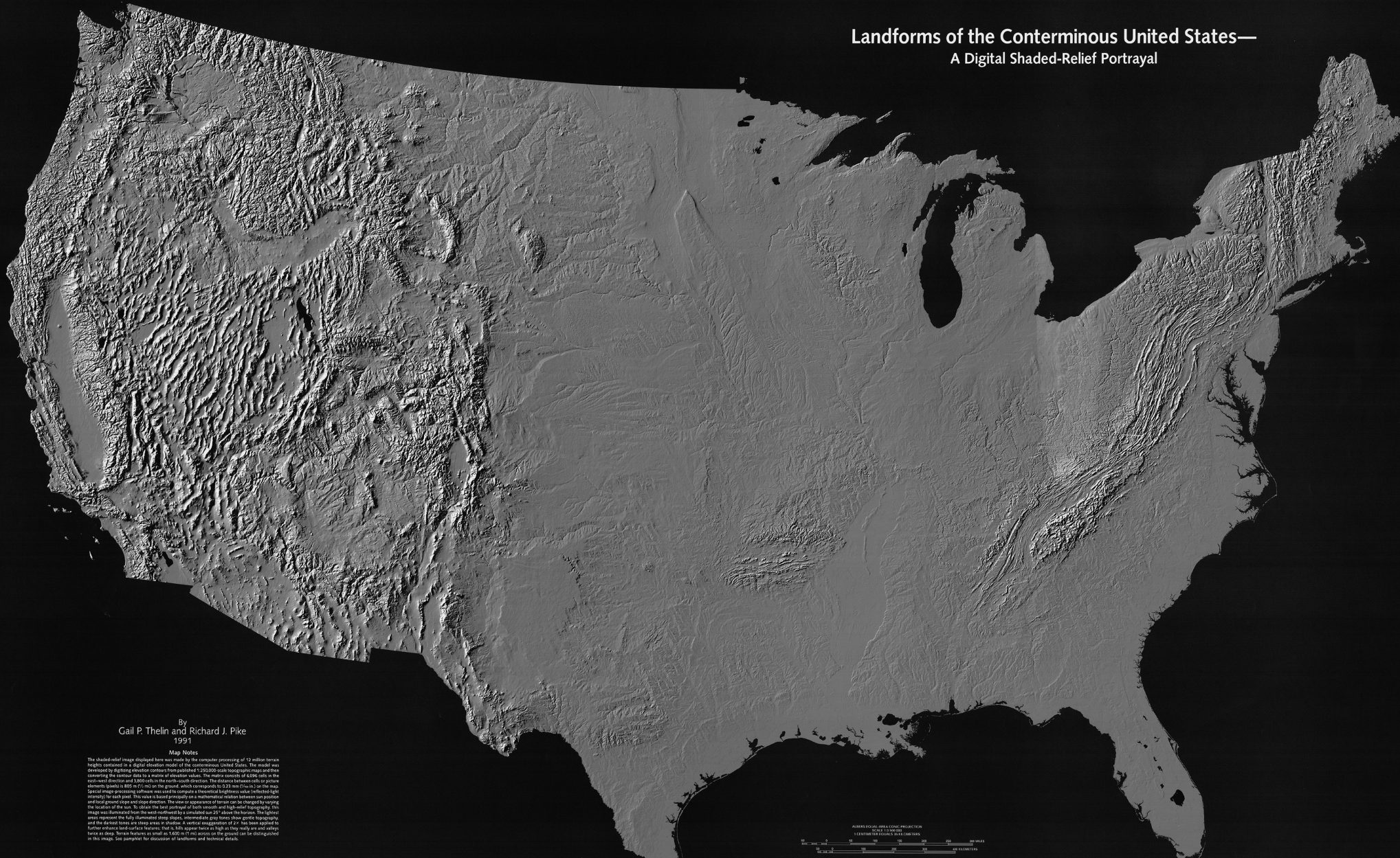


Landforms of the Conterminous United States— A Digital Shaded-Relief Portrayal



By
Gail P. Thelin and Richard J. Pike
1991

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 6,036 cells in the east-west direction and 3,018 cells in the north-south direction. The distance between cells is precise (approximately) to 800 m (0.5 mi) on the ground, which corresponds to 0.23 m (0.09 in.) on the map. Several map-processing software packages were used to compute a theoretical brightness value (reflecting light intensity) for each pixel. This value is a linear projection of elevation differences on positive and local ground slope and aspect direction. The view or perspective of terrain can be changed by varying the location of the sun. To assure that landforms are not obscured by high-angle illumination, the image was illuminated from the west-northwest by a simulated sun 25° above the horizon. The highest elevations represent the fully illuminated steep slopes; intermediate elevations show gentle slopes, and the darkest tones are deep areas or shadows. A vertical exaggeration of 2.5x has been applied to further enhance land surface features, with 1 km's apparent height of 250 m in they study area and steeper 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.

