

Local magnitude Formula Determination of Seismic Swarm at The Long-Dormant Jailolo Volcano, West Halmahera, Indonesia

In 2015 - 2016 there was an attack of Seismic swarms in Jailolo region, West Halmahera, Indonesia. GFZ Germany collaborated joint research with BMKG Indonesia after those disasters to install a temporary seismic network, called 7G network during August 2016 – July 2017. Then, we determined the local magnitude formula for this network. We used 3387 amplitude records from 150 earthquakes event with focal depth less than 30 km. Those data recorded by 6 broadband and 29 short period stations in the 7G network from August to December 2016 and end of June till July 2017. The results from this study were the distance correction function, $-\text{LogA}_0 = 1.742\text{logR} - 0.00184R - 0.113$, and the magnitude local formula for 7G network, $ML = \text{LogA} + 1.742\text{logR} - 0.00184R - 0.113$, where A and R are maximum Amplitude and hypocentral distance, respectively. The stations' correction also found in this study. We found that the stations' correction for the 7G network was among $-2.478 - -0.996$ for 33 stations and anomalies for 2 stations because of their values was out of the range of those 33 stations. The negative values of stations' correction indicated high amplification meanwhile the positives indicated low amplification.

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