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Automatic extraction of slope parameters from DEM for seismic topographic amplification study

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Factors which may be possibly related to topographic amplification include lithology, geologic structure, topographic gradient, aspect, roughness, curvature, slope-height, relative-slope-height, and height-relative-to-riverbed. It has been found that height-relative-to-riverbed is a good factor to interpret the distribution of earthquake-induced landslides in previous study (Lee et al., 2008). The relative-slope-height is also an important factor controlling seismic slope failure (Lee and Wang, 2008). This presentation discusses a stable algorithm for automatic extraction of slope parameters from digital elevation model (DEM); mainly for slope-height, relative-slope-height, and height-relative-to-riverbed. The algorithm for calculation of slope gradient, aspect, roughness, and curvatures has been introduced in many previous studies and software for these is popular in the market, these factors are not discussed in the present study. Also, I shall announces my policy for opening of the computer codes to our society for free application.