

DISCUSSION

This shaded-relief bathymetry map of the Offshore of Pacifica map area in northern California was generated from bathymetric data collected by FGP Pelagos and by California State University, Monterey Bay (CSUMB) (Fig. 1). Mapping was completed in 2005, 2006, and 2007, using a combination of 400-kHz Water Level Sounder (WLS) data collected by FGP Pelagos and 1200 kHz Chirp echosounder data collected by CSUMB bathymetry data from about the 10-m isobath to beyond the 7-3 nautical-mile limit of California's State Waters.

During all the mapping missions, an Applanix POS MV (Position and Orientation System for Marine Vessels) was used to accurately position the vessels during data collection, and it also accounted for vessel motion (roll, pitch, yaw, heave, surge, sway, and heave), as well as tide effects. Accuracy of the POS MV system is approximately ±5%, or 5 cm. To account for tidal-cycle variations, CSUMB used NavCom 2050 GPS receivers (CNVAV) data; FGP 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. The WLS data were collected at 10 m depth intervals, and the Chirp echosounders collected data from sound velocity down to the seafloor. Data were processed using the AM SVPlus data, and for variances in water height (tides) using the AM SVplus data, and for variances in water height (tides) using the AM SVplus data, and for variances in water height (tides) using the AM SVplus data.

Processed soundings from the different mapping missions were exported from the acquisition or processing software to ArcMap 9.2 and the bathymetric surfaces. All the surfaces were merged into one overall 2-m resolution bathymetric surface model and clipped to the boundary of the map area. An illumination having an azimuth of 300° and 45° above the horizon was then applied to the bathymetric surface to create the shaded-relief imagery.

Bathymetric surfaces were generated at 10-m intervals from the merged 2-m-resolution bathymetric surface. The most continuous contour segments were preserved, smaller segments and isolated island polygons were excluded from the final output. Contours were smoothed using a polynomial approximation with exponential kernel algorithm and a tolerance value of 0.00.

The resulting maps are similar to those produced by the same illumination (azimuth of 300° and from 45° above the horizon) to 1-m-resolution topographic-lidar data collected by Photocensus in 2005 for the U.S. Geological Survey and the County of Santa Mateo.

EXPLANATION

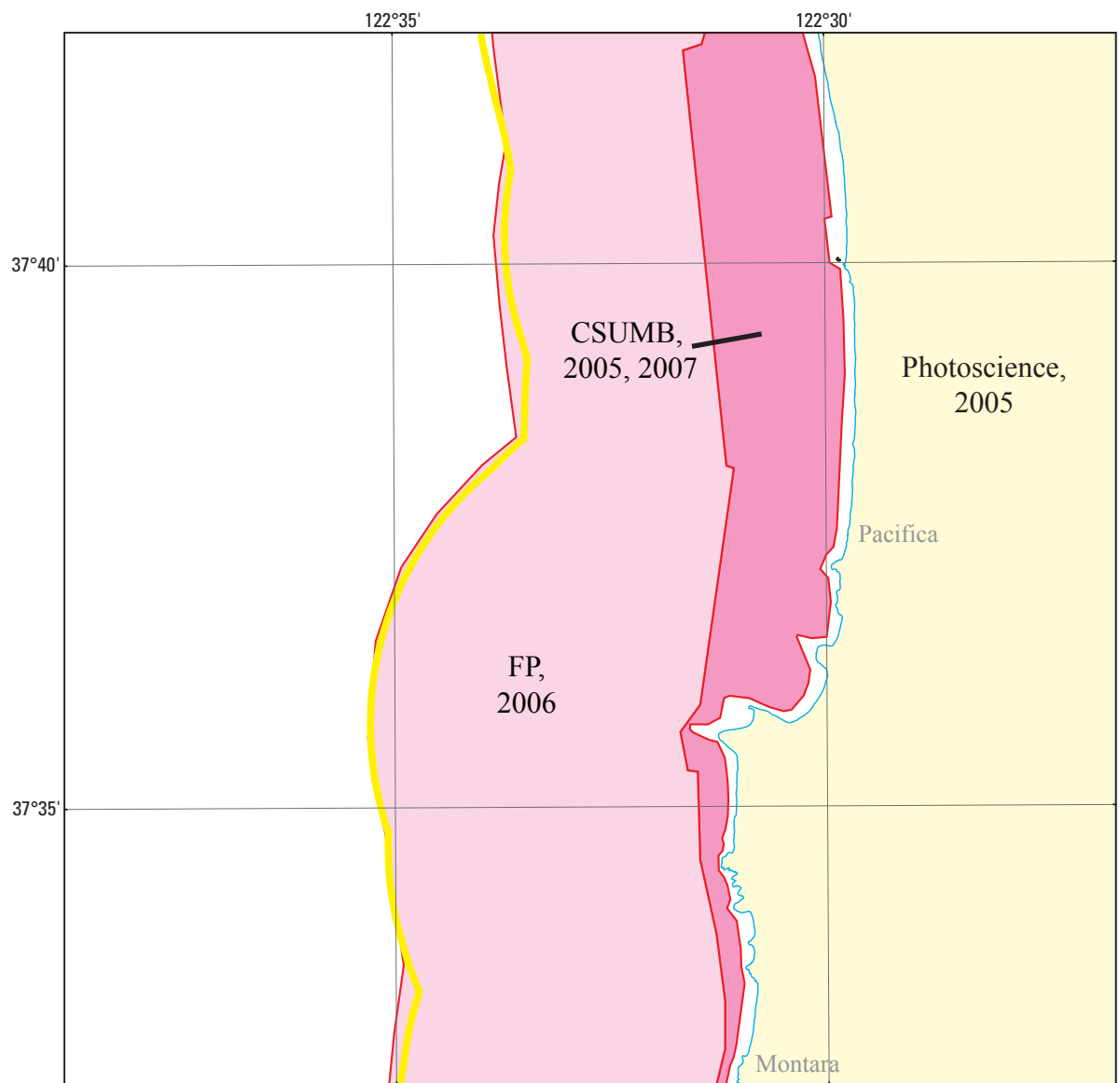
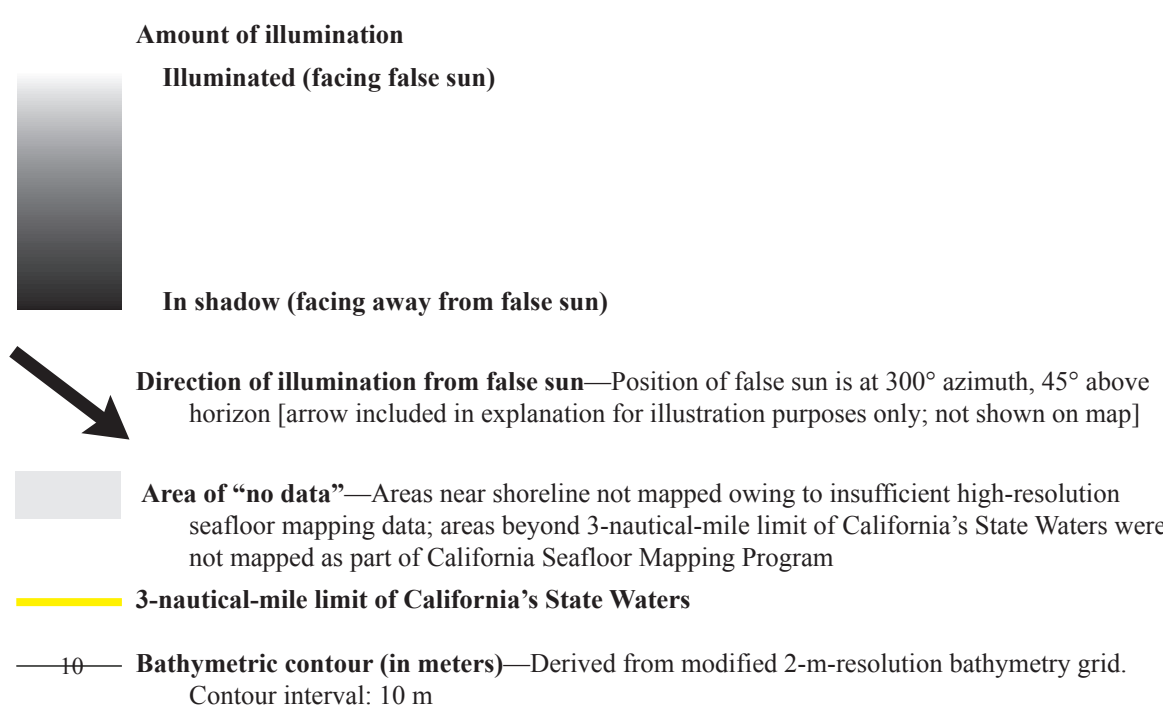


Figure 1. Map showing areas of multibeam-echosounder surveys (pink shading) and onshore topographic-lidar surveys (yellow shading). Also shown are data-collecting agencies (CSUMB, California State University, Monterey Bay, Seafloor Mapping Lab; FP, Fugro Pelagos) and dates of surveys if known. Yellow line shows limit of California's State Waters.

Shaded-Relief Bathymetry, Offshore of Pacifica Map Area, California

By
Carrie K. Bretz,¹ Rikk G. Kvitek,¹ Peter Dartnell,² and Eleyne L. Phillips²
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