

MARINE SCIENCE TOOLS – BUOY SYSTEMS

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Hi, my name is Bob Weisberg. I'm a professor of physical oceanography at USF. Physical oceanography is the physics of the ocean's circulation, how the ocean interacts with the atmosphere, and how the water moves.

To study that, we actually use a variety of instruments. So behind me, there are some buoys on which we mount instruments that measure the movement of the water, the temperature, the salinity, the surface meteorology. And all of this is important to figure out how the ocean actually carries material from the deep ocean across the continental shelf and actually into the estuaries, where we're standing right now.

So there's a couple of different purposes for this information. The first is it helps to inform boaters that go out and use the water. So you know the winds are. You know what the waves are. You know what the currents might be. And so you can actually have a safe and kind of efficient enjoyable outing.

Besides that, we actually use the data for a lot of different scientific applications. For example, what we've been able to find out is that if you have a long enough record, you can actually determine what the mean circulation is of the West Florida continental shelf. And it turns out to be an upwelling oriented circulation, which means water near the surface is going offshore. Water near the bottom is coming onshore, and it's constantly replenishing the water and the nutrient supply for the coastal ocean.

There's also some years that are just anomalously different from other years. And that's what really sets the ecology of the West Florida continental shelf. The biologists refer to the shelf as being oligotrophic, which means that there's no nutrients. Nothing should grow.

And yet, we have really abundant fisheries. We have really copious red tide blooms. So how is it possible that an oligotrophic shelf can be so productive. That's where the ocean physics comes to play. That's where the interannual variability and the circulation allows the continental shelf to be reset by new water on interannual basis. And it's this interannual annual variability that we can only determine through long term measurements that allow us to actually begin to understand how our coastal ocean works.