Geophysical Research Abstracts
Vol. 19, EGU2017-2389, 2017
EGU General Assembly 2017

Joint gravity and seismic data to investigate the tectonic of Taiwan

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Gravity observation is one of priority method that used to explore the subsurface structure. Because it is easy, fast and low-cost, dense gravity observation stations are distributed in whole Taiwan, no exception in mountain area. In this study, the message contained in the observation of gravity values is analyzed. We use g-H relationship and Nettleton's density determination method to estimate the density of topography. Based on the results, the density value of mountain area is range from 2.4 to 2.6 g[U+2044]cm3 , is 2.2 g/cm3 in Western Foothills and 1.8 to 2.0 g[U+2044]cm3 in Western plains. After gravity correction, we can get Bouguer anomaly value and separate the source of gravity effect to the shallow and deeper part by gravity wavelength. Then, it led to discuss the Moho interface relief and subsurface density distribution. The shallow gravity effect is consistent with the pattern of geological division. The deeper gravity effect map reveals that the gravity low area is existed beneath Western Foothills, it might relate to crustal thickening. We utilized the empirical relations between elastic wavespeeds and density to analysis the consistency between velocity structure and observation gravity. According to analysis and comparison, there are significant differences between the analytical results of two physical properties observations.