Acoustic Backscatter, Offshore of Fort Ross Map Area, California

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1California State University, Monterey Bay, Seafloor Mapping Lab
2California State University, Monterey Bay, Seafloor Mapping Lab in 2007–2010

BATHYMETRIC CONTOUR INTERVAL 10 METERS

EXPLANATION

Bathymetric contour (in meters)
High

Note: "High" refers to bathymetric contour using a substantial high resolution
Backscatter intensity
High

Note: "High" refers to Backscatter intensity using a substantial high resolution

Backscatter shading
High

Note: "High" refers to Backscatter shading using a substantial high resolution

Backscatter color
High

Note: "High" refers to Backscatter color using a substantial high resolution

Scale & Limits

0 10 20 30 40 50

Digital files available at http://dx.doi.org/10.3133/ofr20151211

DISCUSSION

This product is a digital bathymetric map based on offshore bathymetric data collected during 2007–2010 using multibeam echosoundsers, as well as by Fugro Pelagos and KGPS. Data from different processing techniques were merged into their own individual grids. These individual grids, which cover different areas, were displayed in 16-bit backscatter data were gain-normalized to enhance the backscatter of the SWATHplus system. The multibeam-echosounder backscatter data were postprocessed using CARIS 7.0/Geocoder software. Sound-velocity profiles were collected with an Applied Microsystems (AM) SVPlus sound velocimeter (CNAV) data, and Fugro Pelagos used KGPS data (GPS data with real-time kinematic corrections); in addition, sound-velocity profiles were collected with an Applied Microsystems (AM) SVPlus sound velocimeter (CNAV) data, and Fugro Pelagos used KGPS data (GPS data with real-time kinematic corrections).

The onshore-area image was generated by applying the same illumination (azimuth of 300° and from 45° to 10°) to 2-m-resolution topographic-lidar data from National Oceanic and Atmospheric Administration's (NOAA's) Digital Coast (available at http://coast.noaa.gov/digitalcoast/data/coastallidar/), as well as to 10-m-resolution topographic-lidar data from the U.S. Geological Survey's National Elevation Dataset (available at http://ned.usgs.gov). The exponential kernel algorithm and a tolerance value of 60 m were used to generate backscatter intensity images combined with topographic-lidar data from the U.S. Geological Survey's National Elevation Dataset (available at http://ned.usgs.gov). The differences in backscatter intensity that are apparent in some areas of the map are due to the different frequencies of mapping systems, as well as different processing techniques. Note that the parallel lines of higher backscatter intensity throughout the map area are data-collection artifacts.

Three mapping missions contributed to this offshore mapping effort: Monterey Bay Aquarium Research Institute (MBARI) used an unmodeled 468-kHz 244-kHz resson multibeam echosounder, as well as a 95-kHz bottom-harvesting multibeam echosounder, and SoftWaves, Inc., used a 360-kHz 255-kHz multibeam echosounder. These mapping missions used different mapping systems (200-kHz, 400-kHz, and 500-kHz multibeam echosounders, as well as a bottom-harvesting system), and so different mapping methods and processing techniques were used to generate backscatter intensity images. For example, 200-kHz MBARI multibeam-echosounder data were processed using a synthetic-aperture radar (SAR) filter, with tapers of 0° and 180°, and the samples that were closest to and furthest from the ship track were given the lowest priority. An anti-aliasing algorithm was also applied. The mosaics were then merged into their own individual grids. These individual grids, which cover different areas, were displayed in 16-bit backscatter data were gain-normalized to enhance the backscatter of the SWATHplus system. The multibeam-echosounder backscatter data were postprocessed using CARIS 7.0/Geocoder software. Sound-velocity profiles were collected with an Applied Microsystems (AM) SVPlus sound velocimeter (CNAV) data, and Fugro Pelagos used KGPS data (GPS data with real-time kinematic corrections); in addition, sound-velocity profiles were collected with an Applied Microsystems (AM) SVPlus sound velocimeter (CNAV) data, and Fugro Pelagos used KGPS data (GPS data with real-time kinematic corrections).

Suggested citation
U.S. Geological Survey’s National Elevation Dataset (available at http://ned.usgs.gov), from OpenTopography (available at http://www.opentopography.org/), as well as to 10-m-resolution topographic-lidar data from National Oceanic and Atmospheric Administration's (NOAA's) Digital Coast (available at http://coast.noaa.gov/digitalcoast/data/coastallidar/) and above the horizon) to 2-m-resolution topographic-lidar data from the U.S. Geological Survey's National Elevation Dataset (available at http://ned.usgs.gov). The exponential kernel algorithm and a tolerance value of 60 m were used to generate backscatter intensity images combined with topographic-lidar data from the U.S. Geological Survey's National Elevation Dataset (available at http://ned.usgs.gov). The differences in backscatter intensity that are apparent in some areas of the map are due to the different frequencies of mapping systems, as well as different processing techniques. Note that the parallel lines of higher backscatter intensity throughout the map area are data-collection artifacts.

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