

Database of Paleozoic-Mesozoic sandstone in Japan, and its application to discrimination of tectonic provinces from chemical composition

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Following the guideline of the SEDBA, a database was constructed for the chemical composition data of sedimentary rocks in Japan, in which various types of data can be managed including text data such as description of specimen and location, numerical data such as analytical values, and graphic data such as photographs of thin section, analytical charts, ternary diagrams, etc. It is possible to retrieve the specified data not only from the numerical value by the ordinal retrieval procedures, but also by specifying the point and/or area on the map and diagrams. The original values and photographs of retrieved data can be displayed, and also they can be plotted on the specified diagram. New diagrams can be designed, and the resulted diagram can be added in the database as the new data. The database is constructed on the WWW server, and opened on the Internet.

Chemical composition data were retrieved from the database and used for discriminant analysis of tectonic provinces of the sandstone which was determined by geological and sedimentological research. It is possible to discriminate the tectonic provinces which are difficult to determine with the current diagram. Detailed examination of discriminant functions suggest that new classification system is necessary for sandstones in tectonic area, especially of magmatic arc, in which chemical change of source rock is more important than the weathering and maturation in the source area. This is an example of the role of database for the systematic research in sedimentary petrology.