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DEPTH ZONE 2—INTERTIDAL TO 30 METERS WATER DEPTH

- ### SLOPE CLASS 2—5 TO 30 DEGREES

- ### E 3—30 METERS TO 100 METERS W

DEPTH ZONE 3—30 METERS TO 100 METERS WATER DEPTH

- SLOPE CLASS 2—5 TO 30 DEGREES

SLOPE CLASS 2—5 TO 30 DEGREES

- E 4—100 METERS TO 200 METERS W

DEPTH ZONE 4—100 METERS TO 200 METERS WATER DEPTH

- ### SLOPE CLASS 2—5 TO 30 DEGREES

- SLOPE CLASS 3—30 TO 60 DEGREES

ent and rock:—Moderate to very high bas

- coarse-grained sand, gravel, cobbles, and bedrock

EXPLANATION OF MAP SYMBOLS

- Area of "no data"**—Areas near shoreline not mapped owing to insufficient high-resolution seafloor mapping data; areas beyond 3-nautical-mile limit of California's State Waters were not mapped as part of California Seafloor Mapping Program
- 3-nautical-mile limit of California's State Waters**

DISCUSSION

This seafloor-character map of the Offshore of Coal Oil Point map area in southern California was produced using video-supervised, maximum-likelihood classification of the bathymetry and backscatter (intensity of return) signals from sonar systems (a summary of the video data collected for the purpose of supervising the classification is shown on sheet 6). Rugosity (a GIS-derived characterization of roughness) and backscatter intensity were used as variants in the classification. The interpreted classifications were then draped over shaded-relief bathymetry (see sheet 2).

The substrate classes mapped in this area have been divided into the following California Marine Life Protection Act depth zones: Depth Zone 2 (intertidal to 30 m), Depth Zone 3 (30 to 100 m), and Depth Zone 4 (100 to 200 m). In addition, the following slope classes are represented on this map (Coastal and Marine Ecological Classification Standard slope zone is shown in parentheses): Slope Class 1, 0° to 5° (flat); Slope Class 2, 5° to 30° (sloping); and Slope Class 3, 30° to 60° (steeply sloping). Depth Zone 1 (intertidal), Depth Zone 5 (greater than 200 m), and Slope Class 4, 60° to 90° (vertical), are not present in this map area.

fine- to medium-grained smooth-sandstone (sand and shale) makes up 94.3 percent (102.6 km²) of the map area. 16.7 km² is in Depth Zone 2, 78.0 km² is in Depth Zone 3, and 8.8 km² is in Depth Zone 4. Mixed sandstone and shale makes up 4.7 percent (5.1 km²) of the map area. It forms a veneer over bedrock, or rock outcrops with little to no relief) make up 5.3 percent (5.8 km²) of the map area. 1.1 km² is in Depth Zone 2, 1.9 km² is in Depth Zone 3, and 2.8 km² is in Depth Zone 4. Rock and boulder, rugose, rock outcrops and boulder fields having high surficial complexity) makes up 0.3 percent (0.4 km²) of the map area. 0.1 km² is in Depth Zone 2, 0.1 km² is in Depth Zone 3, and 0.2 km² is in Depth Zone 4. Rugged anthropogenic material includes a pipe in Depth Zone 2 and hard material associated with oil-platform structural foundation in Depth Zone 3; together they make up less than 0.1 percent (<0.1 km²) of the map area. Smooth, hard anthropogenic material (scour); also, coarse sediment surrounding oil platforms), present only in Depth Zone 3, makes up less than 0.1 percent (<0.1 km²) of the map area (table 1).

Table 1. Coverage of classified seafloor, in square kilometers (sq km) and percent of total area, broken into California Marine Life Protection Act Depth Zones 2, 3, and 4.

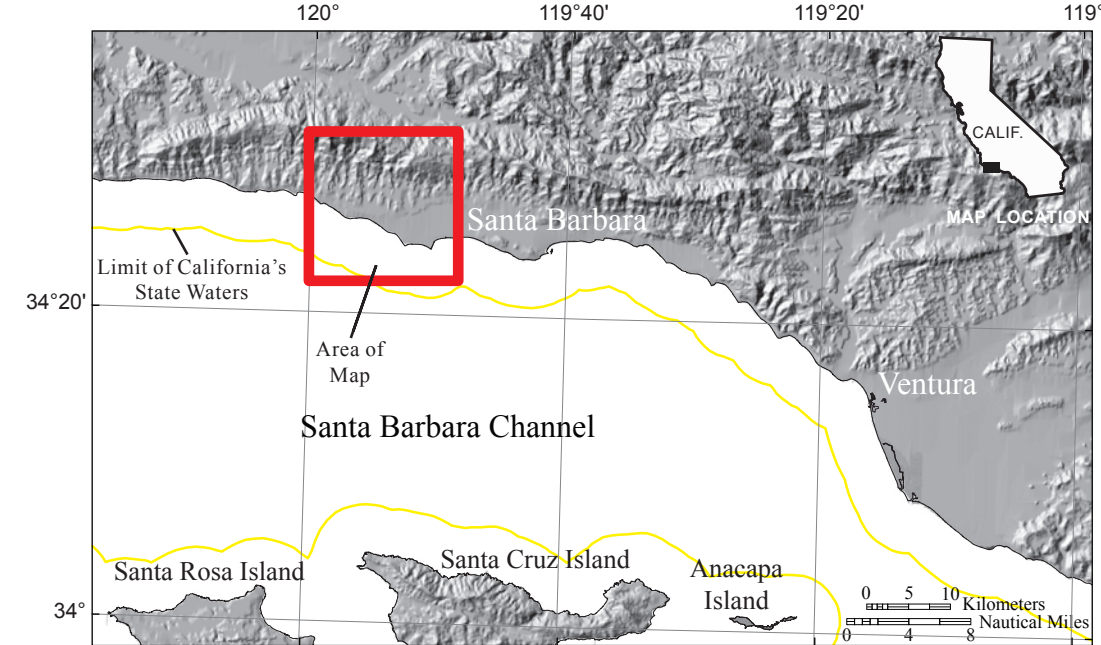
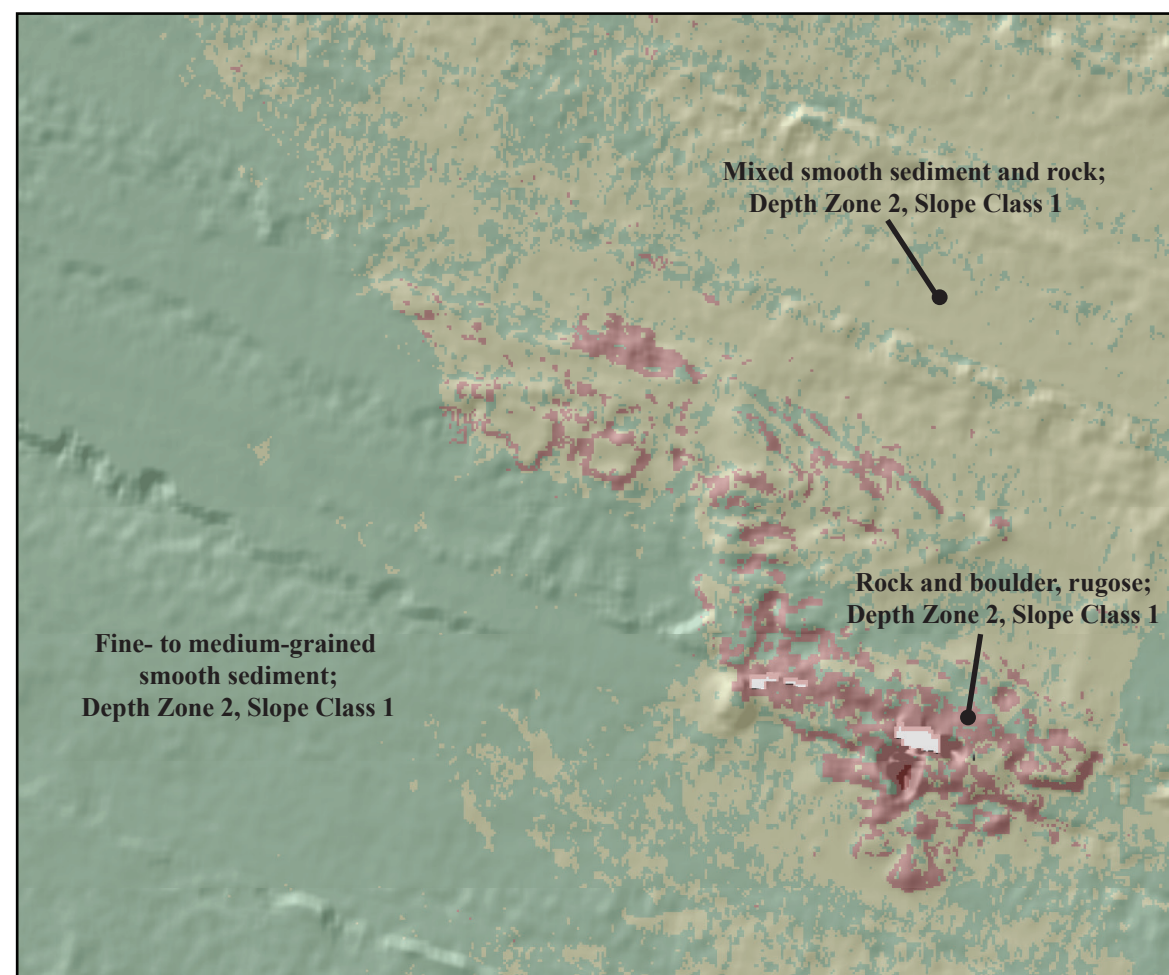
[illegible]**BOX A**

Figure 1. Detailed view of substrate classes mapped in shallow nearshore, just south of Naples (northwest of Coal Oil Point; see Box A, on map, for location): Depth Zone 2 (intertidal to 30 m), and Slope Class 1 (0°–5°). Fine- to medium-grained smooth sediment is shown in shades of green; mixed smooth sediment and rock is shown in shades of tan; and rugose rock and boulders are shown in shades of pink. White areas in lower right are data gaps.

Mixed smooth wall rock and rock;
Depth Zone 2, Stage 1 (a)

Rock and irregular, rougher;
Depth Zone 2, Stage 1 (a)

Fine to medium-grained,
Anisotropic;
Depth Zone 2, Stage 1 (a)

Depth Zone 2, Stage 1 (a)

Mixed smooth sediment and rocks;
Depth Zone 2; Slope Class 1

Rock and boulder, rugose;
Depth Zone 2; Slope Class 1

Fine- to medium-grained
smooth sediment;
Depth Zone 2; Slope Class 1

Figure 2. Acoustic-backscatter image (see sheet 3) draped over shaded-relief bathymetry (see sheet 2) for same area as figure 1 (Box A on map). Brighter areas indicate coarse-grained, rough, or hard seafloor; darker areas indicate unconsolidated (loosely packed) sediment. Interpreted substrate classes from figure 1 included for comparison.

Figure 3. Rugosity (characterization of roughness derived from bathymetry) draped over shaded-relief bathymetry (see sheet 2) for same area as figure 1 (Box A on map). Rugosity values are displayed in muted "rainbow" color spectrum that ranges from purple (low rugosity) through green (medium rugosity) to red (high rugosity). Areas of high slope are indicated by high-rugosity values (red); areas of low slope, by medium- to low-rugosity values (green to purple); however, northwest-southeast-trending areas of high rugosity are data-collection artifacts, as are gray areas surrounding data gaps in lower right. Interpreted substrate classes from figure 1 included for comparison.

BOX B

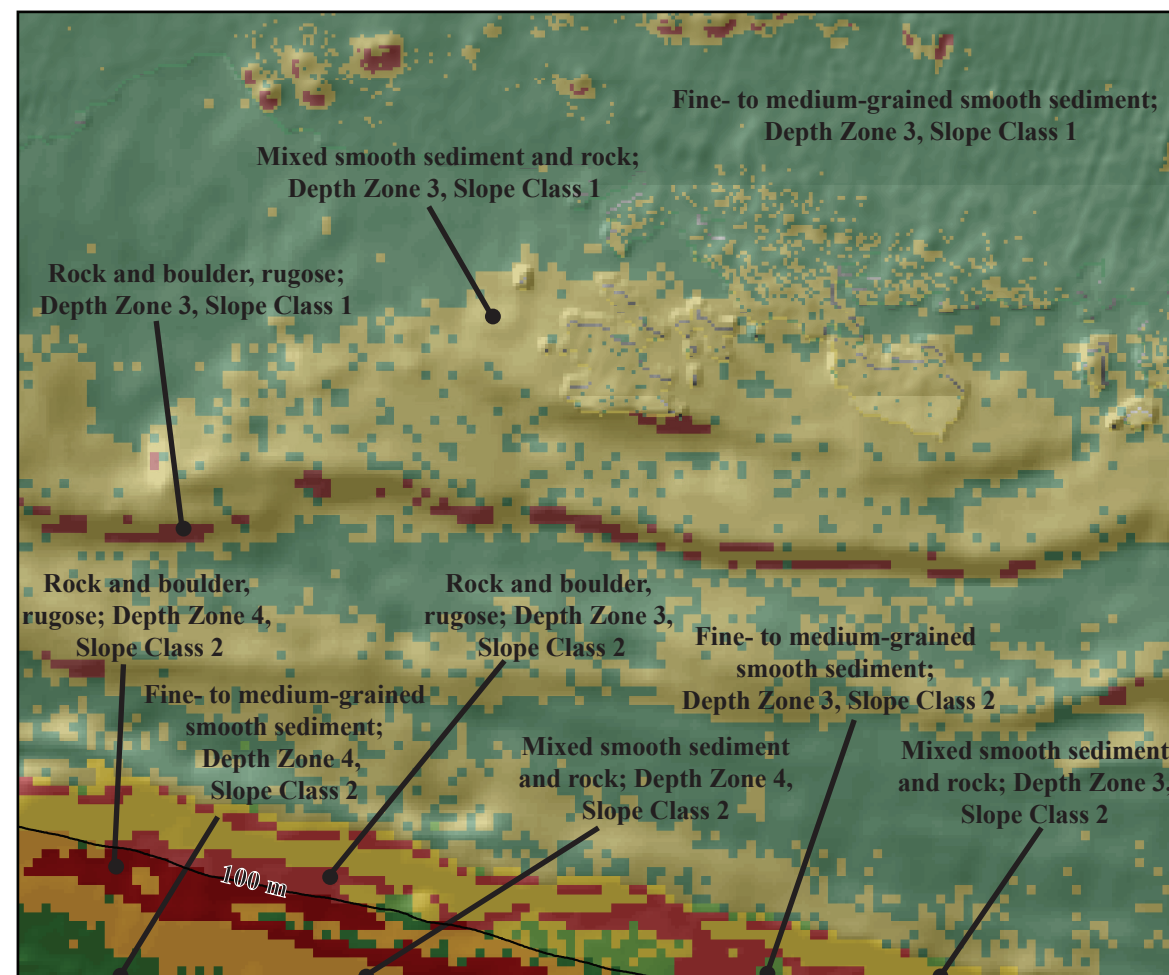


Figure 4. Detailed view of substrate classes mapped further offshore, southwest of Naples (see Box B, on map, for location); Depth Zone 3 (130 to 100 m), Depth Zone 4 (100 to 200 m), Slope Class 1 (0°–5°), and Slope Class 2 (5°–30°). Fine- to medium-grained smooth sediment is shown in shades of green; mixed smooth sediment and rock is shown in shades of tan and orange; and rugose rock and boulders are shown in shades of red and brown. Bathymetric contour (100 m) added for depth reference. Note that pixel size increases in areas where 5-m-resolution bathymetry was collected (in water deeper than 80 m).

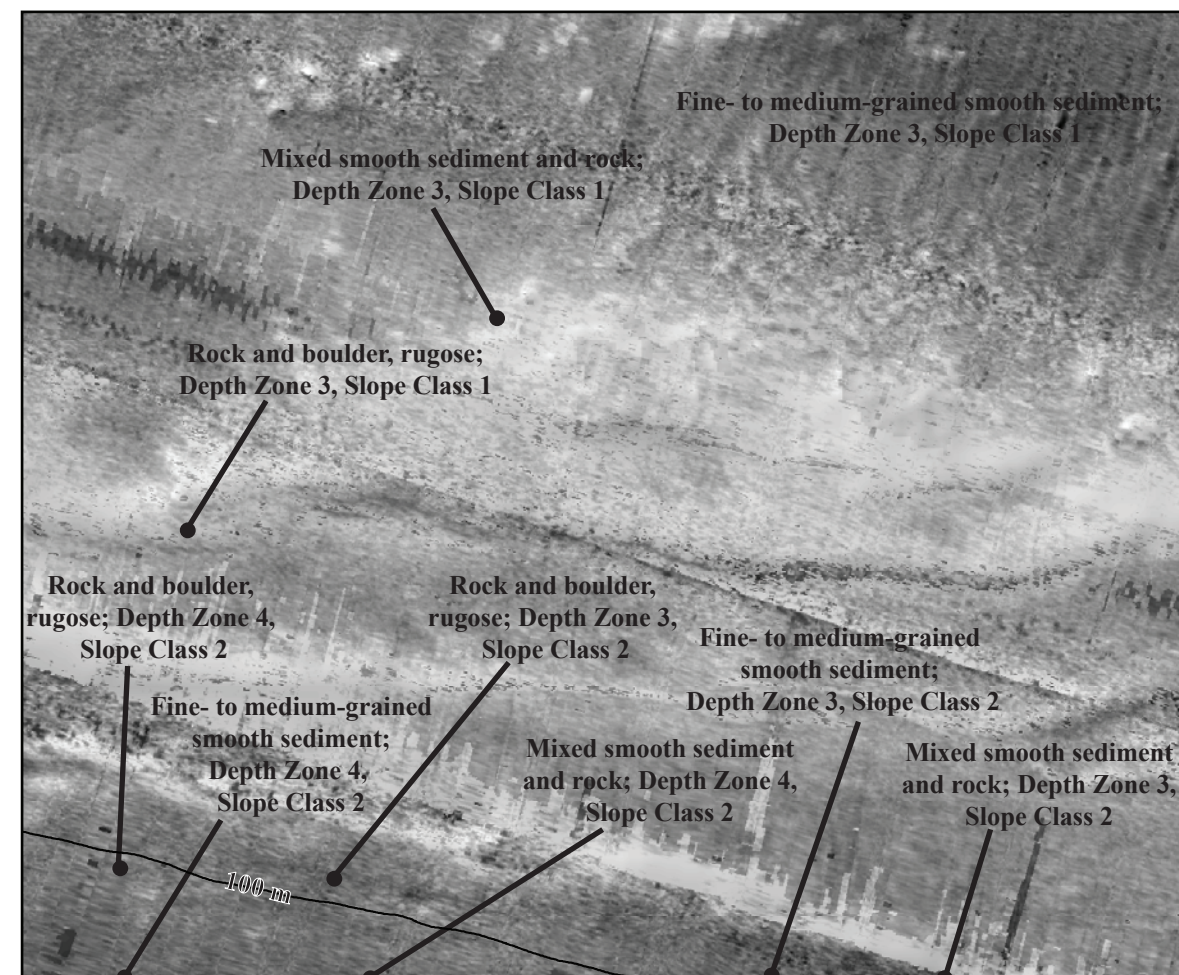


Figure 5. Acoustic-backscatter image (see sheet 3) draped over shaded-relief bathymetry (see sheet 2) for same area as figure 4 (Box B on map). Brighter areas indicate coarse-grained, rough, or hard seafloor; darker areas indicate unconsolidated (loosely packed) sediment. Interpreted substrate classes from figure 4 included for comparison. Bathymetric contour (100 m) added for depth reference.

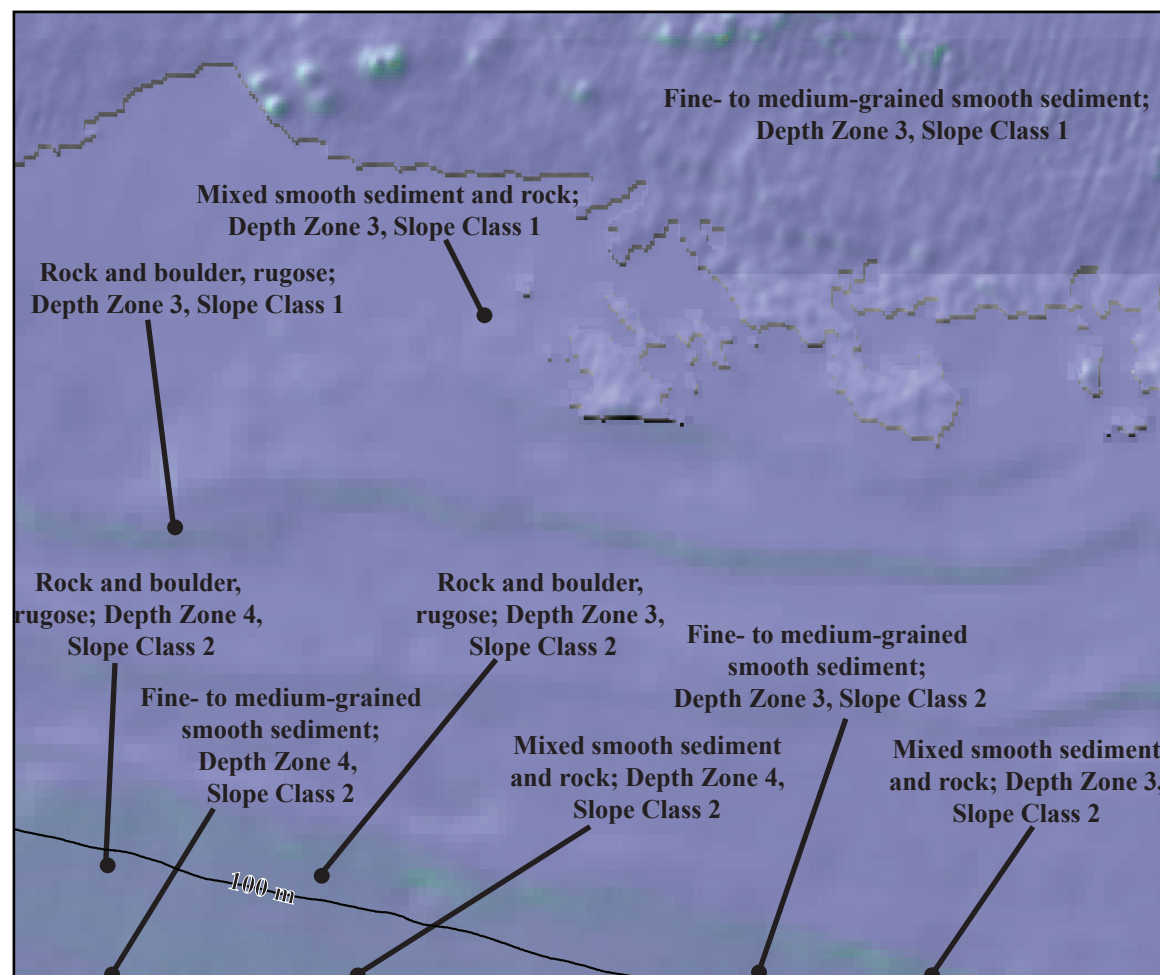


Figure 6. Rugosity (characterization of roughness derived from bathymetry) draped over shaded-relief bathymetry (see sheet 2) for same area as figure 4 (Box B on map). Rugosity values are displayed in muted "rainbow" color spectrum that ranges from purple (low rugosity) through green (medium rugosity) to red (high rugosity). Areas of moderate slope are indicated by medium-rugosity values (green); areas of low slope, by low-rugosity values (purple). Interpreted substrate classes from figure 4 included for comparison. Bathymetric contour (100 m) added for depth reference.