Draft OCN 418 Project Proposal

Currently, over 90 percent of Hawaiian Green Sea Turtles (*Honu*) reproduce and lay eggs within French Frigate Shoals (FFS). FFS is located in the Papahanaumokuakea marine national monument and consists of 10-14 islands and sandbars. Of those, nearly all lay eggs on Tern and East Islands. Each summer scientists from the Pacific Islands Fisheries Science Center (PIFSC) spend ~6 months living on East Island to catalog, examine, and observe dozens to hundreds of *Honu*.

For the past few years the PIFSC biologists have been placing miniature CTDs and GPS units on the turtles to track their movements, behavior, migration routes, and associated salinity, temperature, and depth. The sensors that are currently used are created by Wildlife Computers and cost ~$5-6k. Their sensor is a mix of the SPOT-287 and SPLASH 10-f-351

As a result, they are only able to attach 4 per season, two of which malfunctioned this past summer.

The sampling regime requires a sampling interval of less than 5 minutes and the ability to be telemetered. Sampling will occur as long as the device functions. On the current Wildlife Computers devices, data is telemetered via Argos

The creation of a low-cost alternative to the current models would allow for the collection of a robust data set not only of animal behavior, but of various oceanographic measurements. The current plan for this proposal is to modify OpenCTD to be able to telemter via argos, determine the accuracy and precision of the OpenCTD sensors, and decrease the size of the package so that it meets permitting requirements for attachment to marine life.

Current largest unknown is the Argos telemetry. Could not easily determine cost, and how to link into their satellite network. The current largest issue as not by researchers is battery life. Considering telemetering less frequently? Perhaps once per day. Currently, data is telemetered every time *Honu* surfaces.

Parts list for OpenCTD: 