# Rainfall estimation using new generation meteorological satellite imagery by Refined Multi-Spectral Sensor Convolution Integral Model for early warning of landslide and debris flow disasters

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The objective of this study is to estimate the rainfall using the new generation Himawari-8 meteorological satellite with multi-band, high-bit format and high spatiotemporal resolution, ground rainfall data at the Chen-Yu-Lan watershed of Joushuei River Basin (443.6 square kilometer) in Central Taiwan and it was notorious for frequent landslide and debris flow disasters. Accurate and fine-scale rainfall information is essential for rugged terrain with high local variation for early warning of landslide and debris flow disasters. Refined Multi-Spectral Sensor Convolution Integral Model［U+FF08］RMSSICM［U+FF09］was developed in this study to evaluate the pixel-based rainfall of 2 X 2 km wide. Typhoon Megi of 2016 and meiyu on June 1-4 of 2017 were tested to demonstrate the RMSSICM can capture rainfall variation in rugged mountainous area in fine-scale. The results also provide the valuable rainfall information for early warning of landslide and debris flow disasters.