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Source reconstruction of the 1969 Sulawesi, Indonesia earthquake and tsunami

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An M7.0 earthquake followed by moderate tsunami destructed Majene region, western Sulawesi on 23 February 1969. This event claimed at least 64 lives and caused severe damage to infrastructure. In this study, we reconstructed the earthquake and tsunami source of this event by optimising macroseismic and tsunami dataset reported as well as analysed the earthquake focal mechanism. We estimated that the maximum intensity of the earthquake was VIII (in Modified Mercalli Intensity). From the first motion polarity analysis, the earthquake had a thrust mechanism which was plausibly from the Makassar Thrust. Further, deterministic ground motion modelling successfully fits the intensity data. However, thrust earthquake from the Makassar Thrust was unable to reconstruct 4 m tsunami height observed at Pelattoang. The estimated ratio between maximum tsunami run-up height and lateral distribution distance (l_2) from the dataset indicates that the tsunami was generated by a local coastal landslide.

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