Integration of geoscience data on Google Earth

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Today various geochemical and geophysical data are compiled into database systems which are available on Internet. Integration of geochemical and geophysical data provided by these online database systems would give us a new insight to the nature of the Earth and advance our understanding of the dynamics of the Earth's interior and surface processes. Each system, however, is isolated and provides in its own format data. The goal of our study is to display both geochemical and geophysical data stored in online database systems together. We adopted Google Earth as the presentation tool. Any graphical features can be displayed on Google Earth by utilizing KML format file. We have developed softwares to convert geochemical and geophysical data to a KML file. As a first step, we have developed softwares to convert seismic tomography data, geochemical data of rock provided by GEOROC and PetDB, and navigation data of observation vessels of JAMSTEC to KML files.

The tomography data are provided as ASCII text files. Our conversion software can create KML files that show any vertical or constant-depth cross sections of seismic tomography.

GEOROC and PetDB are both online database systems of rock's geochemical data. The data format of GEOROC is CSV and that of PetDB is Microsoft Excel. Our software converts the geochemical data (e.q. compositional abundance) to a KML to display them as three-dimensional columns on the Earth's surface on Google Earth. The shape and color of the column mean the element type.

The navigation data of observation vessels of JAMSTEC are provided as a text file in SOJ format. The conversion software reads a SOJ format file and makes a KML file to display a cruise track on Google Earth. In addition, the temperature at the sea surface and the depth of water along the cruise track can also be displayed.

We developed a data conversion software that can create KML files to display seismic tomography data, geochemical data of rock and the navigation data of observation vessels of JAMSTEC together on Google Earth. We are going to support more geophysical and geochemical data format. In addition, we are planning to provide the conversion softwares as an online software (http://www.jamstec.go.jp/pacific21/TMGonGE/home.html).