

## National Enhanced Elevation Assessment

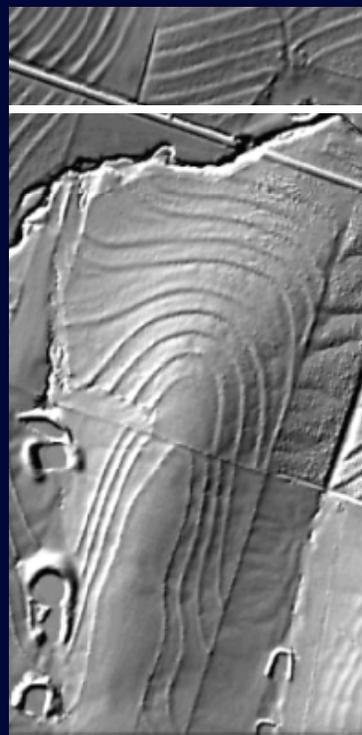
High quality 3-D elevation data are critical to a broad range of government and private sector applications such as resource management, infrastructure planning, environmental monitoring, and disaster mitigation. Without high quality 3-D elevation data, the Federal Emergency Management Agency (FEMA) could not create flood risk maps, research scientists could not easily discover new geologic faults that could cause earthquakes, and coastal-area flood inundation assessments would not be possible. For much of the Nation, professionals in a broad range of critical fields find themselves lacking the right data to perform their missions. Today, Federal agencies, States, counties and businesses are grappling with maps mostly created from elevation data that are more than 30 years old and far less detailed than is needed.

Customers of *The National Map* identified elevation data as one of the top three data types needed to address their business requirements. Mapping systems need elevation data to support 3-D analysis and viewing. In addition, elevation data, geodetic control, and imagery are the fundamental data building blocks of geographic information systems. Elevation data, when combined with imagery, create a foundation for interpreting or extracting other data, such as transportation, water features and buildings. Without a high quality geospatial foundation, it will not be possible to achieve the vision of an integrated National geospatial data asset to support science and operational decision-making.

The use of elevation data has expanded as new technologies produce very high-resolution landscape models. The term “enhanced elevation” is used to describe precise 3-D measurements of land or submerged topography, built features, vegetation structure, and other landscape detail. LiDAR (Light Detection and Ranging) has become the technology of choice for many of these measurements but radar and other technologies also play an important role. LiDAR datasets can be transformed into a dozen or more information types such as bare earth elevation, slope, top of surface (trees, buildings, etc.) and vegetation structure.

A National Enhanced Elevation Assessment has been undertaken to more fully understand Federal, State, local, Tribal and other National business requirements, benefits and costs associated with various program implementation scenarios. The scenarios will provide a planning basis for a potential National program optimized to balance cost and benefits in meeting priority Federal, State and other National information needs. The Assessment will also address fundamental questions prior to detailed program planning, such as: Is it more cost effective for the government to manage elevation activities within the context of a National program? Are there additional National or agency benefits derived from such a strategy? What does the optimized program look like?

The Assessment is inclusive with respect to public and private input since no one entity can speak to all of the business requirements supported by elevation data. The Assessment will help discover economies of scale, potential multiple data uses, and universal business requirements that can be met through a more comprehensive National strategy for improving elevation data in the United States and its territories, including coastlines.

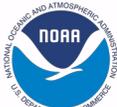


### FOR MORE INFORMATION CONTACT

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### National Enhanced Elevation Assessment Partners



FEMA

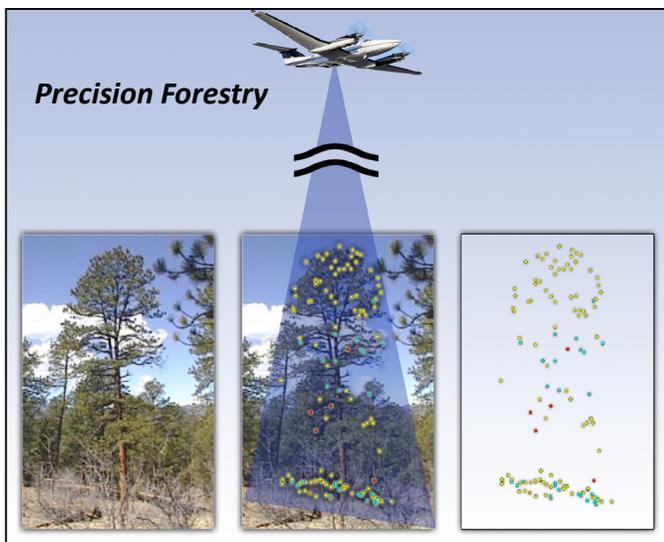


# NATIONAL ENHANCED ELEVATION ASSESSMENT

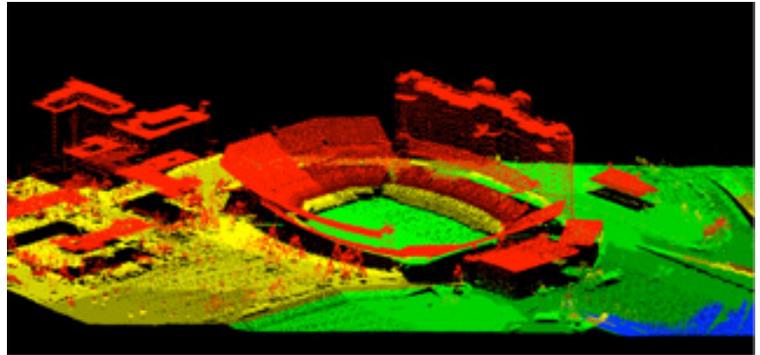
The Potential benefits of a National enhanced elevation program include:

- Improved National fire fuels models to assess fire risks
- Consistent National fault mapping to mitigate earthquake risks
- Improved farming operations for sustainable food production
- Biomass and carbon estimates to understand climate variability
- Improved land-use maps to inform land management decisions
- Better National surface hydrology for water management
- Better floodplain models for insurance rate calculations
- Improved soil surveys to support conservation
- Wind and solar power-potential for alternative energy solutions
- Communication tower placements to serve cell phone users

The Assessment is being sponsored by member agencies of the National Digital Elevation Program (NDEP). Although NDEP has leveraged limited Federal and State agency resources to make progress toward an improved National elevation data resource, a National strategy has not existed with sufficient resources to implement it. The majority of U.S. elevation data are more than 30 years old, coarser than 10-meters in resolution, and do not support current and emerging requirements. This Assessment is being conducted under contract with Dewberry, headquartered in Fairfax, Virginia.



Advanced Applications for LiDAR and Derived Datasets



This LiDAR image of the University of Nebraska football stadium shows the building footprints and height detail that can be visualized from point cloud information.

## Information Gathering:

The first phase of the Assessment is to comprehensively document and validate Federal, State, Tribal and other National needs for enhanced elevation data. These needs, as well as cost and benefit information, will be documented for each participating organization. A two-step process includes an online questionnaire followed by workshops and interviews to refine the consolidated responses. The collection of Federal agency information was initiated in October of 2010, to be followed by the State, local, Tribal and selected industry information gathering in the spring of 2011.

## Follow on Assessment Tasks:

- Analyze the business-use and benefits information to develop proposed standardized National dataset options that will address key business uses.
- Evaluate emerging technology trends and technical limitations to provide a high-level technical approach and costs for implementing a National program over a 4-7 year timeframe, identify where radar may be an alternative to LiDAR, and identify current bathymetric LiDAR technology.
- Assess the feasibility, cost, and performance of data infrastructure alternatives for services such as ingesting and managing a range of minimally processed LiDAR data from Federal and State agencies, generating customized derivative products, and delivering high volumes of data.
- Evaluate and compare alternative program scenarios based on their expected ability to produce the standardized National dataset options (above) in terms of costs, risks, operational efficiency and other feasibility issues.

The Assessment will be completed in 2011. The final report will include an analysis of multiple program implementation scenarios. The report will be available to stakeholders in late 2011.