

DISCUSSION

This sheet includes maps that show the thickness and the depth to base of uppermost Pleistocene and Holocene (in other words, post-Last Glacial Maximum) deposits for the Hueneme Canyon and vicinity map area (Maps A, B), as well as for a larger area that extends about 113 km along the coast from Hueneme Canyon to Refugio Beach (Maps D, E) to establish a regional context. To make these maps, water bottom and depth to base of the post-Last Glacial Maximum horizons were mapped from seismic-reflection profiles. The difference in the two horizons was exported for every shot point as XY coordinates (UTM zone 11) and two-way travel time (TWT). The thickness of the post-Last Glacial Maximum unit (Map B, E) was determined by applying a sound velocity of 1,600 m/sec to the TWT. The thickness points were interpolated to a preliminary continuous surface, overlaid with zero-thickness bedrock outcrops (sheet 10 of this report), and contoured (Wong and others, 2012). Data within Hueneme Canyon were excluded from the contouring because the seismic-reflection data are too sparse to adequately image the highly variable changes in sediment thickness that characterize the canyon (Maps A, B, D, E).

Several factors required manual editing of the preliminary thickness maps to make the final products. The Red Mountain Fault Zone (RMFZ), Pinn Point Fault (PPF), and Oak Ridge Fault (ORF) disrupt the sediment sequence in the region (Maps D, E). The data points also are dense along tracklines (about 1 m apart) and sparse between tracklines (1.2 km apart), resulting in contouring artifacts. To incorporate the effect of the faults, to remove irregularities from interpolation, and to reflect other geologic information and complexity, the resulting interpolated contours were modified. Contour modifications and regridding were repeated several times to produce the final regional sediment thickness map (Wong and others, 2012).

Data to determine the depth to base of the post-Last Glacial Maximum unit was similarly processed and contoured; however, this preliminary data set was set aside in favor of a surface determined by subtracting the modified thickness data from multi-beam bathymetry collected separately (see sheet 1, see also, Wong and others, 2012). The depth of this surface in the Hueneme Canyon and vicinity map area ranges from 12 to 100 m (Map D).

Five different "domains" of sediment thickness, which are bounded either by faults or by Hueneme Canyon, are recognized on the regional maps (Maps D, E): (1) Refugio Beach to the northern strand of the Red Mountain Fault Zone (RMFZ), (2) between the northern strand of the Red Mountain Fault Zone and the Pinn Point Fault (PPF), (3) between the Pinn Point Fault and Oak Ridge Fault (ORF), (4) between the Oak Ridge Fault and Hueneme Canyon, and (5) south of Hueneme Canyon. These data highlight the contrast among three general zones of sediment thickness: (1) the uppermost, sediment-poor Santa Barbara shelf (domain 1, mean sediment thickness of 3.6 m), (2) a transitional zone (domain 2, mean sediment thickness of 17.6 m), and (3) the subsiding, sediment-rich delta and shelf offshore of the Ventura and Santa Clara Rivers and Calleguas Creek (domains 3, 4, and 5, mean sediment thicknesses of 39.3, 38.2, and 28.3 m, respectively).

In the Hueneme Canyon and vicinity map area (Maps A, B), mean sediment thickness northwest and southeast of Hueneme Canyon is 38.1 and 31.9 m, respectively. The variability reflects the influence of channel cut and fill associated with the heads of the smaller, unnamed submarine canyons east of Hueneme Canyon, as well as perhaps the lower sediment supply owing to their location on the downdrift flank of Hueneme Canyon.

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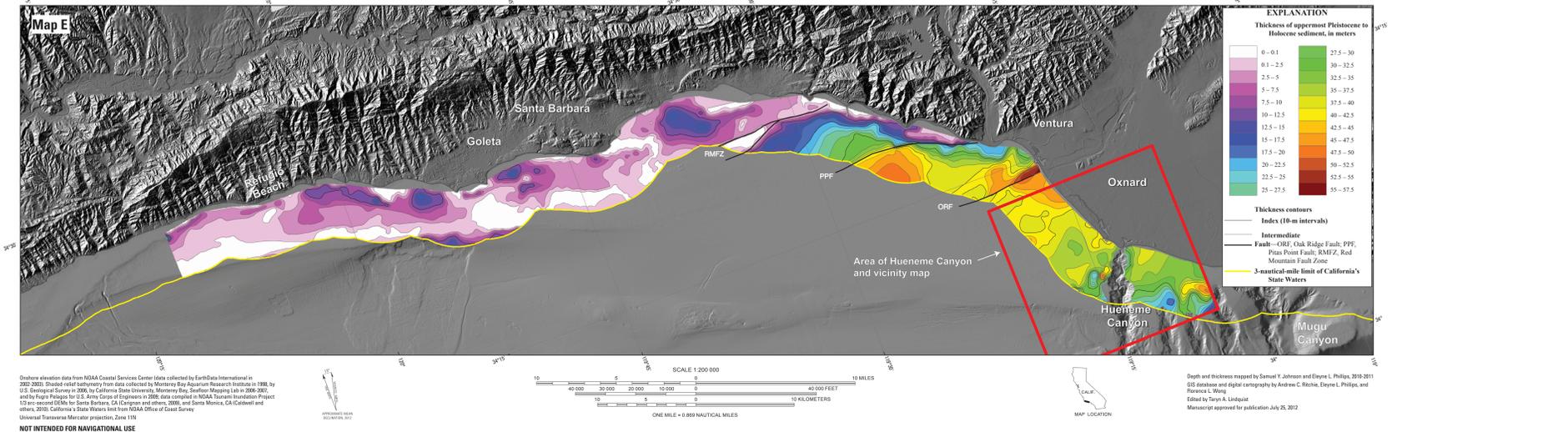
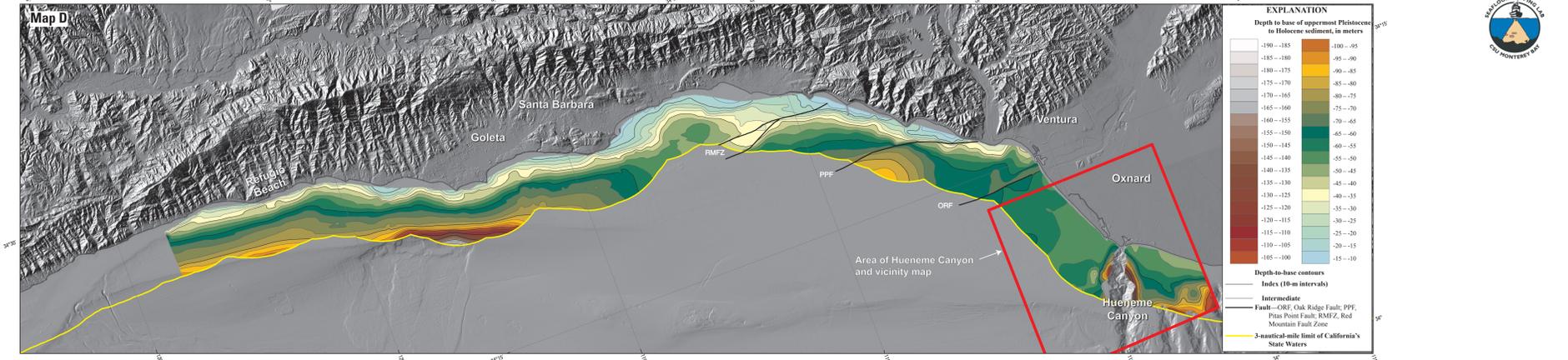
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Local (Hueneme Canyon and Vicinity) and Regional (Offshore Refugio Beach to Hueneme Canyon) Shallow-Subsurface Geology and Structure, Santa Barbara Channel, California

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For more information on the data sources, see the following: Johnson, S.Y., Phillips, J.L., and Sliker, R.W., 2012, Local Hueneme Canyon and vicinity and regional offshore Refugio Beach to Hueneme Canyon shallow subsurface geology and structure, Santa Barbara Channel, California: U.S. Geological Survey Scientific Investigations Map 3225, 12 sheets, pamphlet 38 p., available at <http://pubs.usgs.gov/min3225/>.

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