



Relocation with artificial source in Southern West Taiwan

Chaug-Ciang Hong (1) and Horng-Yuan Yen (2)

(1) Taiwan (wc10023@hotmail.com), (2) yenhy@earth.ncu.edu.tw

Taiwan, located on the boundary between the Eurasia plate (EU) and the Philippine Sea plate (PSP), is an orogenic belt formed by the collision between the Luzon Arc and the continental margin. In the previous studies, there have been published many velocity model. It is based on the vast seismic data recorded by Central Weather Bureau Seismic Network (CWSBN) and gives a way to understand subsurface structure. Actually, the distribution of hypocenter can help us to explain the geological structure. But the uncertainty is existed in earthquake location. In this study, we relocate earthquakes between Jan. 2001 to Sep. 2013 from CWSBN using program HYPODD and select an artificial source of Taiwan Integrated Geodynamics Research (TAIGER) to constrain the relocation work. The artificial source Southern 2 (S2) we choose is located in Chiayi in Taiwan Island. Because the known position of artificial source will give a high weighted in located, it will improve the quality of relocation. The program HYPODD determines relative earthquake location within clusters using the double-difference algorithm, developed by Waldhauser and Ellsworth(2000). Firstly, we join the S2 event into the seismic catalog and give a weight for location. Then, we give a medium weight for S2 event for relocation and compare with the results when increasing into better weights of S2 event. The hypocenters of the relocation will be more concentrated to each other and coincide with geological line. It will improve the accuracy of earthquake location and fabric interpretation.

References

Waldhauser, Felix, and William L. Ellsworth. "A double-difference earthquake location algorithm: Method and application to the northern Hayward fault, California." *Bulletin of the Seismological Society of America* 90.6 (2000): 1353-1368.

Dunn, Meredith M. *Relocation of Eastern Tennessee Earthquakes Using hypoDD*. Diss. Virginia Polytechnic Institute and State University, 2004.