[JJ] Evening Poster | H (Human Geosciences) | H-TT Technology & Techniques

[H-TT17]Geographic Information Systems and Cartography

convener:Mamoru Koarai(Earth Science course, College of Science, Ibaraki University), Kazunari Tanka(Department of Civil Engineering and Urban Design, Faculty of Engineering, Osaka Institute of Technology), Kazuhiko Nakamura(東京大学空間情報科学研究センター)

Thu. May 24, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

This session discusses various methods which acquire, store, analyze and visualize geospatial data, and presents the outcomes of empirical studies using GIS or mapping methods. The session also deals with applications of digital data, GIS, and mapping to various fields of earth and planetary science and human society. All presentations and discussion of this session are made in Japanese.

[HTT17-P02]Integration of surface and subsurface geoinformation around PWRI Tsukuba Site using 3D geoscientific modelling software

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Keywords:Near surface, Log data, Geophysical data, 3D model, Geoinformation, PWRI

We have collected geotechnical boring data and compiled them as a digital database of an area in and around our PWRI Tsukuba Site, Ibaraki Prefecture, Kanto Plain (Inazaki, 1983). We have also conducted near surface geophysical surveys in the Site since 1980 (Inazaki, 1985). The collected and databased boring data were amounted 92 and 866 in and around the Site respectively. We interpreted the boring data stratigraphically based on a type stratigraphy around Tsukuba proposed by GSJ (1988). SH-wave seismic reflection, P-wave seismic reflection, Hybrid surface wave method (Inazaki et al., 2015), OhmMapper resistivity measurements and GPR were the employed 2D geophysical methods, and we applied 1D well logging, CPT (Cone Penetration Test) and DPT (Dynamic Penetration Testing) in the Site too. These digital or digitized data were imported in commercial 2D/3D visualization systems (Surfer 15 and Voxler 4 provided by Golden Software) to create a 3D near surface geoscientific model in and around the PWRI Site, 2.6 km wide and 4.8 km long area including BRI and GSI.

The constructed 3D geoscientific model is characterized as integration of surface and subsurface geoinformation, especially as consisting of 2D geophysical sections and 1D logging profiles as the essential subsurface geoinformation, which are helpful to reconstruct subsurface 3D layered model. In addition, geophysical information is quite useful to evaluate the quality of geotechnical boring log data and eliminate unreliable or fabricated data embedded in boring log data.

The software we used, which has been widely utilized in geoscientific research field, was powerful and cost effective for building 3D models of the near surfaces. On the other hand, the system cannot import SEGY format profiles directly. An authorized or a standard near surface 3D visualization system is required as a platform which has the ability not only to easily import and but also to process various types of geophysical information along with surface geospatial information.