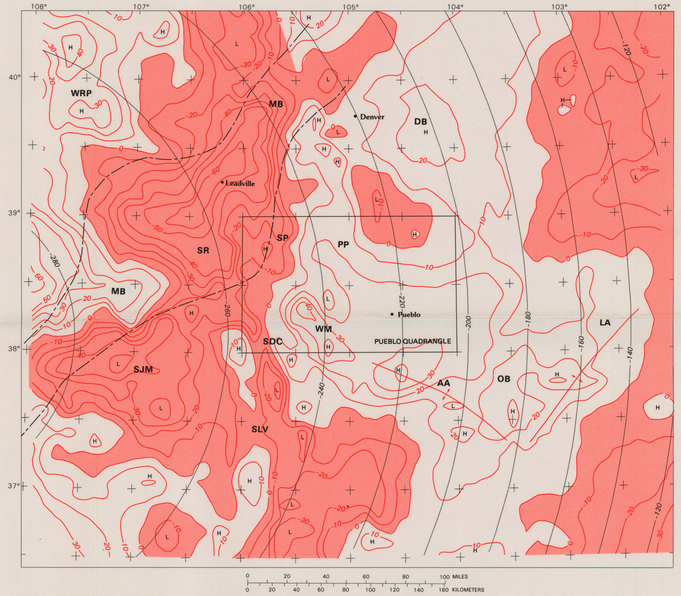


Figure 1. Residual gravity map of the southern Rocky Mountains region

EXPLANATION

10 — **Residual gravity contours**—Contour interval is 10 milligals. Shaded to indicate closed areas of lower gravity values. H indicates closed gravity high; L indicates closed gravity low

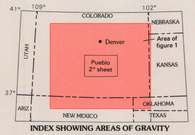
-240 — **Regional gravity contour**—Contour interval is 20 milligals

Generalized axis of the Apishapa arch (AA) and the Las Animas arch (LA)

Approximate boundary of Colorado mineral belt (MB)

Abbreviations for selected localities:

AA	Apishapa arch
MB	Colorado mineral belt
DB	Denver basin
LA	Las Animas arch
OB	Otero-Bent volcanic area
PP	Pikes Peak
SDC	Sangre de Cristo Mountains
SJM	San Juan Mountains
SLV	San Luis Valley
SP	South Park
SR	Sawatch Range
WM	Wet Mountains
WRP	White River Plateau



INDEX SHOWING AREAS OF GRAVITY MAP AND FIGURE 1

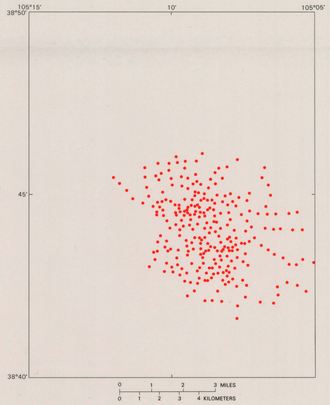


Figure 2. Gravity station locations in the vicinity of Cripple Creek. Taken from Kleinkopf, Peterson, and Gott (1970) and Kleinkopf and Peterson (1969).

EXPLANATION

30 — **Residual gravity contours**—Contour interval is 5 milligals. Hachured contours indicate closed areas of lower gravity values

• **Gravity station**

-210 — **Regional gravity contour**—Contour interval is 5 milligals

A, RESIDUAL BOUGUER GRAVITY MAP

RESIDUAL BOUGUER GRAVITY AND INTERPRETATIVE MAPS OF THE PUEBLO 1° X 2° QUADRANGLE, SOUTH-CENTRAL COLORADO

By
Frances M. Boler and Douglas P. Klein

1990

DESCRIPTION OF THE RESIDUAL BOUGUER GRAVITY MAP

This map is part of a folio of maps of the Pueblo 1° x 2° quadrangle, Colorado, prepared under the U.S. Geological Survey's Conterminous United States Mineral Assessment Program. This publication includes the residual Bouguer gravity map (map *A*) and interpretation (map *B*). Other geophysical maps in this folio are the complete Bouguer gravity map (I–1419–A, Boler and others, 1982), which is an update of the map by Peterson and others (1974), and the residual aeromagnetic map and interpretation (I–1419–C, Boler and Klein, 1990).

In the Pueblo 1° x 2° quadrangle (lat 38° to 39° N. and long 104° to 106° W.), 2,394 gravity stations (Boler, 1981) have been combined with more than 11,000 Department of Defense gravity stations (Defense Mapping Agency Aerospace Center, 1975) from the region extending 173 km beyond the Pueblo quadrangle (lat 36°30′ to 40°30′ N. and long 102° to 108° W.). Together these stations form the data base for the present Pueblo residual Bouguer gravity map (map *A*) and the southern Rocky Mountains residual gravity map (fig. 1). The interpretative map (map *B*) is discussed in the accompanying text.

COMPILATION

All data are referenced to the 1971 International Gravity Standardization Net (Morelli and others, 1974; Woollard, 1979). The complete Bouguer anomaly computations used theoretical gravity from the 1967 Geodetic Reference System (International Association of Geodesy, 1971) and a reduction density of 2.67 g/cm^3. Two-thirds of the Pueblo quadrangle stations had terrain corrections made by hand (Hammer, 1939). Terrain corrections for the remaining stations were calculated by computer using the algorithm of Plouff (1977).

Boler (1981) describes the data reduction for the 2,394 stations within the Pueblo quadrangle. These data were more carefully edited to eliminate errors than were the data outside the Pueblo quadrangle. The larger data set was edited for obvious errors; however, unreliable stations that do not display major inconsistencies may have been overlooked. It is unlikely that such stations would significantly affect the regional pattern.

The complete Bouguer anomaly data used to compile the residual gravity map of the southern Rocky Mountains (fig. 1) were contoured from digital data interpolated to equally spaced grid intervals of 1.5 km in both north-south and east-west directions. The regional gravity correction is the least squares second-degree polynomial surface that fits the southern Rocky Mountains complete Bouguer anomaly data; it is shown by the regional gravity contours in figure 1 and map *A*.

The residual Bouguer gravity map of the Pueblo quadrangle (map *A*) was extracted from the southern Rocky Mountains residual gravity map. Both maps were contoured by computer. Gravity station locations are shown in map *A*, except those in the vicinity of Cripple Creek, which are shown in figure 2.

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