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Investigations of the 2018 earthquake swarm in Mamasa (Sulawesi), Indonesia

In early November 2018, earthquake swarm took place in Mamasa Region, West Sulawesi and resulted on some light damages in the villages. BMKG reported more than 600 events within the first month and four of them having magnitude Mw > 5.0. Here the seismicity was precisely relocated by using double difference with cross-correlation data. Template matching technique was also utilized to provide lower catalog completeness. We show that the earthquakes concentrated on a 12-km length intensive plane and distributed irregularly along very shallow to about 15 km depth. This relocated seismicity suggests a ~90 fault plane and generated by the strike-slip fault. We propose it confidently as the source parameters of 29 earthquake (Mw > 4.0) using moment tensor inversions exhibits a dominant strike-slip mechanism trending NNE-SSW (average strike = ~200, average dip = ~80). Both of our relocation and template matching technique provided 4,170 events started from 31 Oct – 27 Nov 2018 and initiated from the westernmost part, moving gradually and diffusely to the east during early November 2018. Eventually slowly decaying with time lasting for months. Our findings suggest the invaluable chance to elucidate the presence of active fault zone in this region.

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