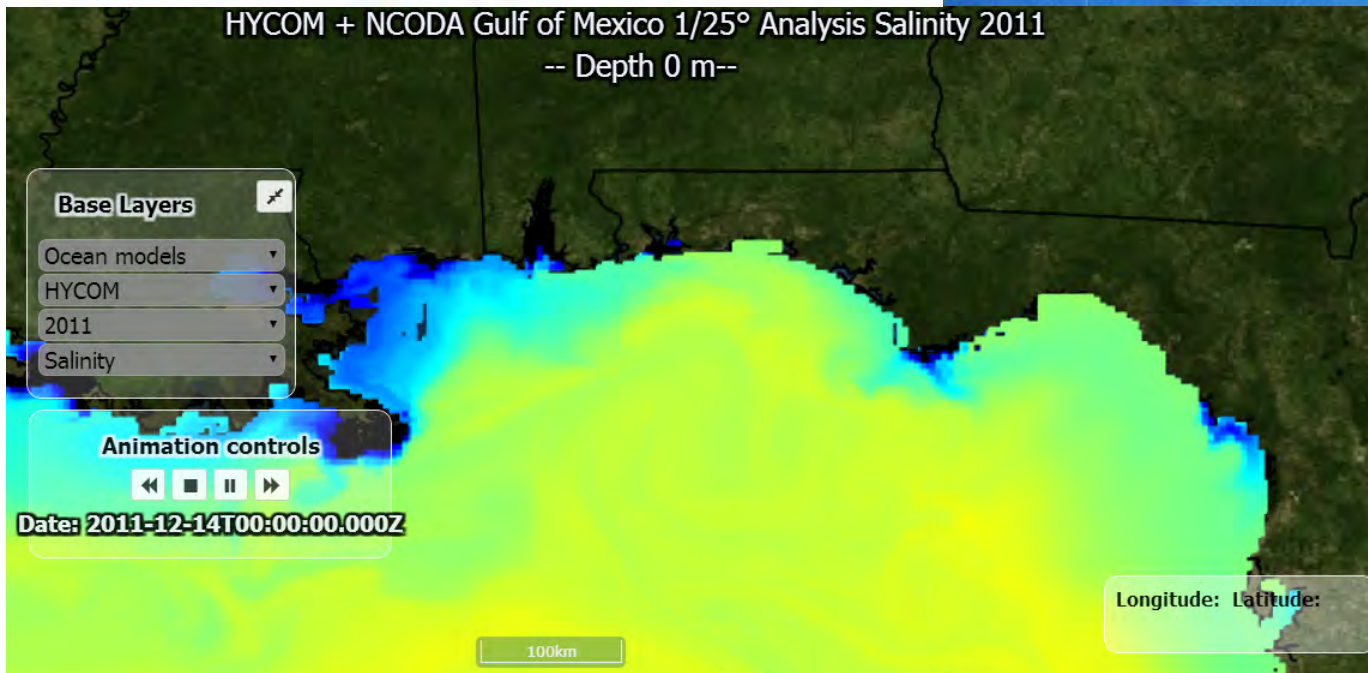
From top right: Ceratium, Dinophysis, of Podolampas, Chaetoceros, Rhizosolenia, Eucampia, Skeletonema, Thalassiometales, Nitzschoids, Centric, Cyanobacteria, Zooplankton, Copepod.

# December 2011

- Ceratium
- Dinophysis
- Other dinoflagellates
- Chaetoceros/Bacteriastrum
- Solenoid diatoms
- Eucampia/Hemiaulus
- Other chain forming diatoms
- Thalassionematales
- Nitzschoid diatoms
- Other diatoms
- Cyanobacteria
- Zooplankton



HYCOM + NCODA Gulf of Mexico 1/25° Analysis Salinity 2011  
-- Depth 0 m--



## Cruise WB-1405

At this time there is currently no data available

## Cruise Details

Vessel: R/V Weatherbird 2

Chief Scientist: Oscar Garcia Pineda

Departure: on 2013-09-23 from St Petersburg FL

Return: on 2013-10-03 from St Petersburg FL

[Abstract](#) || [Keywords](#)




# Metadata

Site↓↑	Coordinates (lat↓↑, lon↓↑)	Date↓↑	Time↓↑	Event↓↑	Data Files?
nt1000	(28.0039, -85.9990)	2013-09-24	13:55:00	Multicore	⚠
nt1000	(28.0039, -85.9990)	2013-09-24	13:55:00	Multicore	⚠
nt1000	(28.0039, -85.9990)	2013-09-24	13:55:00	Multicore	⚠
nt1000	(28.0039, -85.9990)	2013-09-24	13:55:00	CTD	✅
nt1000	(28.0039, -85.9990)	2013-09-24	13:55:00	Multicore	⚠
nt1000	(28.0039, -85.9990)	2013-09-24	13:55:00	Survey	✅
s42	(28.2528, -86.4216)	2013-09-25	14:44:00	Multicore	✅
s42	(28.2528, -86.4216)	2013-09-25	14:44:00	Multicore	⚠
s42	(28.2528, -86.4216)	2013-09-25	14:44:00	CTD	✅
s42	(28.2528, -86.4216)	2013-09-25	14:44:00	Multicore	⚠
s42	(28.2528, -86.4216)	2013-09-25	14:44:00	Multicore	⚠
s42	(28.2528, -86.4216)	2013-09-25	14:44:00	Multicore	⚠
s42	(28.2528, -86.4216)	2013-09-25	14:44:00	Survey	✅
s42	(28.2528, -86.4216)	2013-09-26	00:40:00	Multicore	⚠
s42	(28.2528, -86.4216)	2013-09-26	00:40:00	Multicore	✅
s42	(28.2528, -86.4216)	2013-09-26	00:40:00	Multicore	⚠
XC-4	(28.6365, -87.8685)	2013-09-26	18:46:00	Multicore	✅
XC-4	(28.6365, -87.8685)	2013-09-26	18:46:00	CTD	✅
XC-4	(28.6365, -87.8685)	2013-09-26	18:46:00	Multicore	✅

Lots of data!  
CTD backlog



# Skills/Lessons learned

- How to prepare samples for SEM analysis
- How to navigate and take photos on SEM
- How to prepare samples for FlowCAM analysis
- How to use FlowCAM
- How to prepare slides for light microscope
- Experience on light microscope
- How to prepare samples for HPLC analysis
- How to use the HPLC machine
- Experience on the field (9 days at sea)
- Learned phytoplankton taxonomy (diatoms at the genera level)
- Always keep a journal of what you're doing

# Acknowledgements

## NOAA-NGI Diver\$ity Intern\$hip Program



- Dr. Nienow
- Courtney M. Bryller
- Dr. Miller-Way
- Natalie Ortell Cumbaa





# Questions?

06/28/2014 19:01