School of Ocean & Earth Science & Technology

PRESS RELEASE

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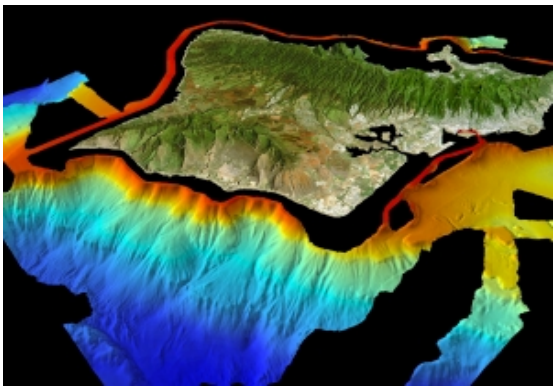
Note: This corresponds to Planetary Missions, Instruments, and Data Analysis Techniques Posters session P41B-0412.

Multibeam Bathymetry and Imagery Capabilities of the Newest UNOLS Research Vessel: R/V Kilo Moana

San Francisco – The R/V KILO MOANA is the newest ship and the first Small Waterplane Area Twin Hull (SWATH) vessel in the US research fleet, owned by the Office of Naval Research and operated by the School of Ocean & Earth Science & Technology at the University of Hawaii. The SWATH hull is designed to provide a stable platform that allows research to continue in higher sea conditions than monohull vessels of comparable size. SWATH vessels slice through the water, supported by submerged pontoons beneath wave-piercing struts. These characteristics make KILO MOANA an exceptional platform for conducting seafloor mapping missions.

Kilo Moana is the newest research vessel in the UNOLS fleet. The ship's unique SWATH design makes Kilo Moana an ideal seafloor mapping vessel.



Combined shallow- and deep-water sonar data around Oahu, Hawai`i, collected aboard Kilo Moana.

Kilo Moana is equipped with two separate multibeam mapping systems. One system (a Simrad EM1002) operates at 95 kHz and is effective at mapping depths from 5 to 800 meters. This sonar has been used extensively in the Hawaiian Island to map near shore

environments and submerged reefs offshore. The other system (a Simrad EM120) operates at 12 kHz to map depths from 500 to 11000 meters. Each system has a swath width of about 7 times the depth of the water, and can be operated at speeds of more than 12 knots. Together with the ability to perform in high sea states, these characteristics enable KILO MOANA to efficiently map the seafloor in all ocean depths.

The small vessel motions associated with SWATH vessels reduces the amount of pitch, roll and yaw that can degrade bathymetry and acoustic imagery. The SWATH design also reduces bubble sweepdown beneath the hull. Bubble masking of sonar signals is one of the biggest impediments to mapping in rough water, because bubbles created at a ship's bow can be swept under the hull and across sonar transducers, preventing the sonar signals from reaching the transducers. KILO MOANA's SWATH design is unique in the research fleet, and makes it a powerful tool in the study of the world's oceans.

Results from shipboard acceptance tests indicate that each of the R/V KILO MOANA's multibeam system meets or exceeds the performance targets. "The systems have performed exceptionally well", says Bruce Appelgate, Director of Field Operations for the Hawaii Mapping Research Group, who run the mapping systems, "Probably the most impressive thing about KiMo's mapping systems is their ability to perform well in high sea states. The channels between the Hawaiian Islands get really rough when the trade winds are blowing, and the ship spent the summer working in the Aleutian Islands this year. Sitting on KILO MOANA, watching the bathymetry map being built on a ship that's hardly moving, sometimes you've got to look out the window to remind yourself how big the seas are out there".

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Images are available online at http://www.soest.hawaii.edu/SOEST_News/AGU2003

Related presentations:

General Ocean Sciences: Instruments, Techniques, and Programs II Posters
OS42A-0823 Multibeam Bathymetry and Imagery Capabilities of the Newest UNOLS Research Vessel: R/V Kilo Moana (AGOR-26) *B Appelgate, P Johnson, B Taylor, D Rolland POSTER

Recent Advances in Understanding Submarine Environments and the Future of Submergence Research and Facilities Posters
OS32A-0237 Comparison of Sidescan and Swath Bathymetry and Imagery Merging Various Types of Swath-Mapping Sonar Data Sets Using a Variety of Post-Processing Display Techniques *N C Becker, A Sterling, P Fryer, B Appelgate, M Tivey POSTER

OS32A-0238 A New Method For Processing Backscatter Imagery Collected By Multibeam Sonars: The HAWAII MR1 Sidescan Sonar Software Suite *R Davis, B Appelgate POSTER

OS32A-0239 The IMI-30 Seafloor Imaging System: Development of A New NSF Deep-Towed 30kHz Bathymetric Sidescan Sonar System *M Rognstad, B Appelgate, T Ericksen POSTER