

NEW MEXICO ELEVATION DATA PLANNING AND ACQUISITION

New Mexico Statewide Lidar Acquisition

NM GAC and NM Elevation Data Planning/Acquisition Subcommittee

NM DoIT Geospatial Advisory Committee (GAC): Mission

Coordinate geospatial technology in state government

Develop policy recommendations and guidelines in state and local government

Share geospatial technology among all government agencies and the public

NM GAC, NM RGIS, and NMGIC: The state's 3 core geospatial elements

Subcommittee: Reasons and Roles

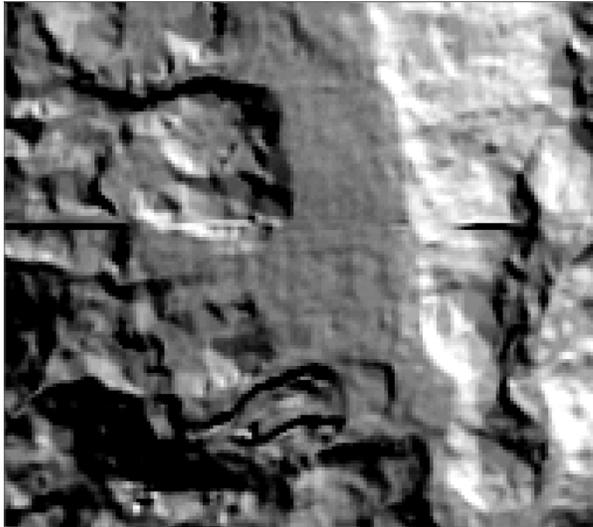
Formed January 2014 in response to NM needs for enhanced elevation data and

the National 3D Elevation Program (3DEP) The National Map: nationalmap.gov/3DEP/

Develop partner/stakeholder relationships to identify lidar needs and priorities

Develop and update the geospatial NM Statewide Lidar Acquisition Plan

What we have statewide: 10-m DEM (NED) [La Cueva Area]



New Mexico's Elevation Data

What we have:

Existing Elevation Data

Out of Date: Most > 40 yrs old

Range: 15 yrs old to > 70 yrs old

Spatial Resolution: 33 ft, 98 ft

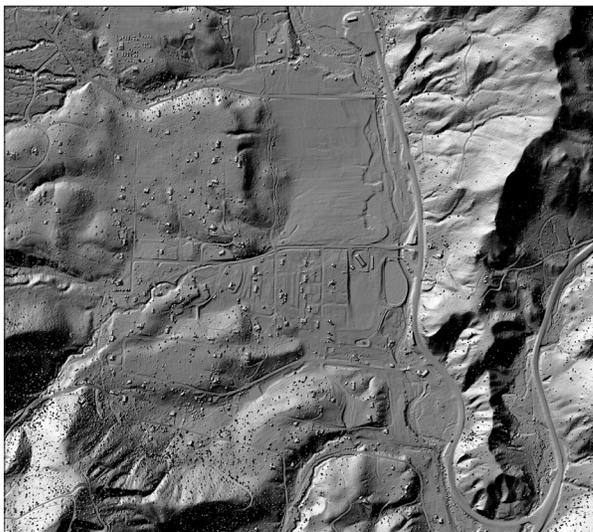
Vertical Accuracy: 3.3 ft–6.6 ft to

36 ft–131 ft to Unknown

Interactive image comparisons:

edac.unm.edu/projects/lacueva/

What we need statewide: Lidar Last Return [La Cueva Area]



What we need:

Quality Level 2 (QL2) Lidar Data

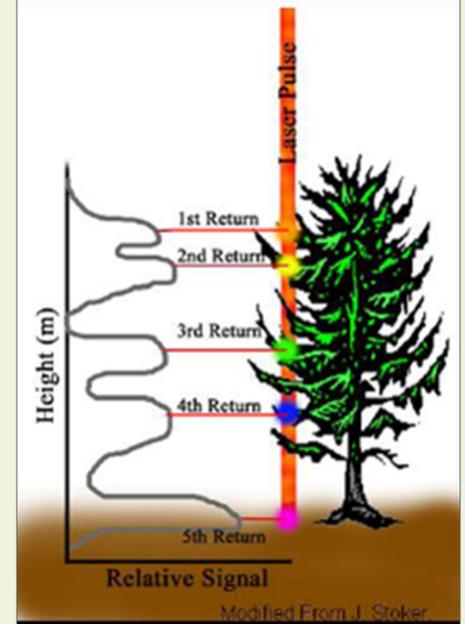
Spatial Resolution: 2 ft or better

Vertical Accuracy: 3.9 in or better

What is lidar?

lidar: light detection and ranging

Multiple Return Explanation



Lidar measures distances to the Earth using laser pulses from aircraft.

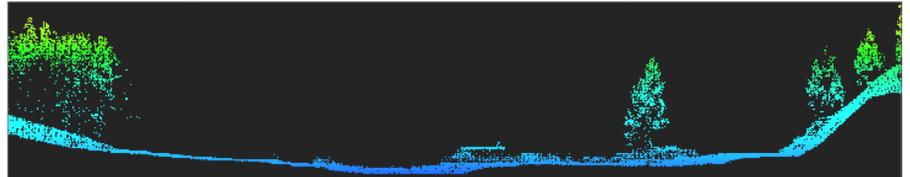
Pulses give precise 3D information about surface shape and features.

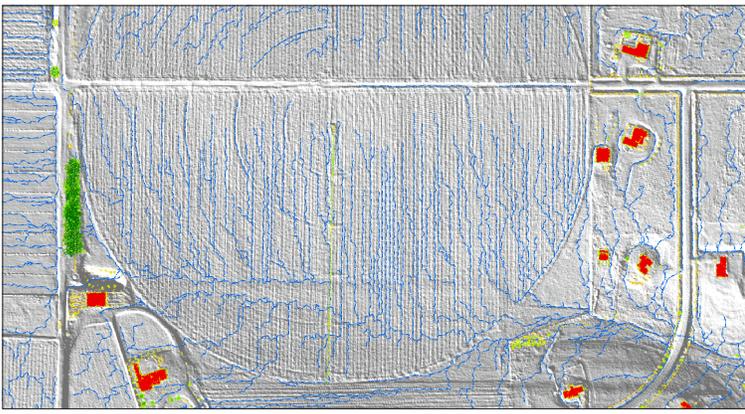
Result: A dense, detail-rich cloud of elevation points—a lidar point cloud.

Point clouds yield geospatial products.

1-ft Contours, 2-ft Bare Earth DEMs, Digital Surface Models (e.g., canopy, structure, and urban canyon surfaces), Detailed Hillshade/Slope/Aspect Maps, Elevation Profiles ...

Lidar Processing and Analysis: Side-View Profile, Classified by Elevation [La Cueva Area]





Lidar Processing and Analysis: Rural

Center-Pivot Irrigation with Drainage/Flowlines
 Analysis: Hydrology and Classification by Category
 Water Drainage/Flowlines (blue)
 Houses/Structures (red)
 Trees/Shrubs (green)
 Low Vegetation (yellow)
 (Santa Fe County Project, 2014)



Lidar Processing and Analysis: Urban

Residential and Commercial Area
 Analysis: Perspective View with Intensity Layer
 (MRCOG, 2010)

NM Lidar Mapping Needs and Priorities

Lidar elevation data will address or improve on many concerns and issues crucial to New Mexico. Examples:

- Hydrology: Flow run-off, accumulation, flooding, point-source pollution, groundwater recharge modeling, catchment areas
- Utility: Pipelines, power lines, right-of-way analysis, slope, gradient
- Transportation: Planning, right of way, drainage control analysis
- Oil/Gas Infrastructure: Wells, pipelines, brine pits, pump stations
- Wind Farm: Wind flow modeling and analysis
- Real Property: Assets management, development, planning
- Cell/Broadband Tower: Propagation modeling, signal coverage, viewshed analysis
- Precision Agriculture: Analysis, rangeland, condition analysis
- Game Species/Species of Concern: Habitat, management modeling
- Wildfire/Brushfire: Threat analysis, fuel load, fuel conditions
- E911: Emergency-vehicle routes, facilities placement, egress/evacuation route planning
- Building/Structure: Footprint extraction, parcel mapping
- Airfield: Clearance, flightline obstruction analysis, security threat analysis (Cannon AFB, Melrose Bombing Range)

Statewide QL2 Lidar Acquisition

Provides baseline/foundation high-quality elevation data
 Leverages economies of scale—efficient, cost effective
 Positions decision makers and analysts to identify, evaluate, mitigate, and respond to natural and human-caused changes
 Users: state, local government, federal, tribal, education, nonprofit, industry, business, private, the public

This collaborative program will result in the best available data for the greatest number of users.

New Mexico Subcommittee Members

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