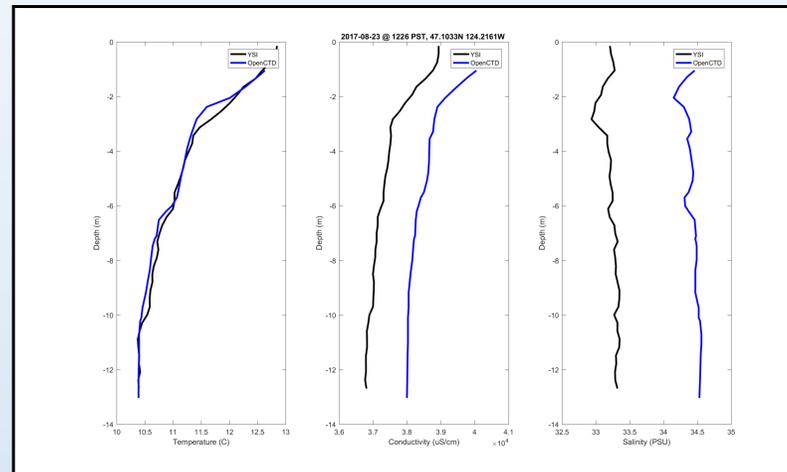


**The OpenCTD**

Oceanographic instruments are expensive and often inaccessible to students and educators. First conceived in 2013 by Oceanography For Everyone, the OpenCTD offers interested parties the opportunity to collect salinity, temperature, and depth data at a relatively cheap price point. Everything you need to build it can be sourced from several online retailers and your local hardware store. The OpenCTD community continues to grow, and has even extended internationally, as people build CTDs for personal and scientific use.

**Why Conductivity, Temperature, and Depth?**

Conductivity, temperature, and pressure are three parameters that provide scientists with information about the fundamental physical properties of our oceans. Many other biological and chemical properties correlate with salinity, temperature, and depth. The OpenCTD has yet to produce research quality data and each unit requires extensive quality conformance review. However, it will produce data that will fulfill the needs of most educators and citizen scientists.



Comparison plots between a YSI Castaway CTD and an OpenCTD. Conductivity gap is due to a correctable script and calibration error.

**Project Goals**

1. Observe how constructing and modifying an OpenCTD may impact student interest in STEM, marine science, and related careers.
2. Engage local commercial fishermen through citizen science.
3. Encourage collaboration between students, fishermen, schools, and researchers.

**Project Partners**

Toledo High School

Working with the STEM 3 teacher at Toledo High School, ten students have been tasked with building and designing additions for five OpenCTDs. In order to complete construction, students must obtain a basic understanding of soldering practices, the engineering design process, data analysis, and the fundamentals of our local ocean.

The devices will then be given to local commercial fishermen for the secondary portion of the project, where data collected may be used by the students in a poster presentation at Ocean Science 2018.

Newport Commercial Fishermen

Using student constructed OpenCTDs, the plan is to work with Newport commercial fishermen to collect data off of fishing vessels. Fishermen interested in the data will have the opportunity to visualize and analyze it for their own benefit. Input from the fishermen will also be used to improve the design and implementation of the device.



**August 2016**  
 First copy of the OpenCTD is constructed.



**July 2017**  
 New requirements prompt redesign of the CTDizzle. Mk3 and Mk4 pictured left to right.



**September 2017**  
 Students begin constructing OpenCTDs. Currently on track for completion at the end of November 2017.



Students tour the R/V Sikuliaq on 18 October 2017 for a view of the various career opportunities found aboard a research vessel.



**September 2016**  
 Walt Waldorf and Johna Winters perform the first official pressure test of the CTDizzle Mk1. The device fails to collect data. Redesign begins.

Photo Credit: Stuart Pearce



**August 2017**  
 The Nearshore Allstars take the Mk4 out for its first official field test.

Photo Credit: Janan Evans-Wilent



**October 2017**  
 Students stand in front of a CTD rosette.  
 Photo Credit: Kama Almasi

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