

**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 Offshore of Coal Oil Point map area (Maps A, B), as well as for a larger area that extends about 115 km along the coast from Huenehne 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 reported for every spot point as XY coordinates (UTM zone 11) and two-way travel time (TWT). The thickness of the post-Last Glacial Maximum unit (Maps B, E) was determined by applying a sound velocity of 1,600 m/s 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 Huenehne 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), Pitas Point Fault (PPF), and Oak Ridge Fault (ORF) distort 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 regriding 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 dataset was not made in favor of a surface determined by subtracting the modified thickness data from multibeam bathymetry collected separately (see sheet 1). The depth of this surface in the Huenehne Canyon to Refugio Beach area ranges from 12 to 190 m (Map D; see also, Wong and others, 2012).

Five different "domains" of sediment thickness, which are bounded either by faults or by Huenehne Canyon, are recognized on the regional maps (Maps D, E): (1) Refugio Beach to the south strand of the Red Mountain Fault Zone (RMFZ); (2) between the south strand of the Red Mountain Fault Zone and the Pitas Point Fault (PPF); (3) between the Pitas Point Fault and the Oak Ridge Fault (ORF); (4) between the Oak Ridge Fault and Huenehne Canyon; and (5) south of Huenehne Canyon. These data highlight the contrast among three general zones of sediment thickness: (1) the uplifted, sediment-poor Santa Barbara shelf (domain 1; mean sediment thickness of 3.5 m); (2) a transitional zone (domain 2; mean sediment thickness of 18 m); and (3) the subsiding, sediment-rich delta and shelf offshore of the Ventura and Santa Clara Rivers and Callegan Creek domains 3, 4, and 5; mean sediment thicknesses of 39.3, 38.9, and 28.3 m, respectively.

In the Offshore of Coal Oil Point map area, sediment thickness ranges from 0 to about 7 m, with a mean thickness of 4.0 m. The thickest sediment accumulations are in three nearshore to inner shelf deposystems, which have delta-mouth-bar morphology, sourced by local, steep watersheds to the north in the Santa Ynez Mountains. Locally thicker sediment (as much as 15 m) also is present on the upper slope (before the shelf break), with the thickest accumulations (about 15 m) representing mid-slope landslide debris. Sediment is notably thin or absent in much of the midshelf to outer shelf area.

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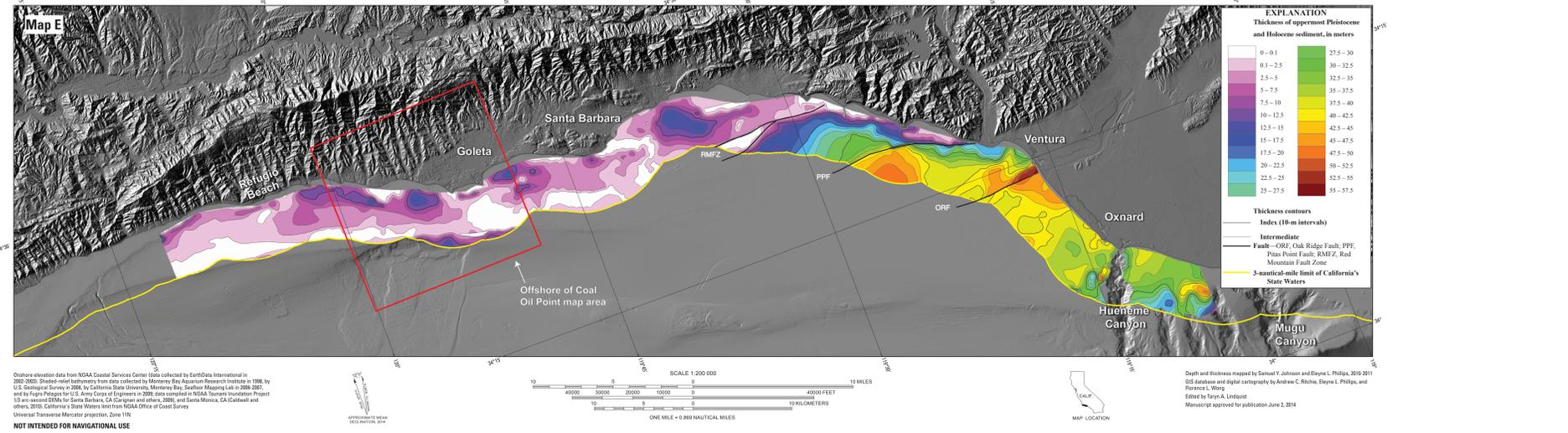
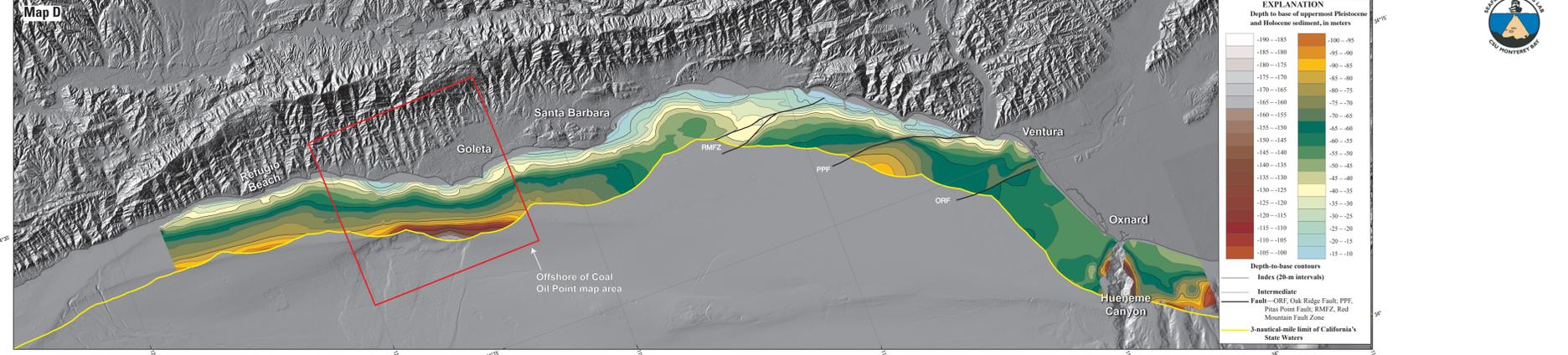
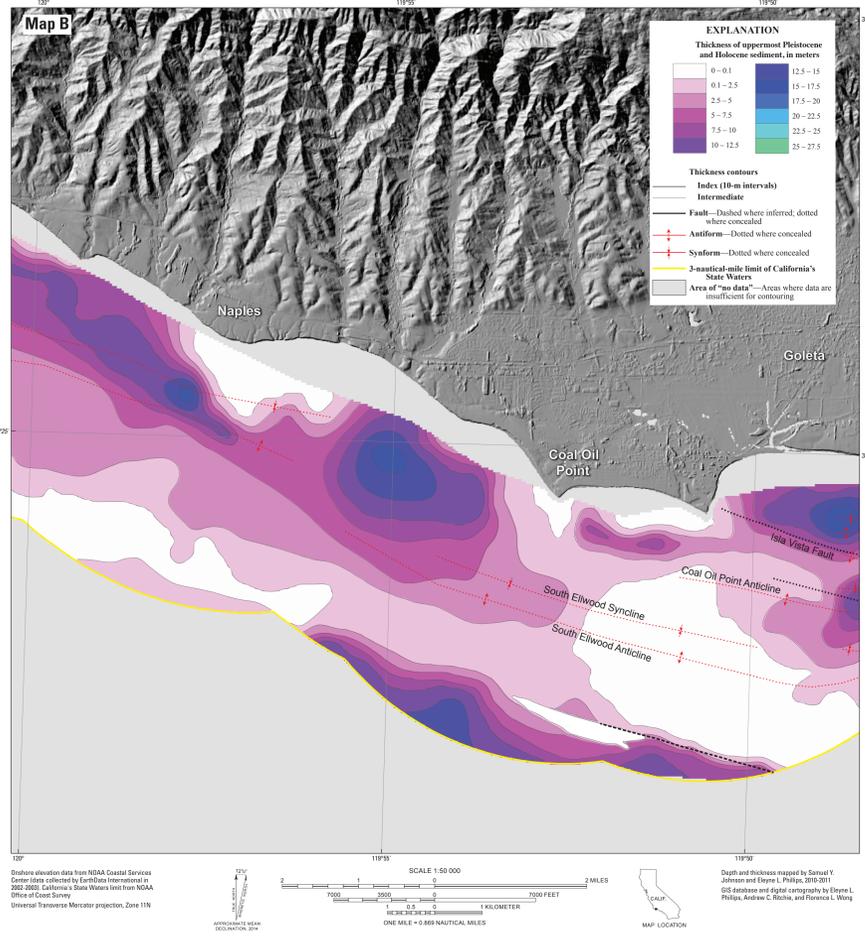
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**Local (Offshore of Coal Oil Point Map Area) and Regional (Offshore from Refugio Beach to Huenehne Canyon) Shallow-Subsurface Geology and Structure, Santa Barbara Channel, California**

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Coastline elevation data from NOAA Coastal Services Center data collected by EarthData International in 2002-2003 and from National Elevation Dataset, 2011. California's State Waters limit from NOAA Office of Coast Survey. Universal Transverse Mercator projection, Zone 11N.

Coastline elevation data from NOAA Coastal Services Center data collected by EarthData International in 2002-2003 and from National Elevation Dataset, 2011. California's State Waters limit from NOAA Office of Coast Survey. Universal Transverse Mercator projection, Zone 11N.

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