LiDAR Surface Topography of Kane County, Illinois

Jace E. Adamski Dennis and Donald E. Lonnes

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LiDAR Elevation Data

This surface topography map was created from enhanced LiDAR elevation data acquired during 2005 with a Terrestrial Laser Scanner (TLS) flown by instruments that record the accurate location of each return pulse in three dimensions—(x) and (y) horizontal coordinates and (z) elevation values. The processed returns, which number more than 150,000 pulses per second, were used to create a digital terrain model (DTM), which was then processed to create a digital surface model (DSM). The two models differ in that the DSM represents all land surfaces, including vegetation and buildings, while the DTM represents only the ground surface and is extracted from airborne LiDAR data using automated filtering methods to produce what is commonly referred to as a "bare-earth" point cloud. To maximize the vertical accuracy of LiDAR enhanced elevation data, meets representing these aboveground features are filtered from the remaining returns, which number more than 150,000 pulses per second, to produce a "first return" digital terrain model (FTM) that represents only the ground surface. The ftm data are used to create the digital surface model (DSM), which portrays the ground surface by including all landforms, including vegetation, buildings, and other features, as well as the ground surface. The remaining returns, which number more than 150,000 pulses per second, are output as a "second return" digital surface model (2SRM) that represents the ground surface and vegetation but excludes buildings and other features.

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References


