SeaSonde's Role in the Ocean Energy Testing & Evaluation Range at Florida Atlantic University's Center for Ocean Energy Technology

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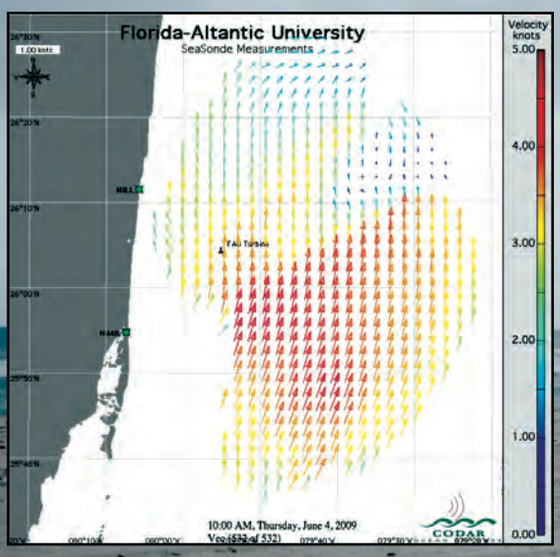
As a necessary contribution to help advance ocean energy development, Florida Atlantic University's (FAU) Center for Ocean Energy Technology (COET) is measuring, characterizing, and modeling ocean thermal and ocean kinetic resources available from the Gulf Stream Current in the Florida Straits. The measurement efforts initially involve stand-alone moored velocity and temperature measurements across the Straits in the Ft. Lauderdale area, surface-deployed water column profiling instruments, and shore-based ocean surface radar.

FAU's COET is pursuing a phased approach to technology and infrastructure development. Ultimately, an offshore testing, measurement, and observation range is planned. This *in situ* laboratory will consist of not only ocean-current energy-extraction device scaled system testing capabilities, but a comprehensive underwater and remote scientific observatory, including both resource and environmental measurement sensor and instrument suites. The phased approach is based upon a collective technology readiness level and regulatory development strategy. This first phase (underway) consists of shore-based coastal radar systems, offshore stand-alone moored current profiler instruments, and Conductivity Temperature Depth (CTD) profiling measurements.

FAU Engineer Shirley Ravenna preparing ADCPs for deployment.

The kinetic resource assessment consists of several ADCP deployed moorings which measure the velocity magnitude and direction of the water column at their locations and a SeaSonde® network measuring the complete current vector for the surface layer. The SeaSonde measurements overlay the information collected by the moored ADCP packages, and thus allow for inference of volumetric flow information. The thermal resource assessment consists of gathering vessel-deployed CTD cast profiles along several transects to quantify the thermal resource off the southeast coast of Florida. Initial resource assessments show that southeast Florida is an ideal geographic location for commercial ocean current and ocean thermal energy conversion (OTEC) device development. Continued measurements will help quantify and characterize a more detailed picture of the potentials for these marine renewable energies offshore of southeast Florida.

Ocean current energy extraction devices will likely be diverse in size, shape, and energy extraction methods. During the second phase of development, COET is preparing a simple scaled ocean current turbine, to generally address the spectrum of device-technology gap development. This turbine, in concert with the accompanying support infrastructure as a small-scale device test bed will be used as a research and development tool to advance the implementation of ocean-energy extraction devices. Leveraging test bed instrumented support infrastructure, device testing and demonstration, and correlated environmental and resource characterization data from a comprehensive ocean observatory, COET aims to provide ocean-energy device-testing methodologies and capability, a sufficient understanding and characterization of marine renewable energies in the Florida Straits, and an understanding of the potential ecological and environmental interactions of this developing ocean energy industry.



Surface current map from FAU SeaSonde network.

FAU SeaSonde deployed at Haulover Beach Park in Florida