

Geonucleus, the freeware application for managing geological mapping data in GIS

Gáspár Albert

Eötvös Loránd University, Department of Cartography and Geoinformatics, Budapest, Hungary (albert@ludens.elte.hu)

Geological mapping is the most traditional way of collecting information from the deposits and rocks. The traditional technique of the documentation was refined by generations of geologists. These traditions were implemented into Geonucleus to create a tool for precise data-recording after fieldwork, but giving the freedom of pondering the details of the observation as well.

In 2012 a general xml-based data structure was worked out for storing field observations for the Geological Institute of Hungary (Albert et al. 2012). This structure was implemented into the desktop version of Geonucleus, which creates a database of the recorded data on the client computer. The application saves the complete database in one file, which can be loaded into a GIS. The observations can be saved in simple text format as well, but primarily the kml (Keyhole Markup Language) is supported. This way, the observations are visualized in comprehensible forms (e.g. on a 3D surface model with satellite photos in Google Earth). If the kml is directly visualized in Google Earth, an info-bubble will appear via clicking on a pinpoint. It displays all the metadata (e.g. index, coordinates, date, logger name, etc.), the descriptions and the photos of the observed site. If a more general GIS application is the aim (e.g. Global Mapper or QGIS), the file can be saved in a different format, but still in a kml-structure. The simple text format is recommended if the observations are to be imported in a user-defined relational database system (RDB). Report text-type is also available if a detailed description of one or more observed site is needed. Importing waypoint gpx-files can quicken the logging.

The code was written in VisualBasic.Net. The app is freely accessible from the geonucleus.elte.hu site and it can be installed on any system, which has the .Net framework 4.0 or higher. The software is bilingual (English and Hungarian), and the app is designed for general geological mapping purposes (e.g. quick logging of field trips). The layout of the GUI has three components: 1) metadata area, 2) general description area with unlimited storing capacity, 3) switchable panels for observations, measurements, photos and notes. The latter includes panels for stratigraphy, structures, fossils, samples, photo uploads and general notes. Details like the sequence and contact type of layers, the parameters of structures and slickensides, name and condition of fossils and purpose of sampling are also available to log (but not compulsorily). It is also a tool for teaching geological mapping, since the available parameters - listed in the app - draws attention to the details, which are to be observed on the field.

Reference:

Albert G, Csillag G, Fodor L, Zentai L. 2012: Visualisation of Geological Observations on Web 2.0 Based Maps, in: Zentai, L. and Reyes-Nunez, J (eds.): Maps for the Future - Children, Education and Internet, Series: Lecture Notes in Geoinformation and Cartography, Tentative volume 5 – Springer, pp. 165-178.