Geophysical Research Abstracts
Vol. 17, EGU2015-8063, 2015
EGU General Assembly 2015

Seismic images of the active fault system in the Yunlin and Chiayi area of Taiwan.

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The Yunlin and Chiayi area in western Taiwan are well known of having a higher risk of earthquake disaster. The main fault system that controls the structure deformation in this area consists of the Chiuchiungkeng fault, the Meishan fault, and the Gukeng fault. According to historical records, the 1906 Meishan earthquake, magnitude 7.1, was triggered by the right-lateral strike-slip fault Meishan fault. Previous Seismic surveys showed that the Meishan fault is a high angle fault with flower structure. The Chiuchiungkeng fault is a thrust fault, located at front of the western foothills. Formations on the hanging wall and foot wall of the fault, both dipping to the east with different angles, can be identified from seismic images. The Gukeng fault was never been studied before. From the recent study of GPS monitoring, we may found that the velocity field near the Gukeng fault had a significant difference at both side of the fault. In addition, there is other information showed that there exists an aseismic gap around the fault. The above phenomena could be considered as a stress accumulation along the Gukeng fault. In the other words, the Gukeng fault could be playing an important role of controlling the regional surface deformation and seismicity distribution in this area. In this case, it will be worthwhile of knowing where the Gukeng fault is, and its subsurface structure. In this presentation, we will show our study of the subsurface structure of the Gukeng fault by using the seismic exploration method. The data consist of the shallow seismic reflection images those conducted by ourselves and the deeper seismic profiles acquired by CPC. Three dimensional relationships between the Gukeng fault, the Meishan fault, the Chiuchiungkeng fault, and other structures such as the Hsiaomei anticline will be illustrated as well.