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## An Detectability of Debris Flow by Using PALSAR and PiSAR (L-band) Data

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**Abstract**

Debris flow sites at Kumamoto and Nagano, where the flows were induced by heavy rain, have been examined by using L-band SAR data. Several L-band SAR data taken with airborne PiSAR (polarimetry mode) and PALSAR (HH polarization) are used and examined the detectability of the debris flow. The disaster sites are well detected by a three components scattering model and volume, double bounce, and surface scattering account for 62%, 31%, and 7%, respectively. But a wasteland shows resemble scattering rates and a land utilization map is needed to distinguish these two sites. We also analyzed two PALSAR data taken at Nagano before and after the debris flow with an off-nadir angle of 41.5 degree and with a polarization of HH. The  $\sigma^0$  value over debris flow site become larger after the disaster for both debris flow sites. But the absolute value of the  $\sigma^0$  in Nagano is 2 to 6 dB lower than that in Leyte. We use small perturbation model and conclude that the possible causes of this difference is due to the difference of incident angle.

Keywords: L-band SAR, Polarimetry, PALSAR, PiSAR, Disaster

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