

# Slope structures of volcanic rocks and their influences on types of slope movements in the Kusu Basin, Central Kyushu, Japan

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Type of slope movements generally depends on configuration of slopes, materials, and slope structures. If direction and spacing of joint planes are not constant within one lava unit, types of movements along slopes may also change depending on the former. As an attempt to obtain the relation, small structures of the Pleistocene volcanic rocks and pyroclastic rocks along steep slopes developing in the Kusu Basin, Central Kyushu, Japan have been studied.

Along steep slopes of Mt. Kirikabu, which is well known as mesa topography, slope angle ranges 60 to 75 degrees in upper portion composed of andesite lava, whereas it is smaller than 40 degrees in the lower portion of lacustrine sediments of tuffaceous sand and silts. Although systematic joints are developing within the lava unit, dip angle and spacing change place to place even in the upper slope. That is, dip angle of joint planes changes from 70W at 660m to 30W at 630m in the upper slope except the lowermost portion, where EW/50N is dominant, and depending on basal structure of the lava unit.

Based on the relation between slope angle and dip angle of joint planes, most of them show slipping structure except the lowermost slope. Then, jointed rock slope are divided into three zones; steep angle slipping structure in zone-1, low angle slipping structure in zone-2, and plunging structure in zone-3 of the lowermost. Zone-2 is relative unstable with translation slide, and zone-1 and 3 are relative stable, respectively. Some the dominant orientation of joint planes depends on rock textures of andesite lava. In addition to this, core stone structures due weathering are dominant in top slopes just below the summit, and local rotational slide or rock fall tend to occur in there.

Two directions of joint planes are distinguished in the Matsuki River area, along which steep columnar joints are developed. Steep one and gentle one perpendicular to the former are recognized in there. Dominant trend and spacing are changeable place to place. Columnar joints are developed along the right bank of the Matsuki River, whereas low angle platy joints developed in the eastern portion. Rock topple tends to occur in the former, translation slide tends to occur in the latter.

Within even one lava unit, types of slope movements are different depending on slope structures of weathering and direction and spacing of joint planes.