Lidar Trends & Innovation

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Part I

Lidar Trends
Atlantic’s USGS QL2 Acquisition

64,590.83 mi² (2013-2016)
Atlantic’s USGS QL2 Data Processing

54,128.77 mi² (2013-2016)
**State of Kansas Lidar Program**

**Scope:** Atlantic was contracted by the State of Kansas on behalf of the Kansas Department of Agriculture and Kansas Data Access for professional services related to the development of Lidar data for a 6-year term (2021). Additional partners included the USDA Natural Resource Conservation Service, the U.S. Geological Survey, the Kansas GIS Policy Board, the Kansas Department of Transportation and the Kansas Water Office. The Lidar data is being used for conservation planning, design, research, floodplain mapping, wetlands identification, dam safety assessments, hydrologic modeling, and subsidence monitoring.

- Over 24,643 square miles in total have been mapped
- 9,513 mi² have been fully QA/QC’ed by both Dewberry and USGS NGTOC and have been accepted
ADECA-Office of Water Resources has worked with FEMA and its local partners to develop updated floodplain maps and RiskMap information for all sixty-seven (67) counties in the State.

The first collaborative LiDAR project in Alabama between federal, state and local agencies was led by ADECA-OWR in 2009. Since 2009, ADECA-OWR has led the development of new countywide and/or watershed based LiDAR in support of the NFIP.

USGS BAA Grant FY2016 priorities for ADECA-OWR / FEMA Region IV along with the FY2016 priorities for the USDA-NRCS were then identified and combined to form Alabama's 2016 BAA 3DEP project coverage area to include a total of 12 counties. The total project area is 8,844.8 square miles from northwest Alabama to central Alabama.
The GIO communicated with the GADNR EPD to understand the priority areas for updating floodplain maps and RiskMap information for all 159 counties in Georgia.

USGS BAA Grant FY2017 priorities for the GIO/GANRCS along with the FY2017 priorities for GADNR EPD were then identified and combined to form Georgia’s 2017 BAA 3DEP project coverage area to include a total of 33 counties.

The total proposed project area is approximately 10,371 square miles from West Central Georgia to SW/S Central Georgia.
Alabama / Georgia Lidar Programs

- **Federal Partners:**
  - USGS
  - NRCS
  - FEMA

- **State, Regional, and Local Partners:**
  - AL GIO, GA GIO, ADECA-OWR (FEMA CTP), ALDOT, ALNRCS, GANRCS, GADNR EPD, TVA, and local agencies (counties)

- **Project Specs:**
  - USGS QL2 LiDAR
  - Over 18,000 sq. miles
  - Multiple uses for many agencies
  - StrikeForce counties covered that previously were not
Part II

Lidar Derivatives
Building Footprint Derivatives

- Classification and extraction of building footprints from USDA-NRCS lidar point data; old imagery
- Created 3-D data for 25,000 buildings over 5,500 square miles covering 8 total counties in NW TN
Impervious Surface Derivatives

- LiDAR News “Mapping Impervious Surfaces from LiDAR”
- Jefferson County, Alabama / RPC of Greater Birmingham
- Algorithmic extraction of other features (R&D) resulted in a capability to extract impervious features directly from the lidar point cloud and intensity data
- Atlantic developed new macros to automate the classification process using GeoCue & Terra Scan software; extra R&D push after Weakley County success
Impervious Surface Derivatives

- Illustrates an intensity orthophoto that has been biased towards building extraction.

- Final polygon impervious feature results of process.

- Through automation, application of COTS tools and with a little clean up from a subject matter expert, this dataset was generated at a fraction of the cost of other impervious layers and using only LiDAR.
Hydrographic Derivatives

- Hydrological Correct Raster
- Hillshade Raster
- Shaded Relief
- Slope Raster
- Flow Direction Raster
- Flow Accumulation Raster
- Derived Hydro Network Feature Profile
- Contour Created from Terrain Dataset
Part III

Other Remote Sensing Technology Trends
Looking for a way to identify and prioritize their public works projects, the Redstone Arsenal chose Atlantic to perform aerial thermal imaging.
Closing

Questions