OKMaps Statewide Seamless LIDAR

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Goal

- Provide access to a statewide LIDAR dataset

  - Seamless across the entire state

  - Visualization

  - Downloads of arbitrary areas of interest
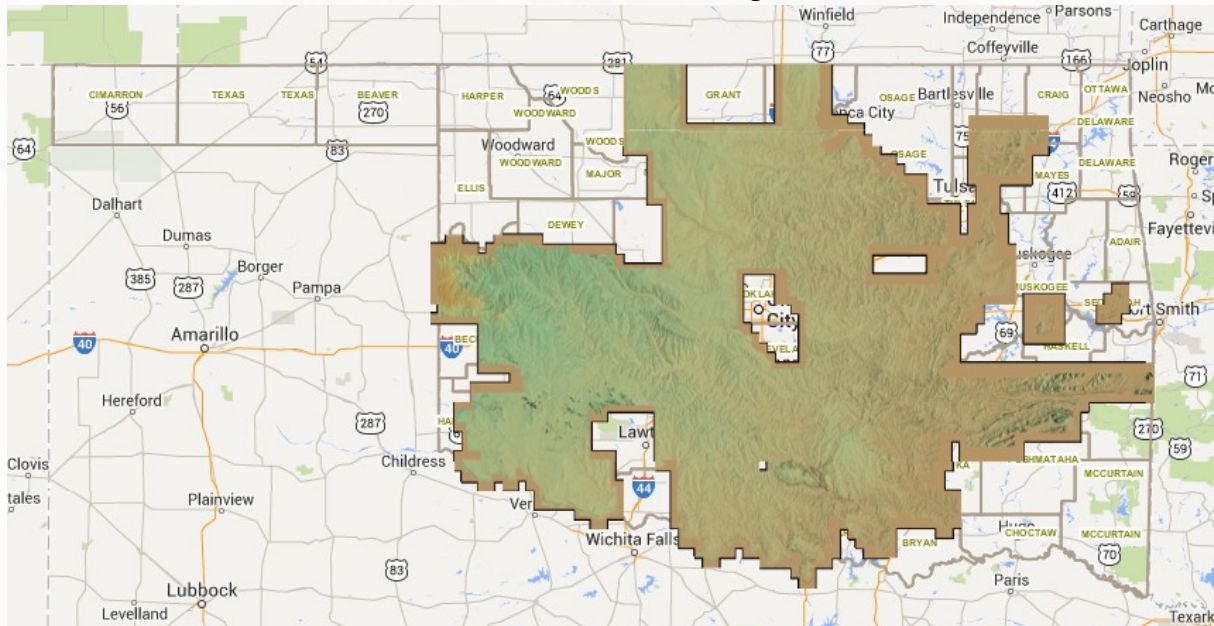
Source Data

- Starting in 2009, the NRCS has delivered thousands of LIDAR files that cover a large part of Oklahoma

    - Processed LAS files

    - 2 meter DEM files, Bare earth and First Return

    - Each USGS quad split into 64 pieces

    - Each piece (LAS file) ~200MB

    - Designed for 2' contour accuracy

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pgPointCloud Repository

- A new (2013) approach by the creator of PostGIS, Paul Ramsey

- Stores "patches" of points in a PostGIS database

- Very fast access to contiguous patches using geographic indexing

- Ideal for the goal of downloading arbitrary areas

PgPointCloud continued

- We used patches of 400 points each to fit within the confines of PostgreSQL. Each row contains one patch.

- Database currently contains over 170 million rows, or 68 billion points.

- Data access is still very fast to pull the records for a download due to the spatial index.
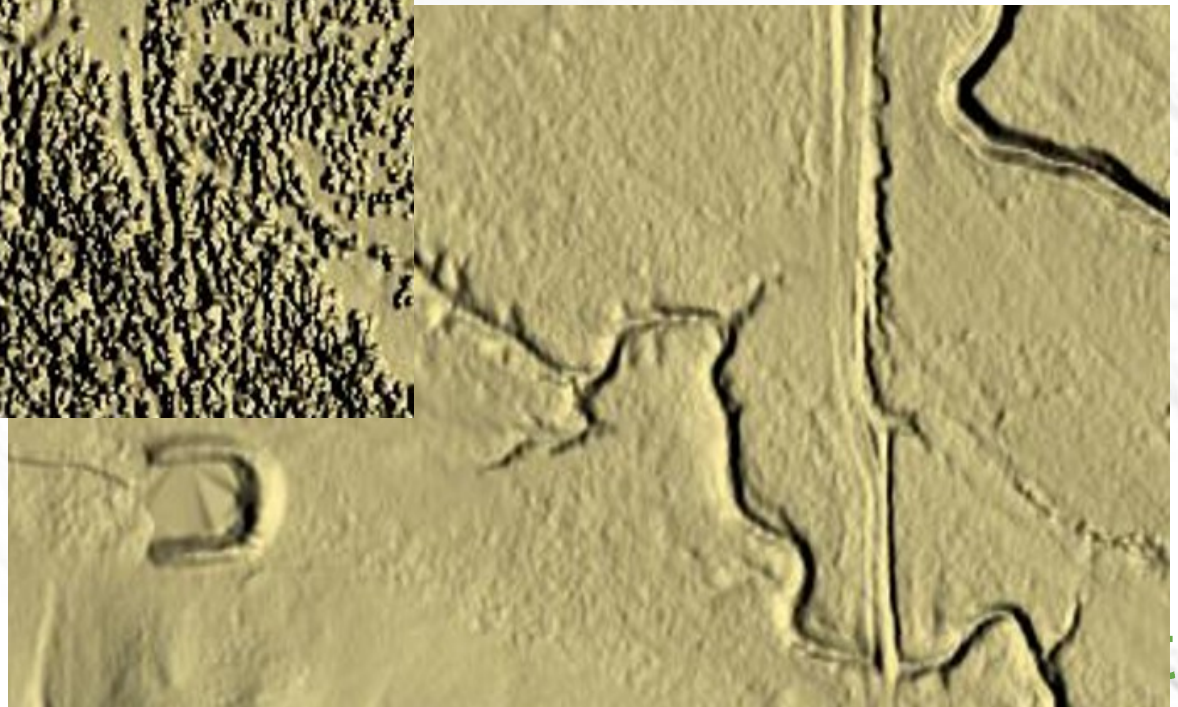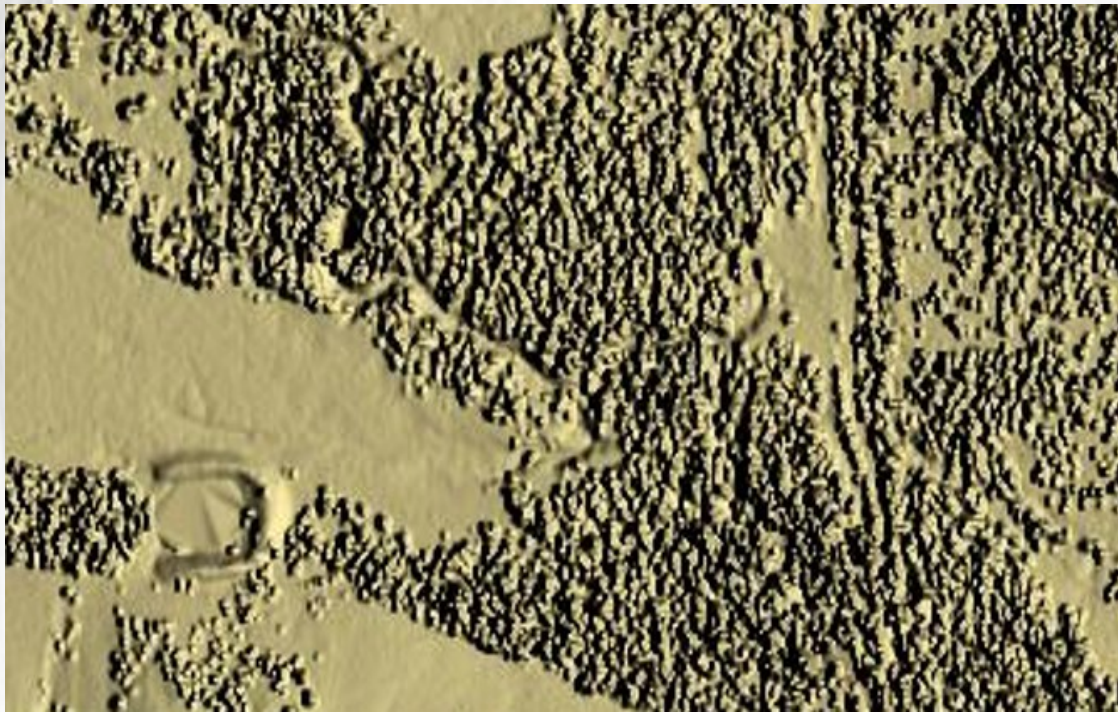
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Visualization

- The LIDAR based NRCS DEM data was used to produce hillshaded images.
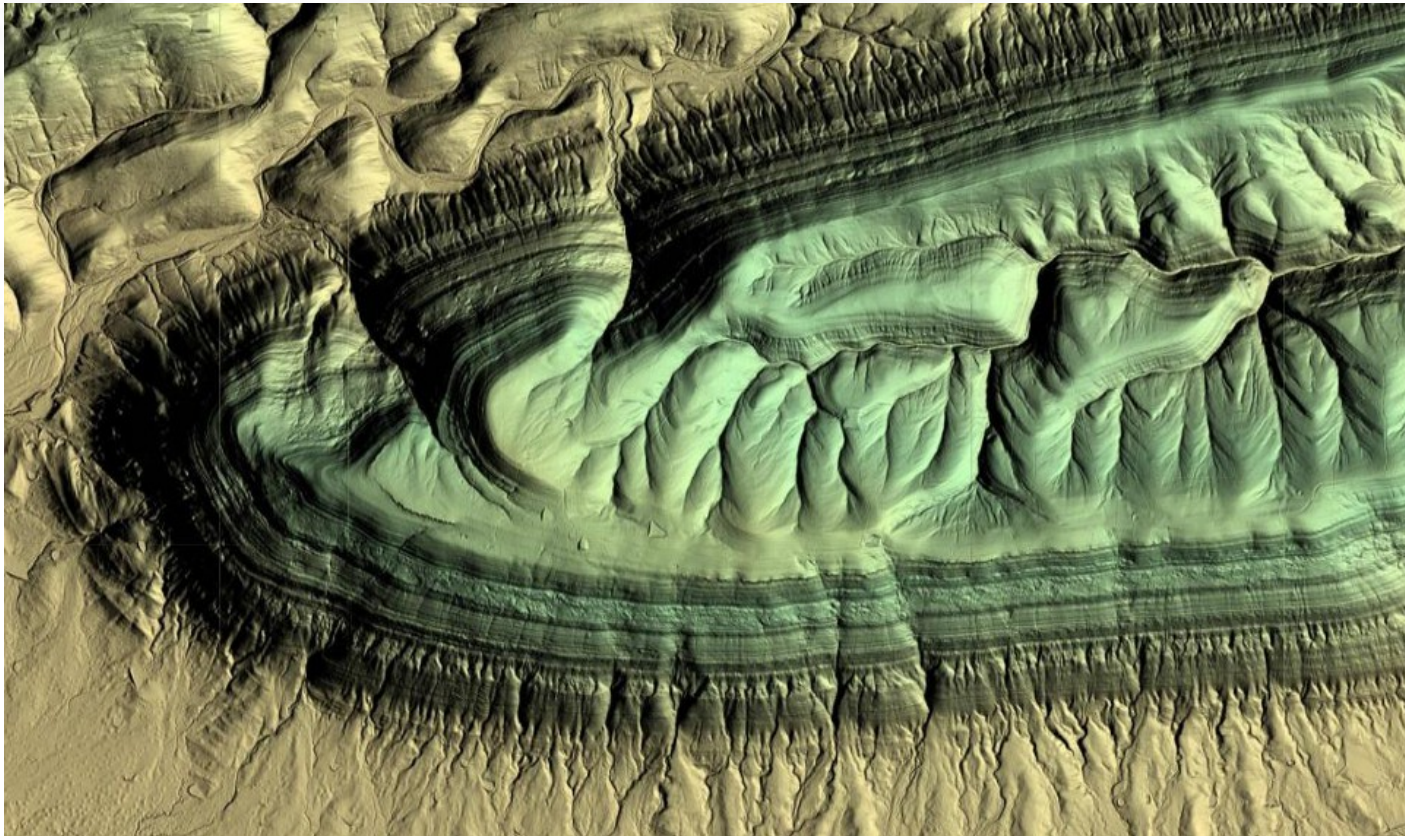
Bare Earth and First Return
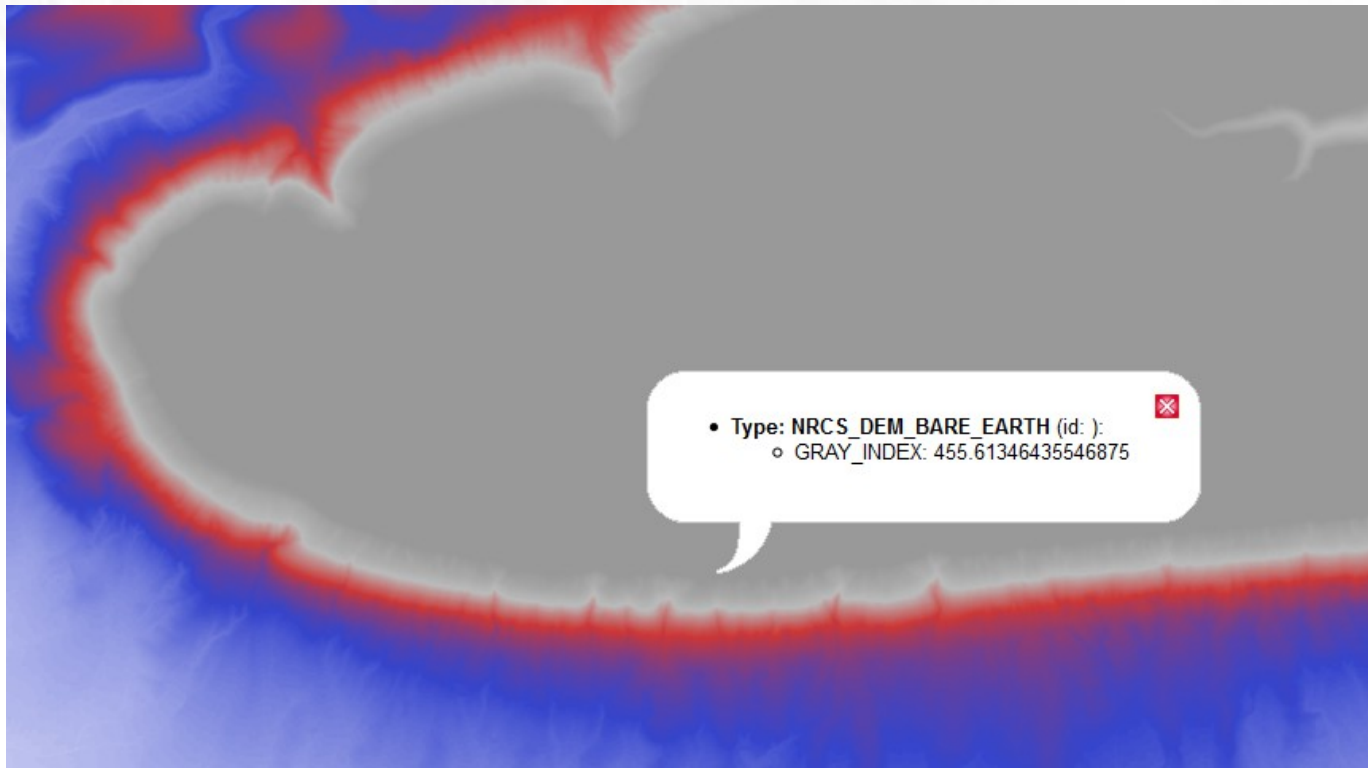
- First return data shows vegetation.

Enhances Aerial Photos

Colormap and elevation

- Clicking on the DEM Bare Earth or DEM First Return will give the elevation (in meters)

All layers downloadable

- All layers, including DEM, Hillshading, and raw LAS are downloadable with a custom AOI rectangle or uploaded SHP in multiple formats and projections.

  - LIDAR – LAS and LAZ (Compressed LAS)

  - Visualization – GeoTIFF, BIL, ERS, IMG, JPG, PNG, NITF

  - Projections: OK State Plane, UTM, NAD83, NAD27, Feet/Meters

Uploading and Displaying User CSV and SHP files

- CSV files with Latitude and Longitude fields can be displayed on the map.

- SHP files can be uploaded and displayed.

- Polygons in the SHP file can then be used to define an AOI for downloads.

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OKMaps uses Open Source

- PostGIS for feature and LIDAR storage

- GeoServer serves images, vector, WMS, WFS, WCS

- OpenLayers for display in browsers

- GeoNetwork for metadata catalog, CSW

- GDAL and PDAL for importing data

- Coordinate Solutions "Glue" software to pull it together

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