



## Optical Phytoplankton Detector

The Optical Phytoplankton Detector, the instrument formerly known as BreveBuster, measures for the presence of *Karenia Brevis* and other algal species from their optical absorbance characteristics. This is accomplished by pumping sea water samples through a Liquid Waveguide Capillary Cell (LWCC), illuminating with a light source, and measuring the resulting light spectra. A single sample concurrently analyzed for as many as 12 species takes only three to four minutes to collect and process. Sampling intervals are user programmable from continuous to many hours. To save power, OPD may be put into a sleep mode between sample cycles. After each sample a status report is sent to a host computer or any serial data telemetry system. All raw spectral and analyzed data are internally logged for later file transfer.

OPD models are available for deeper AUV and towed deployments and for shallow deployments such as buoys, pilings, and piers. A desktop model suitable for laboratory or research vessel use is also available. The OPD is designed to operate autonomously [NOHOST mode] or under the step-by-step control of a host [HOSTED mode]. There are a number of user settable parameters that are used by its program to set the operating mode, sample the water, acquire spectral data, analyze the data, calculate phytoplankton similarity index and CDOM, and to log and report the results.



### Mechanical:

Weight (in air)	13 Kg
10-16vdc	
Diameter	21 cm
Length	31 cm
Depth AUV/Towed	100 meters
Depth Moored/Buoy	3 meters

### Electrical:

Voltage	
Avg. Current, sampling	600 ma
Current (sleep mode)	.01 ma

### Data:

Sample Interval	Continuous to hours
Sample Cycle Duration	3-4 minutes
Data Output	RS-232
Baud Rate	9600 to 115200
Data format	ASCII text
Optical range	350-750 nm

### Sample data report:

6, 13.954, 8.200, 0, 149, 473, 04/05/05, 09:24:27, 2720.00/-08230.00, -0.002, 2.149, 0, 0.18, 4KB4\_019

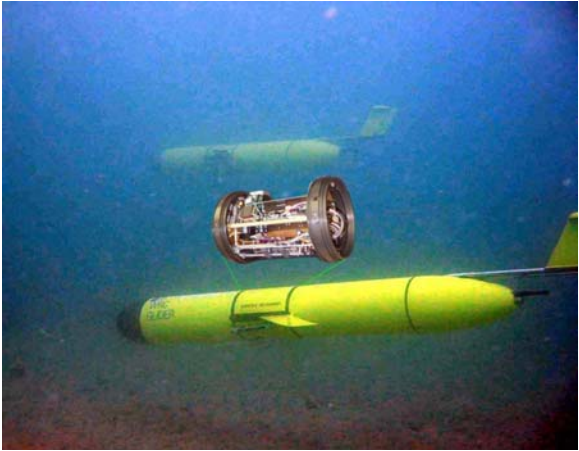
### Data Values:

Serial number, Voltage, Filter trans-membrane Pressure(psi), Error Status, Integration Time(msec), CDOM Reference fluid supply remaining (ml), Date, Sample time, lat ddmm.mm/Lon ddmm.mm, Absorbance slope, Absorbance intercept(of the best-fit line of the measured CDOM absorbance), Spare, Similarity Index, Species Model (2004, *Karenia Brevis*, May #019).

The **Similarity Index** represents a degree of fit for the optical absorbance characteristics of a sample as compared to a species model. Model files can be created for the sensor and are not limited to *Karenia Brevis*. Many species model files are available from Mote. Multiple Similarity Indexes can be reported for each sample.

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TRW-Webb Slocum Glider AUV



Waterway/Harbor Navigational Marker



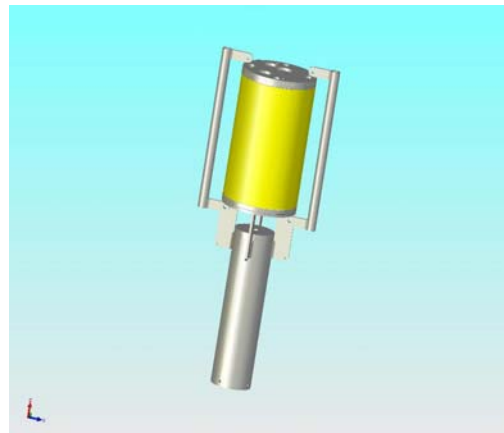
USF BSOP Vertical Profiler



U.S.F. COMPS BUOY



Hydroid REMUS AUV



Drifter/Mooring