

Landforms of the Conterminous United States— A Digital Shaded-Relief Portrayal



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Map Notes

The shaded-relief image displayed here was made by the computer processing of 12 million terrain heights contained in a digital elevation model of the conterminous United States. The model was developed by digitizing elevation contours from published 1:250,000-scale topographic maps and then converting the contour data to a matrix of elevation values. The matrix consists of 6,095 cells in the east-west direction and 3,800 cells in the north-south direction. The distance between cells or picture elements (pixels) is 805 m (1/2 mi) on the ground, which corresponds to 0.23 mm (1/64 in.) on the map. Special image-processing software was used to compute a theoretical brightness value (reflected-light intensity) for each pixel. This value is based principally on a mathematical relation between sun position and local ground slope and slope direction. The view or appearance of terrain can be changed by varying the location of the sun. To obtain the best portrayal of both smooth and high-relief topography, this image was illuminated from the west-northwest by a simulated sun 25° above the horizon. The lightest areas represent the fully illuminated steep slopes; intermediate gray tones show gentle topography; and the darkest tones are steep areas in shadow. A vertical exaggeration of 2x has been applied to further enhance land-surface features; that is, hills appear twice as high as they really are and valleys twice as deep. Terrain features as small as 1,600 m (1 mi) across on the ground can be distinguished in this image. See pamphlet for discussion of landforms and technical details.

