

and seismoacoustic signatures of the 28 September 2018 Sulawesi super shear earthquake

A magnitude 7.5 earthquake occurred on 28 September 2018 at 10:02:43 UTC near the city of Palu on the Indonesian island of Sulawesi. It was a shallow, strike-slip earthquake with fractures up to the surface and a rupture length of about 150 km. Moreover, this earthquake was identified as one of very few events having a super shear rupture speed. Clear and long-lasting infrasound signatures related to this event were observed by four IMS infrasound arrays. Although these infrasound stations I39PW, I07AU, I40PG and I30JP are located in large distances between 1800 km and 4500 km from the earthquake's epicentral region, the observed infrasound signals associated to this event were intense, including both seismic and acoustic arrivals. The seismic-to-acoustic coupling at nearby terrain features is shown to generate distinct infrasonic signatures clearly recordable at remote infrasound arrays. A detailed study of the event-related infrasound observations and the potential infrasound generation mechanisms is presented covering range-dependent infrasound attenuation and propagation modeling, characterization of the atmospheric background conditions as well as identification of the regions of seismoacoustic activity by applying a back projection method from the infrasound receivers to potential source regions.

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