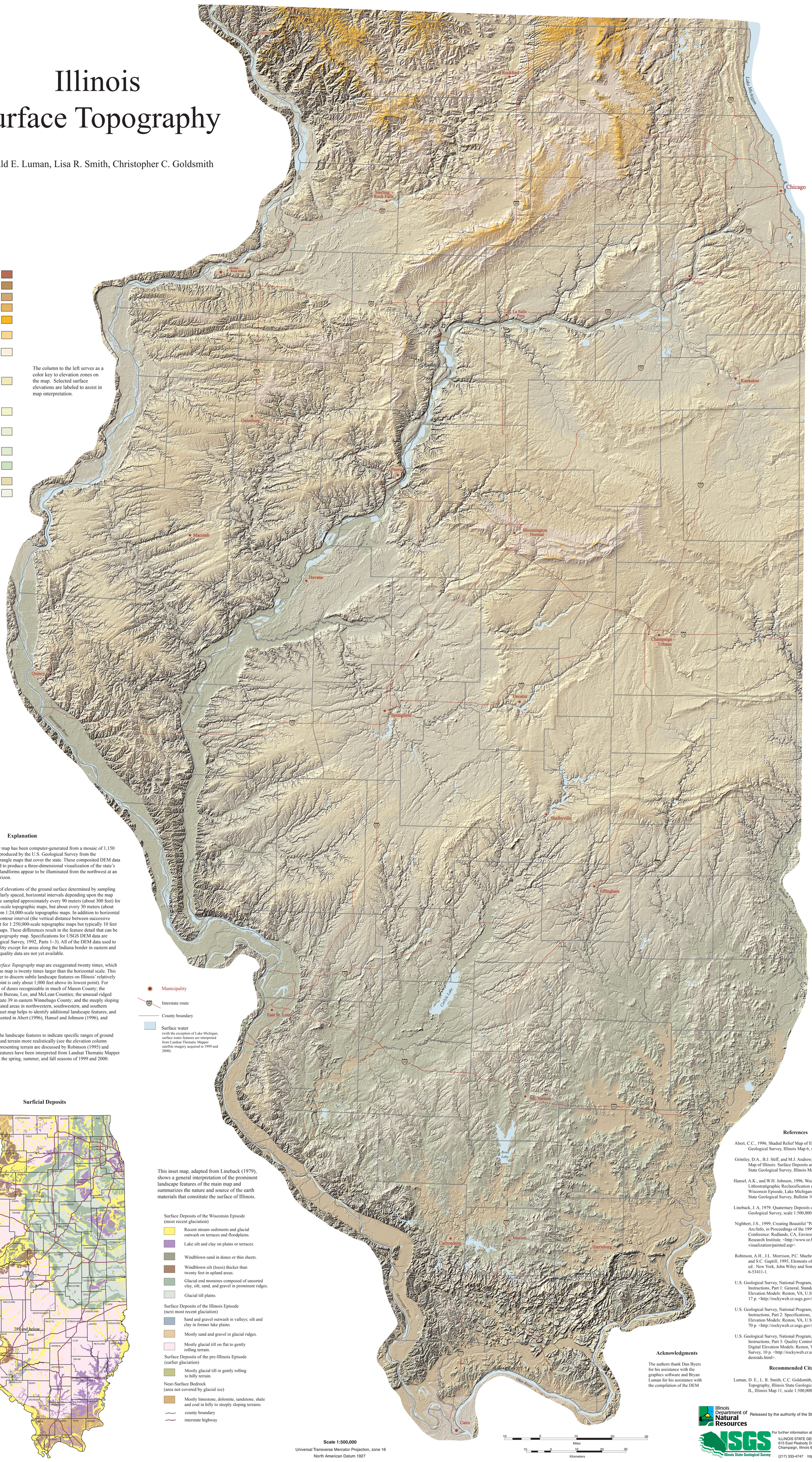
George H. Ryan, Governor

Department of Natural Resources
Brent Manning, Director
ILLINOIS STATE GEOLOGICAL SURVEY
William W. Shilts, Chief
615 East Peabody Drive
Champaign, IL 61820-6964

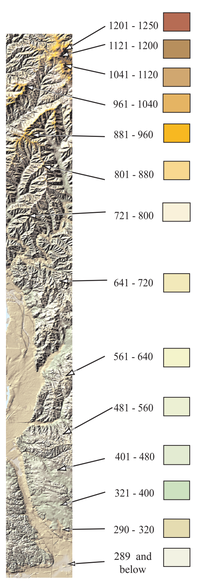
Illinois Map 11
2002

Illinois Surface Topography

Donald E. Luman, Lisa R. Smith, Christopher C. Goldsmith



Elevation (in feet)



The column to the left serves as a color key to elevation zones on the map. Selected surface elevations are labeled to assist in map interpretation.

Explanation

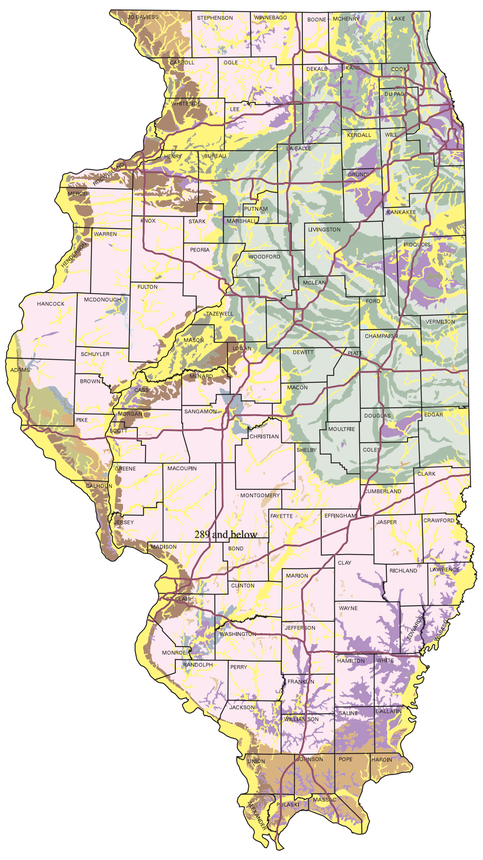
This *Illinois Surface Topography* map has been computer-generated from a mosaic of 1,150 digital elevation models (DEM) produced by the U.S. Geological Survey from the 1:24,000-scale topographic quadrangle maps that cover the state. These composited DEM data were mathematically transformed to produce a three-dimensional visualization of the state's surface topography in which the landforms appear to be illuminated from the northwest at an angle of 40 degrees above the horizon.

DEMs are data files that consist of elevations of the ground surface determined by sampling across a topographic map at regularly spaced, horizontal intervals depending upon the map scale. For example, elevations are sampled approximately every 90 meters (about 300 feet) for DEMs produced from 1:250,000-scale topographic maps, but about every 30 meters (about 100 feet) for DEMs produced from 1:24,000-scale topographic maps. In addition to horizontal scale differences, in Illinois the contour interval (the vertical distance between successive contour lines) is generally 50 feet for 1:250,000-scale topographic maps but typically 10 feet for 1:24,000-scale topographic maps. These differences result in the feature detail that can be shown on this *Illinois Surface Topography* map. Specifications for USGS DEM data are discussed elsewhere (U.S. Geological Survey, 1992, Parts 1–3). All of the DEM data used to produce this map are of high quality except for areas along the Indiana border in eastern and southeastern Illinois where high quality data are not yet available.

The DEM data on this *Illinois Surface Topography* map are exaggerated twenty times, which means that the vertical scale of the map is twenty times larger than the horizontal scale. This exaggeration makes it much easier to discern subtle landscape features on Illinois' relatively flat surface (the state's highest point is only about 1,000 feet above its lowest point). For example, note the large expanses of dunes recognizable in much of Mason County; the prominent glacial end moraines in Bureau, Lee, and McLean Counties; the unusual ridged "fluted" topography along Interstate 39 in eastern Winnebago County; and the steeply sloping terrain distinguishing the unglaciated areas in northwestern, southwestern, and southern Illinois. The Surficial Deposits inset map helps to identify additional landscape features, and more detailed information is presented in Abert (1996), Hansel and Johnson (1996), and Grimley et al. (2001).

Color tinting has been added to the landscape features to indicate specific ranges of ground elevations and to portray the ground terrain more realistically (see the elevation column above). The methods used for representing terrain are discussed by Robinson (1995) and Nighbert (1999). Surface water features have been interpreted from Landsat Thematic Mapper satellite imagery acquired during the spring, summer, and fall seasons of 1999 and 2000.

Surficial Deposits



This inset map, adapted from Lineback (1979), shows a general interpretation of the prominent landscape features of the main map and summarizes the nature and source of the earth materials that constitute the surface of Illinois.

Surface Deposits of the Wisconsin Episode
(most recent glaciation)

- Recent stream sediments and glacial outwash on terraces and floodplains.
- Lake silt and clay on plains or terraces.
- Windblown sand in dunes or thin sheets.
- Windblown silt (loess) thicker than twenty feet in upland areas.
- Glacial end moraines composed of unsorted clay, silt, sand, and gravel in prominent ridges.
- Glacial till plains.

Surface Deposits of the Illinois Episode
(next most recent glaciation)

- Sand and gravel outwash in valleys; silt and clay in former lake plains.
- Mostly sand and gravel in glacial ridges.
- Mostly glacial till on flat to gently rolling terrain.

Surface Deposits of the pre-Illinois Episode
(earlier glaciation)

- Mostly glacial till in gently rolling to hilly terrain.

Near-Surface Bedrock
(area not covered by glacial ice)

- Mostly limestone, dolomite, sandstone, shale and coal in hilly to steeply sloping terrains.
- county boundary
- interstate highway

Scale 1:500,000
Universal Transverse Mercator Projection, zone 16
North American Datum 1927

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Illinois Department of Natural Resources

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ISGS Illinois State Geological Survey

For further information about this map contact:
ILLINOIS STATE GEOLOGICAL SURVEY
615 East Peabody Drive
Champaign, Illinois 61820-6964

(217) 333-4747 http://www.isgs.uiuc.edu