

## Deep-seated Rockslide Avalanches of The Eastern Sekita Mountains, Niigata Prefecture, Central Japan; Pleistocene tectonic events

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#### 1. Introduction

Sekita Mountains, which locate near the border on Niigata and Nagano Prefecture, is mainly composed of Quaternary system. It is known that there are a number of huge collapses of the terrain in this area. This report is intended to describe the huge collapse of the Pleistocene that develops in the north side of Sekita Mountains.

#### 2. Topographic Setting

East of Sekita Mountains continues from Mt. Hishigadake (1,129.2m) Mt. Sanpousan to Mt. Amamizuyama (1,088m), forms to continue flat-top peak and is reducing the gradually advanced to the east. The Nonomi pond is distributed widest small undulating flat surface in Sekita Mountains. Northern side of Sekita Mountains develops continuous with the steep cliff from 150 meters to 400 meters in relative elevation. Following on the north side of the steep cliff, small undulating flat spreads widely.

#### 3. Geologic Setting

Volcanic rocks of Uonuma Group that is from the late Pliocene to the late Pleistocene in age are distributed widely in the southern slopes of ridgeline of Sekita Mountains. However, in the north side of this ridgeline sedimentary rocks of Uonuma Group are distributed widely, the lower strata are distributed more as go to the north.

#### 4. Topography and geology of the huge collapse slopes

Nonomi Collapse has scarp of about 150 meters in relative elevation and sliding width of about 2,000m is ascertained. Sediment deposition surface formed by collapse is ascertained Syoubu plateau. The horizontal travel distance from the scarp reaches about 2,700 meters. The thickness of the deposit will be less than 50 meters. Tensui Collapse has the sliding height to reach from 200 meters to about 400 meters in relative elevation and the sliding width of about 2,600 meters. Sediment deposition surface can be ascertained as a small relief flat surface with sliding block in astrigent the Shibumi River. The horizontal travel distance reaches about 4,500 meters. The thickness of the deposit will be less than 50 meters and it is estimated to be from 15 meters to 30 meters on average.

Most of the sediment is andesitic one, rarely there is deposit which is mainly composed of siltstone. Features of andesitic deposits have no sedimentary structure with or in water, composed of gravel, such as andesite, siltstone, sandstone, tuff and "kusare" gravel, matrix be composed of sandy silt, tuffaceous silt. The collapse big event is estimated as follows; collapse consisting mainly of siltstone as the initial event occurred, after which the collapsed mainly composed of volcanic rocks occurred at many times. Equal coefficient of friction (H/L) are Nonomi Collapse 0.18, Tensui Collapse 0.14.

Hinterland of huge collapse, namely the south side of the mountain slopes from the ridgeline is where Kubota et.al (2015) has claimed the Sagging slope. It can be seen the depression terrain of large and small like valley and many cliffs in the hinterland around the huge collapse. It is a characteristic that many small cliffs show the displacement of the southern inclination.

#### 5. Conclusions

It is estimated that huge collapse, which has occurred in Uonuma Group distribution areas around the north of Sekita Mountains, had not intervening water as debris flow. Both large-scale collapse

and edifice deformation developed in the eastern mountains of this area and the Sagging terrain formation in the south of the ridgeline are important big event related to the edifice formation.

#### 6. References

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Kubota, Y. et al. (2014) Sagging landform and its formation factor in the southern foot of the Sekita mountains, Niigata-Nagano border area, central Japan. AGCJ, Monograph 60, pp143-160.

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