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Process Analysis of the 28 September 2018 Palu Earthquake (Mw 7.4) Using Teleseismic Waveform

On Friday, 28 September 2018 (10:02:45 UTC) occurred the damage earthquake in Palu, Central Sulawesi, Indonesia. Based on BMKG analysis, the earthquake has magnitude Mw 7.4, depth 11 km, and epicenter in 0.2˚S - 119.89˚E. This event cause destructive secondary effects such as tsunami, landslides, liquefaction, and collapsed structure in many place in Palu city. Slip distribution and Source Time Function (STF) was made to investigate the causes of these earthquake. The investigation used 37 teleseismic waveform by IRIS. The result of STF graphic modelling show that 3 peaks of Moment Rate Function (MRF) appear during 35 seconds. This MRF consistent with 3 asperity zones in the fault plane, that consist of 2 asperities nearest of hypocenter and 1 shallow asperity located around 50 km southern of hypocenter. Those asperities was supposed cracked and become the new sources of shaking while signal of the strike-slip Palu earthquake Mw 7.4 was not yet finished. This phenomena was suspected cause submarine landslide that generate tsunami after the earthquake Mw 7.4.

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