

TOPOGRAPHY

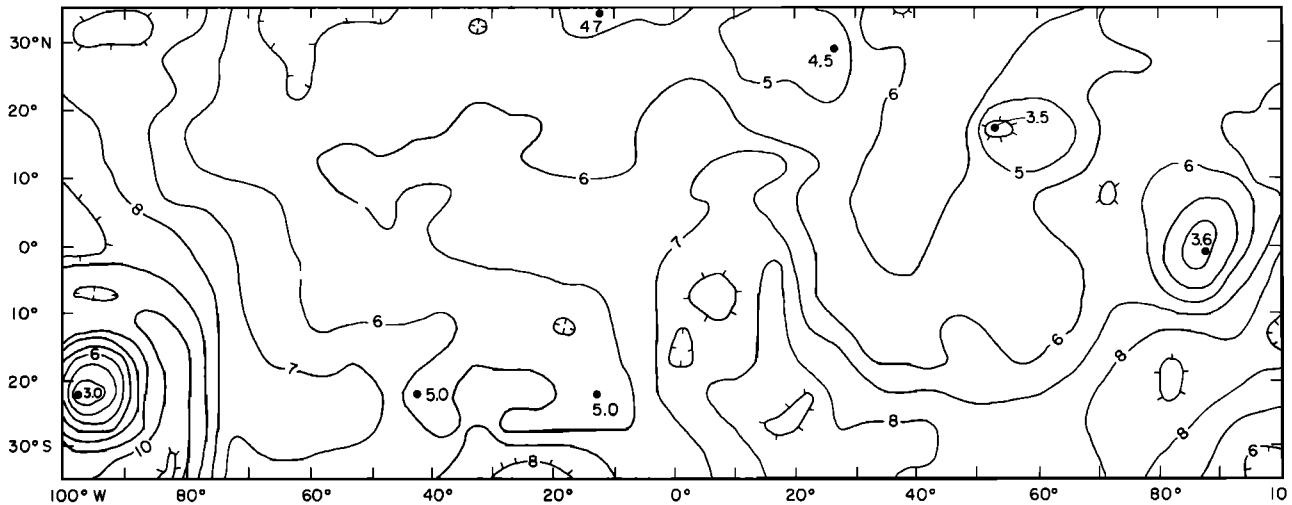
DATUM = 1730 km
CONTOUR INTERVAL = 1 km

Fig. 5. Topography of the lunar nearside, relative to a datum at 1730 km radius. The map is obtained from $5^\circ \times 5^\circ$ averages of topography compiled by *Bills and Ferrari* [1977b] and also incorporates limb height observations of the Orientale basin summarized by *Head et al.* [1981]. The contour interval is 1 km. The elevation minima within several basins are also indicated.

referenced to the lunar center of mass. The Orientale limb height measurements, so adjusted, complete the topographic data set. A contour map of the topography is shown in Figure 5.

The accuracy of the block-averaged topography depends on both the technique employed in making individual measurements and the number of measurements in each block. For the individual determinations of topographic height from Apollo laser altimetry and orbital photogrammetry, *Bills and Ferrari* [1977b] have estimated an error of ± 0.3 km. The majority of these measurements were made between 15°S and 40°N latitude on the nearside of the moon. Error estimates for topography measured over the remainder of the nearside using land-

mark tracking, earth-based photogrammetry, and limb profiling range from 0.4 to 0.9 km.

The error in the average topography over a $5^\circ \times 5^\circ$ block can be estimated from the uncertainties in the individual determinations within that block and from the assumption that all individual measurements are independent. The estimated error in the average topography over Orientale, Humorum, and Nubium for some blocks approaches the estimates for individual observations because these basins are poorly covered by spacecraft tracking data. As a result, errors in topography over these basins represent a large source of uncertainty in the analysis of associated basin structure. For example, the contribution to the Bouguer correction from an 0.5-km error

BOUGUER GRAVITY ANOMALY

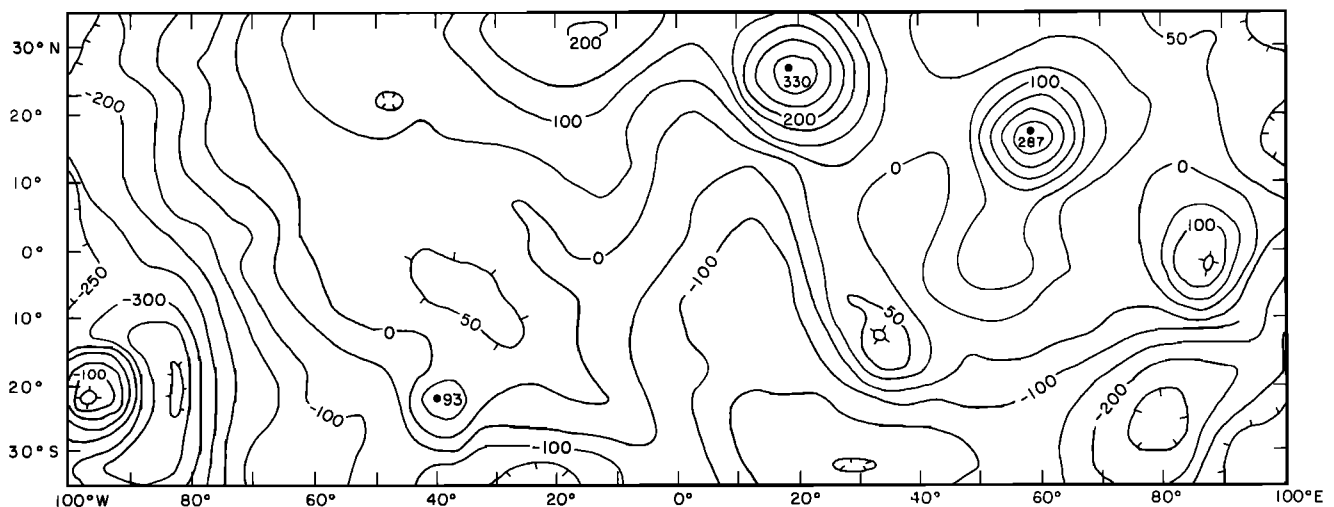
ALTITUDE = 100 km
CONTOUR INTERVAL = 50 mgals

Fig. 6. Bouguer gravity anomaly for the lunar nearside at 100 km elevation. A datum D_7 at a radius of 1736 km was used to make the topographic correction. The contour interval is 50 mgal. Local maxima over several basins are also indicated.