

# DataBubble – A Tsunami Detection Device

## Product Sheet



### Description

The DataBubble family of systems provides a means for communicating from underwater to anywhere on the globe. Applications include tsunami detection and reporting, marine mammal tracking, environmental data reporting, and a variety of classified applications.

The system consists of a sensor, multiple DataBubble's, a Base Station, and one of a variety of satellites as shown in Figure 1. Communications is 1-way and one time in the present implementation; from the sensor out to a ground station. Modifications for persistent communication are possible depending on depth.

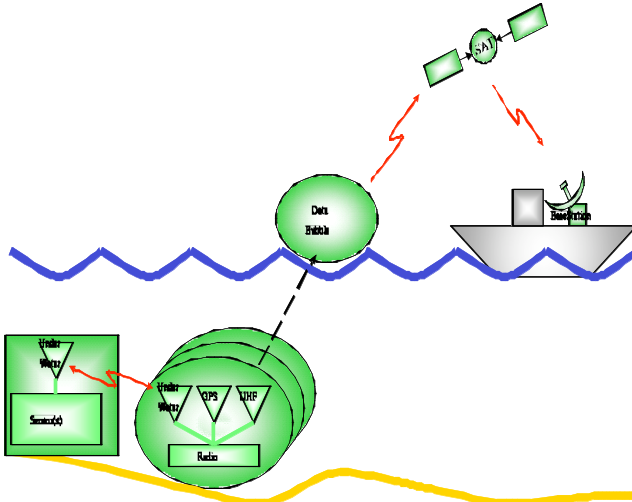


Figure 1 Typical DataBubble Application

As sensory data is collected, it is transmitted over a very short range RF link through water to a DataBubble. The DataBubble is inflated and floats to the surface where it collects its GPS position. The sensor message and GPS position are transmitted over SATCOM and received and reported to the Base Station (and then the Internet, SIPRNET, and/or JWICS if desired).

The radio for this system is based on ETC's operational 1-way Tag, Track and Location (TTL) System with a nominal mass of 30 grams and shown in Figure 2.



Figure 2 DataBubble Radio

### Features

- > 10 dB link margin
- 10's kBytes message payload
- Real-time position acquisition & reporting
- GPS accuracy
- Software Define Radio (SDR) Implementation
- Programmable frequencies
- Programmable data rate
- M-ary FSK or BPSK modulation
- Satellite link / global coverage
- Energy efficient operation

### Development Status

The 1st generation DataBubble prototype was completed in November of 2008 under a contract funded by the Office of Naval Research. ETC is currently doing a spiral development of the DataBubble, enhancing and refining select features. The 2<sup>nd</sup> Generation DataBubble will be complete in November of 2009.