

**4.7.P01****Application of geochemical maps in China**

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**THEME 4:**  
**The Earth's Surface**

**Session 4:7**  
**Geochemical Maps**  
**(poster session exclusively)**

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This session, exclusively for maps, presents geochemical information based on analysis of surface materials such as soil, stream and lake sediment, surface and groundwater. The posters demonstrate the application of geochemical mapping to portray results for environmental, land-use, resource development and fundamental scientific studies. They include studies to identify pollution problems, including eutrophication and urban influence, their use to support environmental risk assessment, mineral exploration applications and land use planning, and understanding the evolution of the Earth's crust, including metallogenesis.

Geochemical maps can illustrate how significant element distribution patterns are recognised at different scales from those based on high density sampling (1 sample per 1-2 km<sup>2</sup>) to those based on very low density sampling (1 sample per 3600 km<sup>2</sup>) over very large areas. The maps should cover a wide range of geological and physiographic environments worldwide.

Various kinds of geological maps have been the basic support in the historical development of geological sciences. The preparation and study of various kinds of geochemical maps will certainly serve as the basic support for the application of geochemistry to solve various and important resources and environmental problems. The following is a brief presentation of geochemical mapping projects carried out in China in recent years and their application in mineral resource, environmental and agricultural studies.

China's National Geochemical Mapping Project (RGNR Project) has been active for 24 years and has mapped the distribution of 39 elements covering an area of more than 6 million km<sup>2</sup> of China's land surface. Nearly 85% of the new mineral discoveries since the 1980s in China are attributed to the information provided by this project. This large project dataset produced is now used for the assessment of mineral resource potential of various ore elements and predicting the presence of large to giant ore deposits in China.

Compilation of a 76 Element Geochemical Atlas is now underway based on the analysis of composite samples prepared from the RGNR archival sample banks.

China's Environmental Geochemical Monitoring Network Project (EGMON Project) carried out during 1993-1995 served as a pilot survey to choose the suitable sampling medium for the global wide-spaced mapping. Flood-plain sediment samples were collected at 500 stations in the whole China's mainland. It is proposed that re-sampling will be undertaken at the same sampling stations at 10-year intervals in order to have a continuous record of overall environmental change in China.

Regional multi-purpose Geochemical Mapping Projects for 56 elements are commencing in eastern China's plain areas (c. 2,600,000 km<sup>2</sup>) to support assessment of environmental risks, land use planning and applications to agriculture.

Regional Deep-penetrating Geochemical Mapping has been conducted for nearly 10 years in order to find concealed deposits overlain by various kinds of exotic covers. Remarkable achievements have been made in method development and dispersion modelling of elements in desert and alluvial terrains, forested areas and swampy lands, and sedimentary basins.