

'Earth-Sciences Atlas of Kyushu' toward simplified integrated-application of electronic earth-sciences information

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1. Introduction

Advanced applications of various kinds of geographic and earth-sciences data are necessary in the studies of geosphere: resources development, environmental protection, and hazard mitigation. Recently, various kinds of basic information have been electronically data-based, and various digital text data files have been disclosed, through CD-ROM publication and WWW data download, at low costs by the governmental organizations such as MLTI, GSI, JODC, JMA and GSJ. However, these data, not in communized formats, are difficult to use in integrated manners for non-experts of GIS. Hence, here, I introduce the outline of a simplified integrated-application method, through making an 'Earth-Sciences Atlas' for the Kyushu district, Japan, by Shigeno (2005).

2. Method

The present method goes through the following three steps, and it is characterized by its independence from high-level GIS software that is often expensive and difficult to manipulate.

(1) Communizing data formats: The new data formats communized are text tables, which take samples (mesh and point vector) in the rows, and longitude, latitude and 1 to 3 attributes of the samples in the columns (LL-M, LL-PP and LL-PPA formats). Various kinds of original data files from various organizations are converted to the new files with the above common formats. The conversions have been done by using newly developed small utility programs, and commercial spreadsheet software.

(2) Visualizing with communized visualization software: A simplified map visualization software communized to various kinds of data, QMM (open source), has been produced using widely-used MS Visual Basic v.6 for MS Windows. Earth-sciences maps are produced using the above new data files, parameter input files (made with spreadsheet software) and QMM, though its functions are limited to the most basic levels.

(3) Making legends and integrating maps: Legends of the above maps are also produced by the same method using QMM. Integration of the various maps and their legends are conducted using commercial graphic software.

3. Results and discussion

New data files, using the above formats, for elevation, sea depth, geology, geochemistry, gravity anomaly, aeromagnetic anomaly, geothermal gradient, Quaternary volcanoes, hot springs, hypocenter, GPS crustal movement, annual average temperature, National Parks have been made for the Kyushu district (128-132 E; 30-34 N). The maps have been produced commonly based on longitude-latitude coordination and 1:1,000,000 scale using the above files, and a miniature 'Earth-Sciences Atlas of Kyushu' has been produced.

However, the original objective of this study is making advanced applications of the various kinds of earth-sciences information easier. For the purpose, it is necessary to transform the above formats to systematically and hierarchically normalized, standardized and communized mesh types. The transform is expected to be conducted in the future by the organizations that have been editing and offering the data files. More progressive open exchanges of various new and processed data will be expected using the above data formats among various persons and organizations.

4. Summary

We have been conducting the studies on geothermal resources assessment using GIS (FY 2001-04 and 2005-09). Refer to Shigeno (2005) for more details of this abstract. The series of the results of the above studies will be published in CD-ROM including the developed programs and case study data in near future.

References (in Japanese): Shigeno, H. (2005) Making an 'Earth-Sciences Atlas' by yourself: A case study for the Kyushu district, Japan, toward simplified integrated-application of electronic earth-sciences information. Chishitsu Nyusu (Geology News), no. 616 (in press).