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Comprehensive Report of M 7.5 14th December 2021 Flores Sea Earthquake: Rapid Observation, Tsunami Early Warning and Aftershock Distribution

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A success tsunami early warning issued to the public just after the occurrence of M7.5 earthquake located in the Flores Sea-Indonesia on 14th December 2021. Rapid seismological observation involving 6 CTBTO seismometers in Indonesia, 440 Indonesian Meteorology Climatology and Geophysics Agency (MCGA) broadband seismometers, 5 borehole seismometers and 167 neighboring countries seismometers. Following the Indonesia Tsunami Early Warning System (InaTEWS) protocol the warning set into four mechanism which urged the inhabitant to evacuate at the highest warning level.

We produce an automatic shake-map by means of intensity level map based on 31 strong motion accelerometers recording around the epicenter. We conduct advance earthquake relocation procedure to the initial catalog comprising 750 aftershock events until 8 days after the mainshock. Earthquake migration over geographical longitude indicated that four earthquake clusters exist. Full moment tensor inversion depicted that the source mechanism dominated by strike-slip movement, however several thrust mechanisms are also observed. We presume that the dextral movement of mainshock is the major cause of the minor tsunami. Then, by using seismo-statistical approach, we predict the aftershock productivity will be end by means of producing zero aftershock at 45 days after the mainshock.

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Promotional text

A success story of Tsunami Early Warning following the M 7.5 Flores Sea Earthquake in Indonesia since the establishment of Indonesia Tsunami Early Warning System (InaTEWS). It involving 6 CTBTO seismometers, 440 Indonesian seismometers and 167 neighboring countries seismometers.

Oral preference format

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