

EAST-CHINA GEOCHEMISTRY DATABASE (ECGD): A NEW NETWORKING DATABASE

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North China Craton is one of the best natural laboratories that research some Earth Dynamic questions, such as continental stability and activation [1]. Scientists made much progress in research on this area, and got vast geochemistry data, which are essential for answering many fundamental questions about the age, composition, structure, and evolution of the East China area. But the geochemical data have long been accessible only through the scientific literature and theses where they have been widely dispersed, making it difficult for the broad Geosciences community to find, access and efficiently use the full range of available data [2]. How to effectively store, manage, share and reuse the existing geochemical data, especially in the North China Craton area?

East-China Geochemistry Database (ECGD) is a networking geochemical scientific database system that has been designed based on WebGIS and relational database for the structured storage and retrieval of geochemical data and geological map information. It is integrated the functions of data retrieval, spatial visualization and online analysis [3].

The goal of ECGD is to provide a geochemical data sharing, access and exchange collaboration platform for researchers. Using the ECGD database, researchers can query, analyze, output and implement spatial visualization to the geochemical data via a website. Because integration of WebGIS technology, the query results can be mapped on digital map based on WebGIS and can generate classification thematic maps. Meanwhile, researchers can make online analysis for the query results that using offered geochemical diagrams.

ECGD focus on three areas:

1. Storage and retrieval of geochemical data and geological map information. Research on the characters of geochemical data, including its composing and connecting of each other is the most important part of this area. We designed a relational database, which based on geochemical relational data model, to store a variety of geological sample information such as sampling locality, age, sample characteristics, reference, major

elements, rare earth elements, trace elements and isotope system et al. And a web-based user-friendly interface is provided for constructing queries.

2. Data view. ECGD is committed to online data visualization by different ways, especially to view data in digital map with dynamic way (Fig.1, left). Because ECGD was integrated WebGIS technology, the query results can be mapped on digital map, which can be zoomed, translation and dot selection. Besides of view and output query results data by html, txt or xls formats, researchers also can generate classification thematic maps using query results, according different parameters.

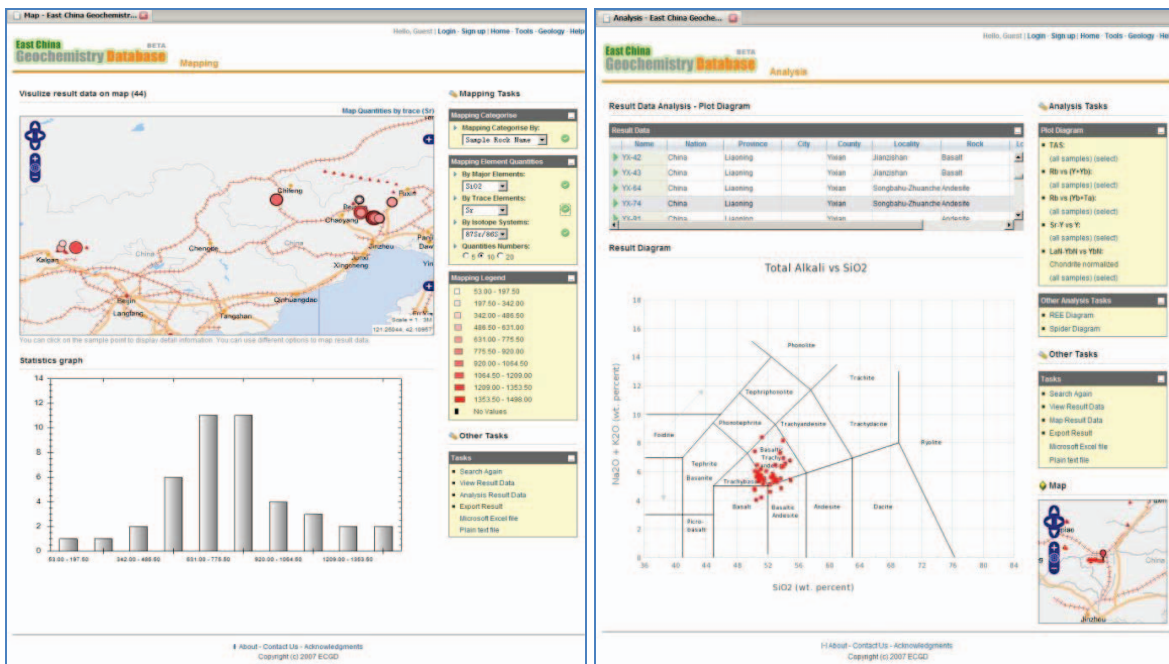


Fig.1 (left) The interface of data view in a digital map with dynamic way. Users can generate classification thematic maps using query results, according different parameters, such as major elements, trace elements, and so on.

(right) the Interface of data analysis on-line. The left-above sheet is the query results. User can select different diagrams from right Toolbar.

3. Data analysis on-line. Different from other geochemical databases, ECGD's biggest feature is the data on-line analysis. Here we designed lots of geochemical online analysis tools, including geochemical diagrams, CIPW computing, and so on, which allows researchers to analyze query data without download query results. (Fig.1, right). Operation of all these analysis tools is very easy; users just do it by click mouse one or two time.

In summary, ECGD provide a geochemical platform for researchers, whom to know where various data are (data discovery), to view various data in a synthetic and dynamic way (visualization), and analyze interested data (data analyze online).

REFERENCES

- [1] S. Gao, R.L. Rudnick, and W.L. Xu, "Recycling deep cratonic lithosphere and generation of intraplate magmatism in the North China Craton," *Earth and Planetary Science Letters*, 270, 41–53, 2008.
- [2] K.A. Lehnert, U. Harms, and E. Ito, "Promises, Achievements, and Challenges of Networking Global Geoinformatics Resources - Experiences of GeosciNET and EarthChem," *Geophysical Research Abstracts*, Vol. 10, EGU2008-A-05242, 2008.
- [3] X.R. Wang, W.F. Ma, and S. Gao, "East-China Geochemistry Database: A New Tool for Geochemistry Research," *Journal of China University of Geosciences*, Vol. 18 (Special Issue), p. 205-206, 2007