Using Polynomial Modeled LiDAR Elevation Data to Identify Wetland Boundaries

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Abstract

Wetland delineation requires resource-intensive on-site investigations of soils, vegetation, and hydrology. Light Detection and Ranging provides spatially distributed ground elevations that have a density appropriate for creating fine-scale topographic maps. These maps enhance the visualization of depressions and the associated wetland. Polynomial trend surfaces offer a useful alternative to triangular irregular networks. Trend surfaces create elevation models that preserve the steeper slopes near wetland edges while smoothing flat areas that would otherwise appear rough. Wetland visualization is greatly enhanced in these smoother models. These models can also be used to extract a boundary for the wetland. The boundaries extracted from each model are within two and three meters of on-site delineations, with the triangular irregular network providing the most accurate border. This suggests that any of the models would be suitable tools for augmenting on-site delineations.