



SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY

Press Release

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UH Ocean Research Program Reaches Milestone

Honolulu, HI - On November 3, 1988, the University of Hawaii (UH) research vessel Moana Wave returned to Honolulu's pier 45 after successfully establishing a deep ocean observation station dubbed ALOHA (A Long-term Oligotrophic Habitat Assessment) as the benchmark site for the Hawaii Ocean Time-series (HOT) program. The 1988 expedition was led by Roger Lukas and David Karl, both professors of oceanography in UH's newly created School of Ocean and Earth Science and Technology (SOEST). The primary objective of HOT was to obtain a long-term time-series of physical and biogeochemical observations at a location that was characteristic of the North Pacific Subtropical Gyre habitat to address U.S. Global Change Research Program goals, namely to document and understand seasonal and interannual variability of water masses and to relate variations to gyre fluctuations, to determine the relationships between microbial community structure and function including nutrient dynamics and carbon sequestration, and to measure the time-varying concentrations of carbon dioxide in the surface waters and annual atmospheres-to-ocean gas fluxes. The HOT program was envisioned to last at least one decade, possibly longer.



On February 21, 2008, the UH research vessel Kilo Moana departed from the UH Marine Expeditionary Center at pier 45 on the 200th scientific expedition of HOT after nearly 20 years of approximately monthly research cruises to observe and interpret habitat variability and to track climate impacts on Hawaii's marine ecosystem. "Like a good wine, the value of the HOT program data sets improves with time" said David Karl. "Each additional year of observations brings us closer to a fundamental understanding of how the ocean functions, and its relationships to climate."



Each HOT cruise requires careful planning, skillful execution and collaboration among the tripartite of academic scientists, marine technicians and engineers, and the professional crews of the research vessels. "An extraordinary amount of preparation and follow through, and attention to detail, are required of all involved to make the comprehensive HOT measurements and to produce the state-of-the-art datasets that are in now in use around the world", says Roger Lukas. "We can now see important trends and cycles that could never have been detected without the sustained, consistent observational efforts".

In addition to its primary mission of ocean research, the HOT program has been an invaluable training ground for undergraduate and graduate students, "UH's floating classroom," Karl said. Some UH graduates have gone on to faculty positions on the mainland and their students are now

Image above: Eric Grabowski, chief scientist for the HOT 200th cruise, and Karin Bjorkman, who has participated in over 100 HOT cruises. Image courtesy of HOT/SOEST



Hawaiian Ocean Time-series scientists recover their sediment traps at dawn. Image courtesy of HOT/SOEST

conducting their research at Station ALOHA – so the HOT influence has now extended into the next generation of marine scientists.

HOT has provided academic scientists worldwide with access to the sea, Karl said, and in turn each visiting scientist adds their own data and ideas to the program as a whole. It is fair to say that Station ALOHA is probably one of the best studied open ocean sites on our planet. In addition to the monthly ship-based observations, HOT program scientists have access to real-time satellite-based remote observations, unattended mooring measurements, unmanned instrumented gliders and floats, and a fiber optic cabled observatory with a broadband connection back to Oahu. "The HOT program is providing new understanding of fundamental Ocean processes, even as those processes are being modified by human activities on a global scale",

says SOEST Dean Brian Taylor. "It is essential to skillfully continue the HOT observations, experiments, data analysis and student training that we may monitor, and inform society how best to respond to, the changing ocean conditions."

The success of the HOT program, to date, is a result of the coordinated, dedicated efforts of a large team of scientists, students and technical staff led by David Karl and Roger Lukas of the UH Department of Oceanography. "I have been fortunate enough to meet and work with some members of the HOT community and have been very impressed by their passion and dedication to our oceans", says Brian Wehmeyer, Captain of the R/V Kilo Moana. "The HOT team exemplifies a group of people taking action, and working hard at trying to make the world just that little bit better."

After returning from this 200th cruise, Chief Scientist Eric Grabowski reflected on the expedition. "HOT-200 was a giant success. It felt as if all the elements came together to make this historic cruise incredibly memorable. The weather was beautiful, whales greeted us repeatedly and the HOT scientists and researchers, and the crew aboard the Kilo Moana showed great teamwork to achieve all of our scientific objectives. It was a true honor for me to serve as Chief Scientist on this monumental cruise."

Later this year the HOT program will celebrate 20 years of ocean observation with an international science symposium that will review the program's accomplishments and present plans for the next decade. "This 20-year anniversary of the Hawaii Ocean Time-series is testament to our UH Manoa faculty's long cutting-edge leadership in collecting and analyzing vital ocean science data, especially the impact of climate change on Hawaii's ecosystem," said University of Hawaii at Manoa Chancellor Virginia Hinshaw.

The HOT program receives primary funding from the U.S. National Science Foundation (NSF) with contributions from the Gordon and Betty Moore Foundation and the State of Hawaii. In 2006, a new NSF-funded Science and Technology Center of excellence in microbial oceanography (cmore.soest.hawaii.edu) was established to complement the HOT program.

For more information on the **Hawaii Ocean Time-series Program**, please see <http://hahana.soest.hawaii.edu/hot/hot.html>

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