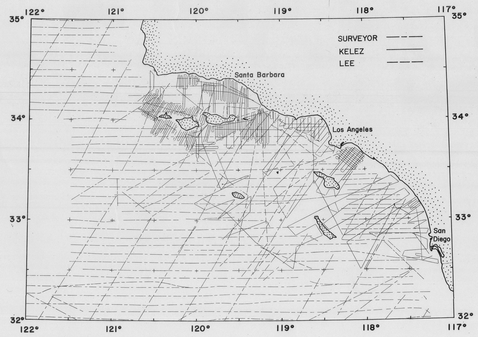
Contour label 50 at 33° 53.7' N, 119° 39.6' W should read -50.

Composite base map constructed from U.S. Coast and Geodetic Survey Charts 12200-15,-16 and 13200-19,-20 (offshore area) and U.S. Geological Survey 1:250,000 topographic series San Diego 1958, Santa Ana 1959, Long Beach 1957, Los Angeles 1959, Santa Maria 1962, and San Bernadino 1958 (onshore area).

Bathymetric contour intervals: 10 m interval from 0 to 200 m depth
50 m interval from 200 m to maximum depth

Onshore contour interval: 200 feet



SURFACE SHIP GRAVITY TRACK LINES

MARINE GRAVITY SURVEYS

Organization	Ship	Year	Navigation Systems	Gravity Meter
NOAA & NAVOCEANO	SURVEYOR	1970	Decca Lambda Lorac B HiFix Satellite radar	Bell, model BGM-2
USGS	KELEZ	1973	Motorola RPS Raydist radar	LaCoste & Romberg with stabilized platform
USGS	LEE	1974	Raydist	"

NAVOCEANO: Navy Oceanographic Office
NOAA: National Oceanic and Atmospheric Administration
USGS: United States Geological Survey

COMPILATION NOTES

Individual surveys used to prepare this map are summarized in the above table. In the Santa Barbara Channel and certain other areas, supplemental use was made of data from von Huene and Ridlon (1966) and Harrison and others (1966).

Free-air gravity was obtained by forming the difference between adjusted observed gravity and the Earth's theoretical gravity field as given by the 1930 International Gravity Formula (Heiskanen and Vening Meinesz, 1958). Observed gravity was adjusted in three ways: (1) Corrections were made for instrument drift based on repeated occupations of harbor base stations; (2) Eötvös corrections, based on ship speed and heading were applied to account for the centripetal accelerations introduced by east-west motion over the rotating earth (LaCoste, 1967); and (3) relative gravity was converted to absolute values by tying harbor base stations to absolute gravity base stations (Chapman, 1966).

The accuracy of these adjustments as well as the effectiveness with which inertial forces are minimized by the stabilized platform and removed by averaging techniques are best indicated by the magnitude of discrepancies between gravity values at the intersections of ship survey lines. Differences between values of free-air gravity at 154 SURVEYOR line crossings ranged from less than 1 to 7 milligals and averaged 2.5 milligals. Similar discrepancies for KELEZ and LEE line crossings never exceeded several milligals. Adjustments of as much as 10 milligals were necessary to reconcile differences between 1970 SURVEYOR free-air gravity and 1973-74 KELEZ and LEE free-air gravity. Where feasible all of these discrepancies were minimized by adjustment of line values prior to contouring.

Ship navigation included precision land-based range-range systems, satellite and radar control. Position uncertainty for USGS cruises is about 100 to 200 feet. Theberge (1971, p. 2) states that "overall navigation accuracy is 0.25 nautical mile" for SURVEYOR data.

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Theberge, A. E., Jr., 1971, Magnetic survey off southern California and Baja California: NOAA-NOS Operational Data Rept., NOS DR-12, 10 p.

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EXPLANATION

Free-Air Gravity Contours

Contour interval is 10 milligals with selected intermediate 5 milligal contours. Hachures indicate closed areas of lower gravity. Dashed contours are used in areas of poor control.

FREE-AIR GRAVITY MAP OF THE CALIFORNIA CONTINENTAL BORDERLAND

by
L. A. Beyer, K. A. Pisciotto, and N. B. Sasnett

1974

SCALE 1:500,000

10 0 10 20 30 40 50
NAUTICAL MILES

10 0 10 20 30 40
KILOMETERS

TRANSVERSE MERCATOR PROJECTION

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