Oral | Symbol S (Solid Earth Sciences) | S-SS Seismology

[S-SS26_30PM1]Crustal Structure

Convener:*Ayako Nakanishi(Institute for Frontier Research on Earth Evolution, Japan Agency for Marine-Earth Science and Technology), Chair:Ayako Nakanishi(Institute for Frontier Research on Earth Evolution, Japan Agency for Marine-Earth Science and Technology)
Wed. Apr 30, 2014 2:15 PM - 4:00 PM 315 (3F)
The aim of this session is to cover seismological and geophysical studies on the Earth's crust. Contribution on seismological and geophysical structure of the crust, processes that develop in the crust which include earthquakes, volcanoes and geological descriptions of the crust are welcomed. We also welcome theoretical and methodological studies that will serve as basics in such explorations.

3:15 PM - 3:30 PM

[SSS26-P02_PG]Correction of Gravity Measurements Utilizing GSI Maps and its Application in the Southern part of Uemachi Fault Zone

3-min talk in an oral session
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Keywords:gravity structure, digital geographic information, JavaScript, Uemachi Fault, field research, efficiency of measurement

1. Summary In Earth science research with some field work, acquisitions of geolocation of the measurement point are essential. Particularly, it is a major burden that the latitude, longitude and altitude of the measurement points are obtained for the various corrections in gravity measurements. These pieces of information can be obtained by geodetic surveying or GNSS surveying in the field. Occasionally, topographic maps of large scale are substituted for these surveying. On the other hand, the acquisition of geographic information, that has been digitized, into a numerical value has become possible on WWW in recent years. Web browsing service map of GSI, Geospatial Information Authority of Japan, which had been put to the test, was translated to the formal opening to the public on October 30, 2013. The new browsing service is "GSI Maps" (GSI, 2013a). According to the Agreement of GSI Tile Use, it is to be able to take advantage of this service in the academic research (GSI, 2013b). Therefore, it is created that JavaScript applications give information on the measuring position by using GSI Tiles (GSI, 2013c). If combined with some mobile digital devices, information of geolocation is readily available even in the field. When gravity measurements have been conducted, until now, the authors have been made the most use of the large-scale topographic map as the base map in the southern part of Uemachi Fault Zone. These results were mixed up to base on Tokyo Datum and Japanese Geodetic Sytem 2000. Therefore, they are integrated with the latter in this time. **2. Target area** Survey's line of the target has integrated the results by Ryoki (2011), Ryoki and Nishitani (2013) and recent measurements. The length of the survey line is about 9,7 Km. The line lies from Yunagi-cho Izumiotsu to Ibukino Izumi and intersects the some faults included in Uemachi Fault Zone. **3. Acquisition of geographic information** Latitude, longitude and altitude of the measuring points were used numerical information provided by GSI. These elements obtained by constructing an HTML application. A JavaScript code has been created to revise some samples of GSI Tile. In general, for the purpose of protecting the system, the string is not transferred directly to the clipboard from a Web browser. However, there is a function to be transferred through JavaScript in the specific browser. On the other hand, in some browsers which not support such a function, the ZeroClipBoard library is possible to use to transfer the information (zeroclipboard.org,

2014). Numerical information, transferred to the clipboard, is edited in a spreadsheet application or in an editor software. In this study, an application which is used at indoor after measurement in situ is coded for a batch process. If operated in tablet devices instead to a field note book, numerical information is easily got in the measurement point. Numerical site information is used for various corrections and illustrated the gravity measurement point on the map.**4. Result** Formerly, in order to obtain numerical information related to the measurement point, latitude, longitude and altitude had been read using a digitizer from topographic map. But, if using the application proposed in this paper, time required for these operations could be significantly reduced. In particular, as it becomes a constant accuracy of the reading errors of the elevations which determined by GSI Maps, homogeneity of the data could be secured. **5. Challenges for the future** It is obvious that the application, which is proposed in this paper, ensures the homogeneity of data and improves the measurement efficiency in a variety of field research that includes geosciences. Development of the system for the operation of the tablet terminal is able to challenge, and it is an aim that an application of the terrain correction have been considered in the future.