U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

DRAFT MAP

Preliminary Digital Shaded Relief Map of Afghanistan

SCALE 1: 1,000,000

0 50 100 200 Kilometers

0 50 100 200 Miles

Discussion

For 11 days in February of 2000, NASA, the National Geospatial-Intelligence Agency (NGA), the German Aerospace Center (DLR), and the Italian Space Agency (ASI) flew X-band and C-band radar interferometry onboard the Space Shuttle Endeavor. The mission covered the Earth between 60°N and 57°S and will provide interferometric digital elevation models (DEMs) of approximately 80% of the Earth's land mass when processing is complete. The radar-pointing angle was approximately 55° at scene center. Ascending and descending orbital passes generated multiple interferometric data scenes for nearly all areas. Up to eight passes of data were merged to form the final processed SRTM DEMs. The effect of merging scenes averages elevation values recorded in coincident scenes and reduces but does not completely eliminate the amount of area with layover and terrain shadow effects.

The SRTM digital elevation model (DEM) depicted in this map was produced by the USGS for geologic mapping, natural resource investigations and reconstruction of Afghanistan under the USGS/USAID PASA agreement. This SRTM DEM was produced from over 40 individual tiles of elevation data from the Shuttle Radar Topography Mission (SRTM). Each tile was downloaded, converted from its native Height file format (.hgt), and imported into a GIS for additional processing. Processing of the data included data gap filling, mosaicking, and re-projection of the tiles to form one single seamless digital elevation model (DEM).

The most significant form of data processing for the Afghanistan DEM was gap-filling areas where the SRTM data contained a data void. These void areas are as a result of radar shadow, layover, standing water, and other effects of terrain. To fill these gaps, topographic contours were digitized from 1:200,000 scale Soviet General Staff Topographic Maps. Digital Contours were gridded to form elevation models for void areas and subsequently were merged with the SRTM data through GIS and image processing techniques.

The final product, represented by this map, is a gap-filled elevation dataset with nominal ground resolution of 85m. The purpose of this data set is to provide a single consistent elevation model to be used for natural resource assessments national scale mapping, GIS, and remote sensing applications.

Map Projection Information

Projected coordinate system name: WGS_1984_Transverse_Mercator

Geographic coordinate system name: GCS_WGS_1984

Map Projection Name: Transverse Mercator
Scale Factor at Central Meridian: 0.999600
Longitude of Central Meridian: 66.000000
Latitude of Projection Origin: 34.000000
False Easting: 0.000000
False Northing: 0.000000

Planar Coordinate Information
Planar Distance Units: meters
Coordinate Encoding Method: row and column
Coordinate Representation
Abscissa Resolution: 85.000000
Ordinate Resolution: 85.000000

Geodetic Model
Horizontal Datum Name: D_WGS_1984
Ellipsoid Name: WGS_1984
Semi-major Axis: 6378137.000000
Denominator of Flattening Ratio: 298.257224

USGS science for a changing world