



THE OCEAN IS HOT!!!

SEAL Analytical case study - University of Hawaii

Scientists working on the Hawaii Ocean Time-series (HOT) program have been making repeated observations of the hydrography, chemistry and biology of the water column at a station north of Oahu, Hawaii since October 1988. HOT is based out of the School of Ocean and Earth Science and Technology (SOEST) at the University of Hawaii and receives funding from the U.S. National Science Foundation. The objective of HOT research is to provide a comprehensive description of the ocean at a site representative of the North Pacific subtropical gyre.



Cruises are made approximately once per month to the deep-water Station ALOHA (A Long-Term Oligotrophic Habitat Assessment; 22° 45'N, 158° 00'W) located 100 km north of Oahu, Hawaii. Measurements of water column chemistry, currents, optical properties, primary production, plankton community structure, and rates of particle export are made on each cruise.

Both inorganic and organic nutrient samples are analyzed to provide a description of water column chemistry. Nutrient samples are collected on each cruise from the surface ocean and to a depth of ~4800m. The samples are frozen and brought back to the lab for analysis of NO_3+NO_2 , PO_4 , and $\text{Si}(\text{OH})_4$ concentrations. These seawater nutrients are analyzed using a SEAL Analytical AutoAnalyzer 3 (AA3) Segmented Flow Analyzer. Samples are loaded onto the sampler and analyzed colorimetrically for each nutrient simultaneously, thus generating around 300 tests an hour.

Susan Curless (pictured below with the AA3) works for the Hawaii Ocean Time-series program, and has acted as the lead nutrient analyst for the program since January 2005. Their AA3 has been used to fully support the nutrient analyses required for the HOT program since then. Susan is also one of the chief scientists of the HOT program, so when she is not out at sea organizing, planning, and leading research cruises, she is in the laboratory analyzing nutrient samples on the SEAL AutoAnalyzer 3.



Susan also utilizes the AA3 for nutrient samples collected on CMORE (Center for Microbial Oceanography: Research and Education) cruises.

Dr. David Karl and Dr. Roger Lukas (and others) started the HOT program back in 1988 and are still very heavily involved in the direction of the program today. As of August 2009, Dr. Matthew Church is the now the lead PI.

SEAL Analytical are world-wide leaders in the supply of segmented flow analyzers for Seawater community. The high precision and reproducibility, robust design and low detection limit of SEAL analyzers make them the first choice for seawater analysis. Leading seawater laboratory and research institutes use the SEAL AutoAnalyzer and QuAAtro. As well as being reliable laboratory instruments, these analyzers are designed to stand up to tough conditions on board an oceangoing research vessel, and are in routine ship-board use from the Arctic Ocean to the Weddel Sea. The latest instruments use LED light sources which have long life and are unaffected by vibration and are extremely stable. They were developed specifically for trace-level on-board seawater analysis.

Further information on the HOT program & SEAL Analytical can be found on their websites:

http://hahana.soest.hawaii.edu/hot/hot_jgofs.html
<http://www.seal-analytical.com>