Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

MGI030-P01 Room:Convention Hall Time:May 25 16:15-18:45

Surface Interpolation System for Geologic Data on the Web

Susumu Nonogaki[1*], Tatsuya Nemoto[1], Shinji Masumoto[2]

[1]GSJ, AIST, [2]Geosci.,Osaka City Univ.

Geologic data observed in the field survey are often distributed irregularly. One of the effective way to interpret these data objectively is a contour map generation with a certain interpolation method.

We developed a prototype of surface interpolation system for geologic data. The system enables us to determine an optimal surface for a given set of geologic data on the Web. Two kinds of filed survey data are available. One is elevation data and the other is strike-dip data. The optimal geologic surface is determined based on smoothing algorithm with bi-cubic B-spline.

The procedures for surface interpolation are as follows: 1) upload field survey data, 2) generate distribution map of uploaded data, 3) determine the optimal geologic surface and 4) generate the contour map for the optimal surface. There are three kinds of output data: 1) mathematical function that represents the optimal geologic surface, 2) evaluation parameters for smoothness of the surface and goodness of fit and 3) mesh data with arbitrary size of grids.

This system must promote effective use of geologic data on the Web. In this presentation, we will explain the detail of the system.

Keywords: Geologic Data, Interpolation, Web, Bi-cubic B-spline, Contour map

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WEB system for standardization of geographical information on coastal area

Yumi Amemiya[1*], Toshiaki Ueki[1], Ryoichi Kouda[2]

[1]OHTI, [2]AIST

WEB system for standardization and management of geographic information on littoral regions

The littoral region is an important area for economy and people's life, because big cities and many factories locate in the land area, and important harbors and fishery facilities locate in the sea area. So far the exploration tool of the geographic information is different in the sea area and the land area, and in the littoral area, as the condition is limited further, there is a necessity for attempting the data integration of land area and the sea area, such as combining the reflection method by bay cable, the electric detection method and gravity/magnetism data.

This research improves the interoperability of the geographic information of the littoral area now open to the public by two or more organizations who are in charge of managing this information, and also contributes to the efficiency improvement of the analysis and the overall use and management, by integrating and standardizing the geographic information of the land area and the sea area.

To integrate and to analyze the geographic information data of the land area and the sea area that had been collected by two or more different organizations, a new system is constructed for unitary management of the meta data of different organizations by a standard format, and opening to the public by WEB base. Standardization at the meta data level can contribute also to the efficiency improvement of the retrieval, use, and management of data, for the integration and unitary management of different kinds of data.

Keywords: coastal area, geographical information, standardization

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1:3,000,000 THE MINERAL RESOURCES OF CENTRAL ASIA AND ADJOINING AREAS

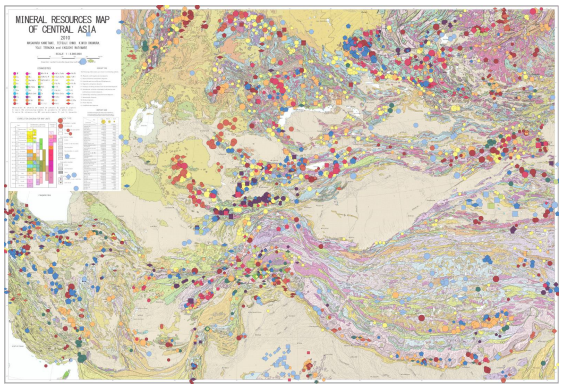
Masaharu KAMITANI[1], Tetsuji Ohno[1*], Kimio OKUMURA[1], Yoji TERAOKA[1], Yasusi WATANABE[1]

[1]AIST

The mineral resources map of Central Asia is adjoins the mineral resources map of East Asia published in 2007 and includes the Central Asian and part of the neighboring countries.

The map of Central Asia shows land area deposits of main metallic mineral and non-metallic mineral resources, except for limestone, dolomite, magnesite and construction materials. Uranium is included, although its principal utilization is for nuclear energy. About 2,700 mineral deposits are shown on the map regardless of their status of exploration, exploitation and mined out.

The background geology of the Mineral Resources Map was adopted from the Geological Map of Central Asia (1 to 3,000,000 scale; Teraoka and Okumura, 2007). The geology of the northeastern part of the map was newly added after the publication of the Geologic Map of Central Asia (Teraoka and Okumura, 2007) for this mineral resources map.



Keywords: mineral resources, Central Asia, metallic mineral, non-metallic mineral

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Collection and analysis of physical properties of rocks for enhancing the geotechnical database KuniJiban

Toru Takahashi[1], Tomio INAZAKI[2*]

[1]Fukada Geological Institute, [2]PWRI Tsukuba Central Institute

The geotechnical database KuniJiban of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) has more than 75,000 data of the boring logs and laboratory soil tests as of April 2010. However the laboratory test data registered in it are mainly those for unconsolidated soils, not many for rocks. Therefore we have started to collect and digitize the laboratory test data for rocks obtained in investigations for dams and tunnels conducted by MLIT in the past.

Before starting digitization of the data, we have studied the information and data to be registered referring to existing databases. Main physical properties of rocks decided to be registered include ultrasonic P- and S-wave velocities, and deformability and strength measured by uni-axial and tri-axial compression tests, as well as the basic physical properties such as density, water content, porosity and magnetic susceptibility of the rock. The information on the location and geology of the core sampling site is also registered. Approximately 1,600 data obtained mainly in investigations at the dam sites has been so far digitized.

To check the quality of each digital measurement data, major physical properties of P- and S-wave velocities, dynamic and static deformability, and unconfined compressive strength are cross-plotted against each other and also compared to other datasets. This check indicates that most digitized data are high in quality enough for further analysis.

Keywords: database, KuniJiban, phsyical properties of rocks, laboratory rock test