[EE] Evening Poster | S (Solid Earth Sciences) | S-TT Technology & Techniques

[S-TT47]Recent Advances in Exploration Geophysics (RAEG2018)

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Geophysical exploration methods are widely used to estimate physical or chemical properties of media that are located in the environment where it is difficult for human beings to access. We would welcome presentations and discussions on theories, applications, case studies in which geophysical exploration schemes are applied for using artificial/natural signals or potentials. A proceeding paper within 4 A4 pages for each submission is to be asked to prepare after the acceptance based on the quality of the abstract of the submission and will be published electronically with doi on EarthDoc (http://earthdoc.eage.org/publication/eventoverview?p=78) under MoU with the European Association of Geoscientists and Engineers.

[STT47-P05]A study in the conversion between P-wave velocity and density models of Yunlin and Chiayi areas, Taiwan

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According to the assumption that there is a simple linear relationship between P-wave velocity and rock density, we can find the empirical conversion formula in the approach of linear regression, such as ρ=a+b×V_P . In order to find the adequate empirical velocity-density conversion formula, we follow the previous empirical formulas and compare to the geological structure simultaneously. Moreover, we can obtain the more precise density model by utilizing different conversion formula for different depth in each geological block. In this study, different velocity models of Taiwan provided by previous studies are turned into density models from the conversion formula, and the theoretical Bouguer gravity anomaly value is also calculated through the 2D forward modeling to reveal the lateral variation in profiles. To survey the crustal structure in Yunlin and Chiayi areas, Taiwan, we conducted the accurate gravity measurements in our study area by using the CG-5 relative gravity meter, and combined the gravity data recorded from Chung Hsing Surveying Company, Taiwan. After the standard gravity correction procedure, we can obtain the Bouguer gravity anomaly map. The result shows that our formulas can effectively convert the initial velocity models to density models which are correspond to the observed Bouguer gravity anomaly. Meanwhile, the results indicate that there is the relative high gravity anomaly in Chiayi area, which is consistent to the high magnetic anomaly in previous study. The phenomena might be the ancient basalt flow which was related to the Penghu volcanic activities. Finally, the results can provide the important parameters for different research such as the simulation of seismic wave propagation and the assessment of earthquake disaster in the future.