

Sharing and Analyzing Dem Datasets through DEM Explorer

Weiguo Han

*Center for Spatial Information Science and Systems, George Mason University
4400 University Drive, MSN 6E1, Fairfax, VA 22030*

Project Goal:

Digital elevation model (DEM) datasets including SRTM, ASTER GDEM, GTOPO30 and SRTM30_Plus are freely accessible and downloadable in separate files from many federal and academic organizations. But users need to process these datasets by themselves to obtain data for the area of interest (AOI) which does not exactly match the spatial extent of original DEM files.

DEM Explorer will offer an easy and direct way to customize, visualize, download and analyze DEM datasets through a responsive and interactive web-based interface (<http://ws.csiss.gmu.edu/DEMExplorer>). It will provide not only valuable services such as mosaicking, subsetting, re-projecting, and reformatting for these DEM data, but also an interoperable and timely mean to get the interest DEM data by sending standard WCS request to WCS4DEM (<http://geobrain.laits.gmu.edu/cgi-bin/gbwcs-dem>). With the intent of improving users' knowledge from DEM data, common terrain analysis functions will be integrated to learn terrain characteristics, and hydrological analysis web services implemented in the GeoBrain project will be invoked to obtain hydrologic patterns. In addition, Web services in relation to DEM analysis from other sources will be called to extend system capabilities. Utilizing new Web 2.0 technologies and geospatial data and service standards, DEM Explorer will be a comprehensive one-stop portal for DEM data delivery, visualization and analysis.

Project Tasks:

With support from ESIP FUNDing Friday mini-grant, specific tasks that will be accomplished in DEM Explorer during next 4 months include:

- Providing technical support to USGS EROS Center and helping them re-use DEM Explorer to distribute ASTER GDEM to worldwide users. Comments and feedbacks from them and global users also will be useful and helpful for us to improve DEM Explorer, this effort will foster such collaboration among ESIP members;
- Implementing Web service client to call more DEM related services from online sources. It will enable users to invoke those services on their own in the extensible framework of DEM Explorer;
- Improving system performance to offer better user experience. For higher performance, DEM Explorer will be migrated and deployed in a cluster environment; DEM data processing procedure will be optimized and improved to generate the customized data more quickly; PostgreSQL will be used to load all

vector data and overviews and internal tiles will be built for all raster imagery to boost rendering speed.

Milestones:

1. Provide all necessary design documents, source codes, geospatial data and configuration files to the technicians of USGS EROS Center, and help them build and release their system by the end of October, 2010.
2. Design and implement the common Web service client by the end of November, 2010.
3. Finalize system optimization and improvement by the end of December, 2010.