LIDAR Surface Topography of Henry County, Illinois

June K. Johndrow, Daniel F. LeBlanc

2012

LEAP Elevation Data

The Illinois State Geological Survey (ISGS) and the Illinois Department of Transportation (IDOT) conducted airborne LiDAR (Light Detection and Ranging) surveys of the state of Illinois. LiDAR is a remote sensing technology that uses lasers to detect and map surfaces. The ISGS processed the LiDAR data to create Digital Terrain Models (DTM) for each county in Illinois. These DTM data were used to create this generalized surface topography map for a portion of northwestern Illinois. The map was produced by the University of Illinois Center for Geospatial Information Research (CGRIS), with funding from ISGS.

Data Sources


Acknowledgments

- Illinois State Geological Survey (ISGS), University of Illinois, Champaign, Illinois 61820-6964
- University of Illinois Center for Geospatial Information Research (CGRIS)
- Illinois Department of Transportation (IDOT)

© 2012 University of Illinois Board of Trustees. All rights reserved. For permission information, contact the Illinois State Geological Survey.

References


Map Scale: 1:62,500

Legend: Surface Elevation

- Water bodies
- Natural and man-made features
- Location of LiDAR data collection

Figure 1: A portion of the processed returns represents the ground surface, or a soft target such as vegetation. When a laser pulse strikes a ground surface, it will likely reach the surface and produce ground returns. A portion of the processed returns contains the ground information required to create a Digital Elevation Model (DEM). The bare earth point cloud, comprising only ground returns, will pass through vegetated canopy, a portion of the laser pulses will reflect from the vegetation, and the rest will not be available for capture. The pulses that are returned from the ground surface are collected by the laser sensor and recorded by the laser sensor (fig. 1). The reflected light pulses are detected by instruments that record the accurate location of each return pulse in three dimensions—(x) and (y) coordinates of the point location on the digital terrain model (DTM) with the features visible on this DSM. Scale 1:6,000.

Figure 2: Sand dunes are a prominent landform feature within the Green River Lowland of Illinois, and several dune fields are prominent in the Henry County area, as shown in the LiDAR Surface Topography Map, ICGM Henry ST, 1:62,500. The sand dunes are parabolic or compound parabolic in form. Standing 30 feet in height and measuring nearly 1.5 miles in length, this dune's exceptional feature detail is revealed using LiDAR technology. Scale 1:6,000.