

Precursory microseismic quiescence preceding the 2016 M_L 6.6 Meinong earthquake in southern Taiwan

*Hsin-Chieh Pu¹

1. Central Weather Bureau, Taiwan

Before the Meinong earthquake in southern Taiwan, a spatiotemporal seismic gap is roughly found. During this seismic gap, only four earthquakes were located by the Central Weather Bureau Seismological Network 24 bits (CWBSN24), whose magnitude of completeness (M_C) is about M_L 1.2 in the area of the Meinong earthquake. In order to specify the range of this spatiotemporal seismic gap, this research examined the duration and spatial scale of this seismic gap. Then this seismic gap is characterized as an undoubted low seismicity rate. Here, this low seismicity was kept about 90 days before the Meinong earthquake and localized within an area with a radius of 12 kilometers from the hypocenter of this strong earthquake. Particularly, this kind of low seismicity rate could be only found before this strong earthquake. For this reason, this low seismicity should be associated with the Meinong earthquake. This low seismicity appeared before the Meinong earthquake is obvious as the data was extracted from the seismic catalog whose magnitude lower than M_L 1.5. Therefore, this research suggested that this low seismicity is characterized as the behavior of microseismicity. Between after this low seismicity and the Meinong earthquake, some foreshocks were found. According to the process of a principle rupture cycle, this low seismicity could be the intermediate-term quiescence. The spatial scale of this quiescence is similar with the previous observations for some strong earthquakes. In practice the seismic quiescence had been found before some strong earthquakes and used for earthquake precursor. For earthquake precursor in southern Taiwan, this research indicates that the useful precusory signal of seismic quiescence may be buried in microseismicity which is monitored by a dense seismic network and was difficult to observed in the past.

Keywords: Meinong earthquake, seismic quiescence, microseismicity