Representing Terrain Entities using Lidar Data
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Abstract
The U.S. Geological Survey (USGS) will begin distributing data from the 3D Elevation Program in January of 2015. This distribution will include the lidar point cloud, intensity images, and bare Earth elevation model. The USGS is exploring an object-based semantic model of terrain entities extracted from lidar data. This model begins with the 56 named feature types that are included in the Geographic Names Information System. Each of these feature types includes specific semantics associated with that feature and developing those semantics requires additional information that is not available in lidar. To develop the semantics, the approach is as follows: 1) determine the location of the feature using the GNIS identifier and coordinates; 2) extract from all geospatial data sources the appropriate geographic area to contain the feature; 3) mine these extractions for feature attributes and relationships that form the basis of the feature semantics; 4) construct a feature ontology in a Resource Description Framework representation of the semantics including coordinate representation and multiple source datasets; 5) make the ontology and semantics in RDF available on the Semantic Web through linked open data.