

Seismicity characteristics in the southeastern Central Range of Taiwan from a temporary seismic network

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ABSTRACT

Taiwan is located in the boundary between the Philippine Sea and Eurasian plates. The Taiwan orogen is created by the collision between the continental shelf of the Eurasian plate and the oceanic crust of the Philippine Sea plate. Currently, we have deployed four temporary seismographs in southeastern Central Range and combined some data from stations setup by Central Weather Bureau seismic network of Taiwan (CWBSN) and Broadband Array in Taiwan for Seismology (BATS) to study the seismicity in this area. Totally, there were 623 earthquakes with high quality of location (ERZ and ERH are less than 5 km, RMS is less than 0.5 second) from March to November, 2013. However, in previous studies, our study area was reported as an aseismic zone. With the benefit of the temporary seismic network, we were able to detect micro-earthquakes and non-volcanic tremor in this “aseismic zone”. The center of aseismic zone is really “aseismic” probably caused by high-temperature in the upper and middle crust (5-20km depth) in this area from previous studies (Wang et al., 2010) but the southern part of the aseismic zone have more micro-earthquakes that may indicate different physical property.

References

- Pavlis, Gary L., Vernon, Frank, Harvey, Danny and Quinlan, Dan. (2004) The generalized earthquake-location (GENLOC) package: an earthquake-location library. *Computers & Geosciences*, V30, 1079-1091.
- Lin, C.H., (2000). Thermal modeling of continental subduction and exhumation constrained by heat flow and seismicity in Taiwan. *Tectonophysics* 324, 189 – 201.
- Wang, Y., Ma, K., Mouthereau, F., & Eberhart-Phillips, D. (2010). Three-dimensional qp-and qs-tomography beneath Taiwan orogenic belt: Implications for tectonic and thermal structure. *Geophysical Journal International*, 180(2), 891-910.
- Yu-Ling Chuang. (2012) A semi-automatic detection system of non-volcanic tremors in Taiwan.
- Jo-Hao Chen. (2011) The study of Earthquake activity characteristic at the South section of Central Range.