

National Elevation Dataset (NED) Readme

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INTRODUCTION:

The U.S. Geological Survey has developed the National Elevation Dataset (NED). The NED is a seamless mosaic of best-available elevation data drawn from a variety of sources. While much of the NED is derived from USGS Digital Elevation Models (DEM's) in the 7.5-minute series, increasingly large areas are being obtained from active remote sensing technologies, such as LIDAR and IFSAR, and also by digital photogrammetric processes. Efficient processing methods were developed to filter production artifacts in the source data, convert to the NAD83 datum, edge-match, and fill slivers of missing data at quadrangle seams. NED is available in spatial resolutions of 1 arc-second (roughly 30 meters), 1/3 arc-second (roughly 10 meters), and 1/9 arc-second (roughly 3 meters). The dataset is updated with "best available" elevation data on a two month cycle.

These digital elevation datasets are essential in understanding the Earth's landscape: elevation, slope, and aspect (direction a slope faces.) NED is critical to identifying and modeling geologic features such as water drainage channels and basins, watersheds, peaks and pits, and movements such as avalanches. NED is used to create relief maps, 3-D visualizations, to classify land cover and to geometrically correct data from satellite or aircraft sensors (orthorectification). The fire community, natural resource managers, urban planners, conservationist, emergency responders, communication companies to name a few all rely on these elevation datasets. This data also supports *The National Map*.

Part 1: DATA INFORMATION

Development of the NED required the merging of over 50,000 different DEM data files. A processing system was designed to assemble a seamless dataset from multiple data sources, resolutions, and production methods. Procedures were developed to maintain the database with periodic updates and to insure the integration of higher resolution elevation data as they become available. A raster data model referenced to a geographic grid was used for NED. The data model is logically seamless but uses an internal tile structure initially selected as a 1- by 1-degree area. The NED dataset currently achieves complete national coverage by integrating the "best" available data. Even with the "best" available, there could be a wide range of source dates and some artifacts in the source data, such as Level 1 30 DEM's. The system filters production artifacts, and performs any necessary datum conversions and coordinate transformations. The NED data is only as good as the original source data. Individual files are appended together into the larger tile structure specified for the database. Edge matching, a 6 pixel overlap to ensure no gaps or issues when users perform functions like reprojection to the data, and metadata generation are applied lastly in assembling each NED tile. The NED homepage is <http://ned.usgs.gov>

Part 2: DATA SPECIFICATIONS

Cell size: one arc-second
Data type: Floating Point
Number of rows: 3612
Number of columns: 3612
Projection: Geographic
Datum: NAD83
Units: Decimal Degrees
Zunits: Meters
Spheroid: GRS1980

PART 3: CONTENTS OF FOLDERS

The NED data is stored in 1 x 1 degree tiles in ArcGRID, GRIDFLOAT or IMG format. Each tile covers a 1x1 degree area of the earth's surface. The naming convention of the folders utilizes the latitude and longitude coordinates. The coordinate represents the upper left (northwest) corner of the grid.

Directory Name: The coordinate of the upper left corner of the grid.

Sub Directory: The format, the upper left corner coordinate, and resolution
Sub Directory: info (for the ARCGRID Format)
Metadata file

Example:

n40w110: North Latitude of 40 degrees and West Longitude of 110 degrees.
This is the upper left corner coordinate. Area within this tile covers N 40 degrees top boundary, N 39 degrees bottom boundary, W 110 degrees left boundary, W 109 degrees right boundary.

grdn40w110_1 (2 or 13): data is ARCGRID format within the bounding coordinates and is 1 Arc Second resolution (2 Arc Second or 1/3 Arc Second)

OR

floatn40w110_1 (2 or 13): data is GRIDFLOAT format within the bounding coordinates and is 1 Arc Second resolution (2 Arc Second or 1/3 Arc Second). Includes .prj and .hdr files.

OR

imgn40w110_1 (2 or 13): data is img format within the bounding coordinates and is 1 Arc Second resolution (2 Arc Second or 1/3 Arc Second).

AND

n40w110_1_meta.xml: metadata for 1 x 1 degree area.

PART 4: INDEX INFORMATION

Indices available:

The complete data source information of the areas that were processed into NED.
example: meta1212_shape

The data source information of the updated areas that were processed into NED
example: ned_update_201212_shape

The 1 x 1 degree tiles updated.
example: ned_1x1_1212_shape

Indices describing the NED source data are available at: <http://ned.usgs.gov/downloads.asp>.

PART 5: RESOURCE INFORMATION

NED Homepage:

<http://ned.usgs.gov>

Metadata indices, the NED Data Dictionary, and NED Release Notes are available at:

<http://ned.usgs.gov/downloads.asp>

To acquire custom downloads go to:

<http://nationalmap.gov>

To acquire entire datasets via Bulk Data Distribution:

Email: bulkdatainfo@usgs.gov

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