

CENTER FOR COASTAL & OCEAN MAPPING NOAA-UNH JOINT HYDROGRAPHIC CENTER

MULTIBEAM AND SIDESCAN SONAR DATA PROCESSING *Developing New Tools, Setting New Standards*

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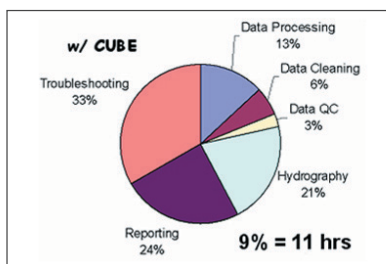
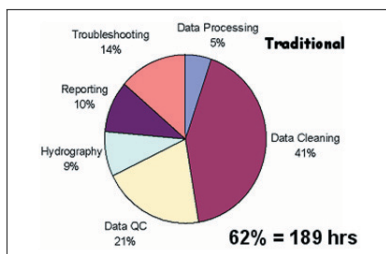
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One of the major efforts of CCOM/JHC has been to develop improved data processing methods that allow hydrographers to very rapidly and accurately process the massive amounts of data collected with modern multibeam systems. This data processing step is one of the most serious bottlenecks in the hydrographic “data processing pipeline” at NOAA, the Naval Oceanographic Office, and hydrographic agencies and survey companies worldwide.

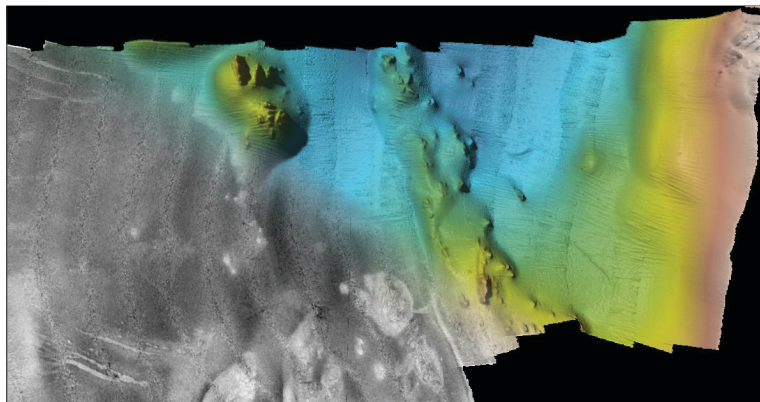


To that end we have created a technique known as CUBE—for Combined Uncertainty and Bathymetric Estimator—and a new database called The Navigation Surface that are now part of standard processing protocols. Nearly every hydrographic software producer has already, or will be, incorporating these approaches into their products.

CUBE is both very fast and statistically robust and provides a mechanism for automatically “cleaning” most of the data, which removes both the tedium and subjectivity of analyzing individual depth soundings. Most importantly, the technique produces an estimate of uncertainty thereby providing high confidence in the accuracy of the data.

Notes CUBE developer, research associate professor Brian Calder, “Every gain in efficiency has a very important and practical real-world application, and that’s one of the center’s main accomplishments. The tools we create today, when implemented a few years from now, can have a very significant impact on how efficiently and, therefore, how quickly we survey.”

In addition to improving bathymetric processing, it has become increasingly clear there is a great need for improved processing of backscatter data, both from multibeam and sidescan sonars. The energy or magnitude of the signals returned from the seafloor—the backscatter—can provide insight into the physical character of the seafloor (sandy, muddy, rocky, smooth, etc.). This, in turn, can be critical for habitat mapping—another emerging area for CCOM/JHC and NOAA and a key element of the “map once, use many times” standard of Integrated Ocean and Coastal Mapping.



Multibeam bathymetry and backscatter from Aat's Bay, Alaska, processed using techniques developed at CCOM/JHC. Data courtesy of the NOAA Ship FAIRWEATHER.

