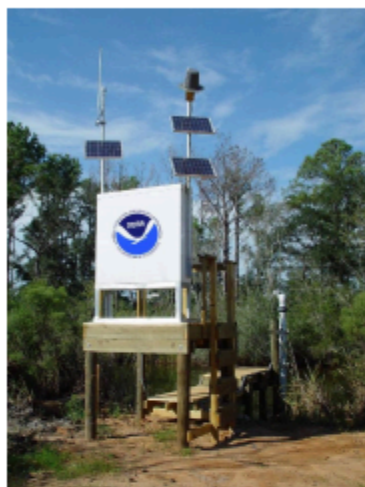


## STUDENT MASTER

### When Did a Jubilee Occur?



Scott Phipps and Mike Dardeau with a datalogger at Bon Secour monitoring station



Tidal datum station, Weeks Bay Reserve



Weather station, Weeks Bay Reserve

Scientists Mike Dardeau, of Dauphin Island Sea Lab and Scott Phipps, Research Coordinator for Weeks Bay Reserve, want you to think about the following: "If you weren't there along the shores of Mobile Bay to see the fish and crabs coming onshore during a jubilee, what kind of data would you need to examine to identify when jubilee event occurred?"

What do you think? If you understand the conditions that cause a jubilee and if you have data about those conditions on a specific date, you should be able to say whether or not a jubilee occurred. Let's see if that's true!

#### Procedure

1. Mike and Scott have provided you with Mobile Bay datalogger data for three days in the summer of 2011. The graphs, one for each day, show dissolved oxygen, tide height, and wind direction.
2. Look at each graph. What does the dissolved oxygen level graph show happening on that day? When was the tide rising and falling on that day? In which direction was the wind blowing?
3. As you examine the three graphs, keep a record of your findings in the Data Log. You will need the data you record to either support or disprove which dates met the conditions for the occurrence of a jubilee event.
4. Once you have examined all three graphs and filled in the Data Log, use the Jubilee Conditions Checklist to help you draw your conclusions about which day or days jubilees occurred. Remember, a jubilee should only occur when all of the conditions on the checklist were present in Mobile Bay.

#### Jubilee Conditions Checklist

- ✓ It is summer. The water temperature in summer is very warm.
- ✓ It is very early morning and the sun is still down or just rising.
- ✓ Because of the warm water and the time of day, dissolved oxygen levels in the water are very low.
- ✓ The wind is easterly. The wind is blowing gently from the east and moving the fresher surface water away from the shore and into the middle of the bay.
- ✓ The tide is rising. Water is coming in from the Gulf of Mexico, but has very little tidal movement.

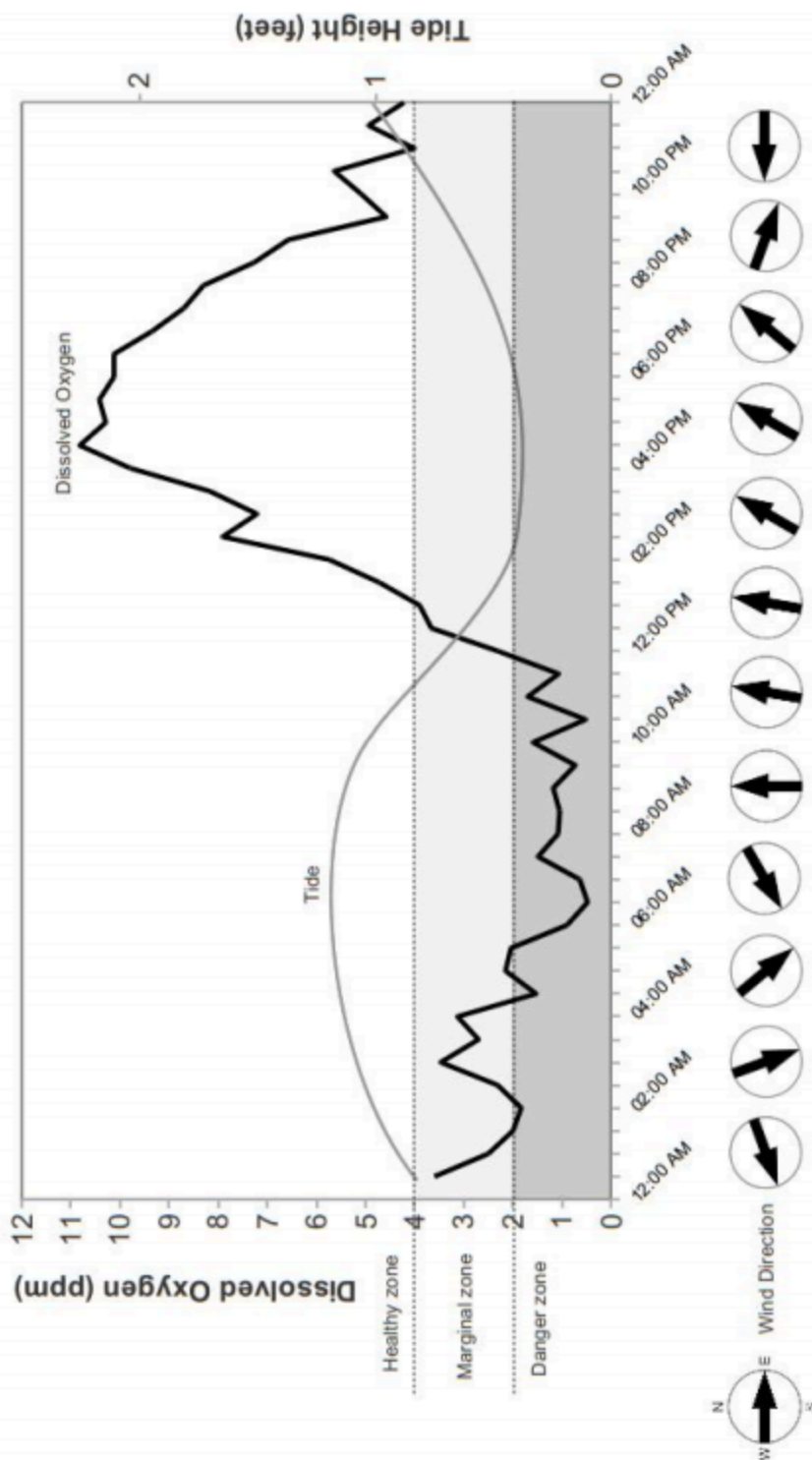
# Water's the Matter Measuring Oxygen Activities

5. Share your conclusions with the class. Were all conditions for a jubilee event present on June 25, August 5, or August 25, 2011? Provide evidence to support your findings. Do you think researchers could predict a jubilee before it happened? Why or why not?

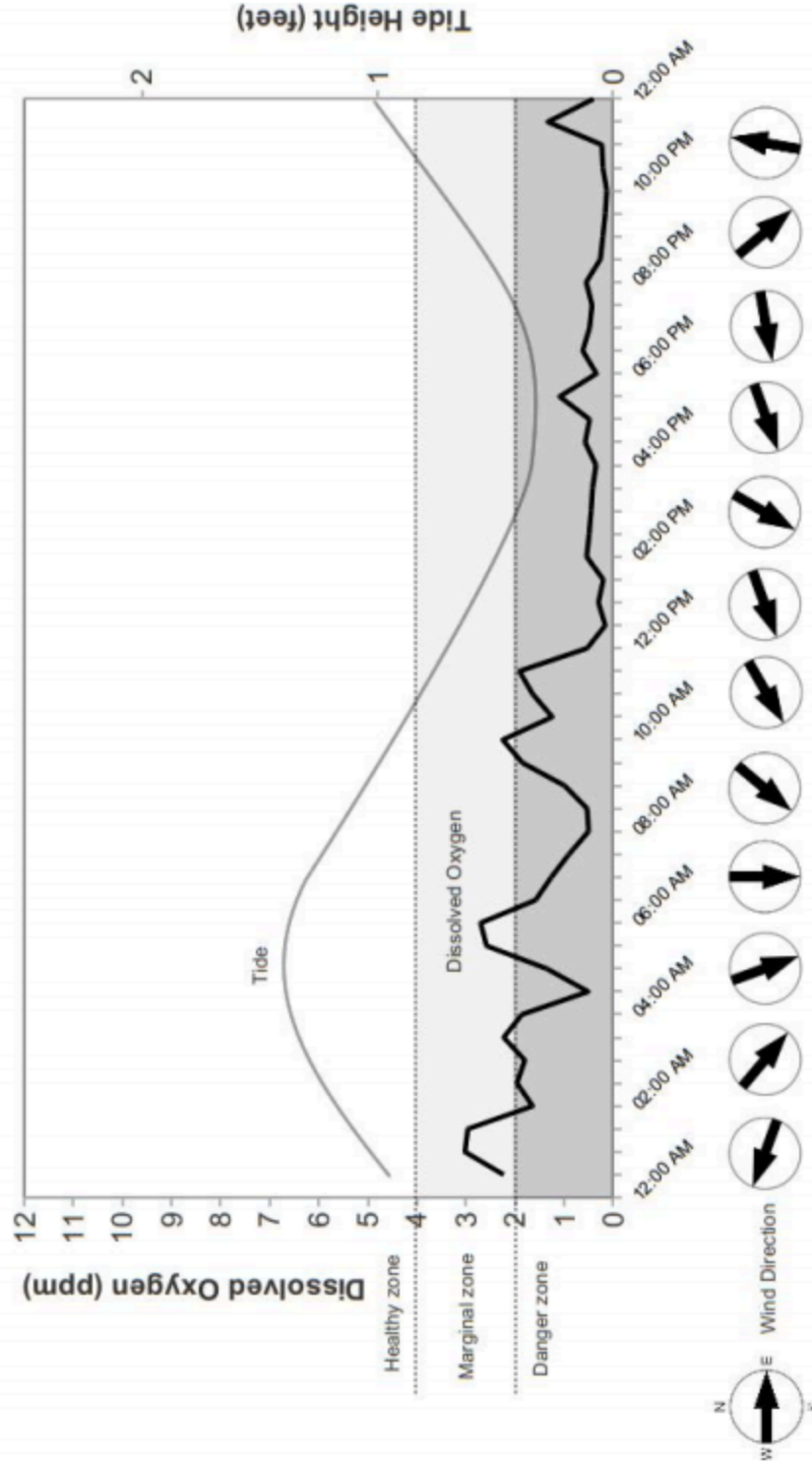
## Data Log

Date	What was the time range of the lowest dissolved oxygen levels on this day?	Was the dissolved oxygen (DO) level near or below 2 ppm on this day?	Was the tide rising (water entering the bay) or falling (water leaving the bay) near dawn on this day?	Was the wind easterly (blowing from the east) near dawn on this day?
June 25, 2011				
August 5, 2011				
August 25, 2011				

Bon Secour  
 Dissolved Oxygen, Tide Height & Wind Direction  
 June 25, 2011



Bon Secour  
 Dissolved Oxygen, Tide Height & Wind Direction  
 August 5, 2011



Bon Secour  
 Dissolved Oxygen, Tide Height & Wind Direction  
 August 25, 2011

