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Improvement of web application of KML generator for visualizing geochemical data of rocks and sediments in Google Earth

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At present, cross-disciplinary researches are popular for constructing a new structure model on the Earth's interior. To promote these researches, visual presentation of different kinds of geochemical/geophysical data at once will be a great help to integrate and understand the research results from different fields. The layer system of the various virtual globes, e.g., Google Earth, easily provides the overlaying image of different types of geographic data on the same area. To plot the geographic data in Google Earth, the data should be written by Keyhole Markup Language (KML). For compiling various research results from different geoscience fields in Google Earth, we have developed several applications generating KML from original analytical/observational datasets. Our project launched in 2007 and we have already developed successful applications, called KML generator, for visualizing seismic tomographic model, geomagnetic field model, and geochemical data of rock and sediment samples in Google Earth. One of the KML generators converts geochemical and isotopic datasets in several online database systems into KML and allows users to visualize those data easily in Google Earth. The generator accepts data files produced by the database systems PetDB, SedDB, GEOROC, and GANSEKI and template data files that users themselves make. The data are plotted three-dimensionally as a bar graph on the surface of the virtual Earth at the sampling site for the rock and sediment samples. The major element compositions of samples can also be displayed as a stacked bar graph. A web application for the generator has already been available since 2008, so anyone can set the parameters for visualization over the Internet. Here we have improved User Interface (UI) of the web application to set the parameters of the generator intuitively. The sampling sites of the samples existing the uploaded data file will be plotted in map on the web UI of the generator, and the data range of selected composition or isotope ratio will also be graphically illustrated. For visualizing of one type of the composition or isotope ratio, histogram will be illustrated, and for ratio between two types of them, two-dimensional scattergram having x-axis for one type and y-axis for other type, will be constructed. These graphical images will help user to set the parameters, e.g., the data range to be plotted and the color of the graphs, for visualizing the data in Google Earth. Moreover, the visual image of the geochemical data in Google Earth can be confirmed on the web browser by using Google Earth API before the downloading the KMZ file.

Keywords: geochemical data, isotopic data, visualization, Google Earth, KML, web application