



Explanation

The principal gravity data set compiled for this map was generated by various projects of the U.S. Geological Survey. This set was the compilation of data obtained from the Defense Agency Gravity Library. The observed gravity data, based on the International Gravity Standardization Net (IGSN71) datum (Merriell, 1974), were reduced to gravity anomalies by using the Geodetic Reference System 1973 formula (Heiskanen and Swick, 1971, p. 40) and Swick's (1962, p. 63) formula for the free air correction. Snapper, curvature, and terrain corrections (and to a station of 100-m from the station at a standard reduction density of 2.67 g/cm³) were added to the terrain anomaly at each station to determine complete Bouguer gravity anomalies.

Editing of data involved examination and subsequent deletion of stations which produced large anomalies not supported by values at neighboring stations. This procedure probably was successful in eliminating gross errors in areas with dense gravity coverage but incorrect values may still exist in areas of sparse coverage.

The bulk of the inconsistencies remaining within this data set probably stem from observed gravity values based on a datum other than IGSN71 and from errors in terrain corrections. Because the gravity data come from a variety of different sources, some datum problems were unavoidable. However, based on comparison of individual observations from different sources, datum inconsistencies are believed to be less than 1 mGal. Terrain corrections (inconsistencies are believed to be less than 1 mGal) were applied to some of the data set. The error introduced at this area probably is less than 1 mGal for most stations but could be larger for stations in areas of sparse topographic control. In view of these problems, the data are believed, in general, to be accurate to within 2 mGal.

Contouring by computer with 1000 meter grid size.

References

Heiskanen, W. A., and Vening Meinesz, F. A., 1958, The earth and its gravity field, McGraw-Hill, 600 p.

International Association of Geodesy, 1971, Geodetic reference system 1973, International Association of Geodesy Special Publication no. 3, 116 p.

Jachens, R. C., and Roberts, C. W., 1981, An isostatic residual gravity map of California's central and southern regions, U.S. Geological Survey Open-File Report 81-576, p. 26.

Karki, P., Kivinen, L., and Mäkelä, M. A., 1961, Topographic-isostatic reduction maps for the world for the height zones 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200, 2300, 2400, 2500, 2600, 2700, 2800, 2900, 3000, 3100, 3200, 3300, 3400, 3500, 3600, 3700, 3800, 3900, 4000, 4100, 4200, 4300, 4400, 4500, 4600, 4700, 4800, 4900, 5000, 5100, 5200, 5300, 5400, 5500, 5600, 5700, 5800, 5900, 6000, 6100, 6200, 6300, 6400, 6500, 6600, 6700, 6800, 6900, 7000, 7100, 7200, 7300, 7400, 7500, 7600, 7700, 7800, 7900, 8000, 8100, 8200, 8300, 8400, 8500, 8600, 8700, 8800, 8900, 9000, 9100, 9200, 9300, 9400, 9500, 9600, 9700, 9800, 9900, 10000, 10100, 10200, 10300, 10400, 10500, 10600, 10700, 10800, 10900, 11000, 11100, 11200, 11300, 11400, 11500, 11600, 11700, 11800, 11900, 12000, 12100, 12200, 12300, 12400, 12500, 12600, 12700, 12800, 12900, 13000, 13100, 13200, 13300, 13400, 13500, 13600, 13700, 13800, 13900, 14000, 14100, 14200, 14300, 14400, 14500, 14600, 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