

Relationship between landslides and wetland configurations in Hachimantai volcanic group

Natsuki Sasaki^{1*}, Toshihiko SUGAI¹

¹Graduate School of Frontier Sciences, the University of Tokyo

1. Introduction

Large-scale disturbances like landslide create the diversity of landscape and biology. Wetland is one of the most important factors which make mosaic structures across landscapes in humid areas. Wetlands in landslide bodies appear, develop and disappear by intermittent landslide activities. While these movements are suspended, they are assumed to continue to change their figures because of the earth flows from its unstable circumference. Wetlands are known to exist in landslide. However, few researchers have discussed its properties and development processes associated with landslide. Takaoka *et al.* (2012) points out that landslide activities affect the origin and distribution of alpine ponds in the northern area of the Northern Japanese Alps. Not only there, landslide activities are widely considered to play an important role in formation of mountain wetlands, and it is necessary to accumulate researches on it in other areas with many mountain wetlands. In this presentation we characterize the wetlands on the landslide masses and discuss their development process in Hachimantai volcanic groups.

2. Properties of landslides and wetlands in Hachimantai

Hachimantai area is in the northern part of Ou Mountains, the backbone of Tohoku district, Japan. There remains about 3 m of snow still in April (Daimaru *et al.*, 2000). Hachimantai volcanic group is a collection of Quaternary complex stratovolcanoes, and their bodies are being collapsed in landslides characterized by variety of body size and structures: some have deformed into several numbers of sliding blocks. Wetlands occur in almost all large scale landslide bodies. Many wetlands are also located in such as the volcanic craters and the nivation hollows.

3. Distribution and development process of wetland in landslide

The wetlands on the original surface of the volcanoes mainly stand in the craters, on the saddles with much snow accumulation, and on the lava terraces, on the other hand those in the landslides tend to stand just below scarps. In the northwest of Hachimantai volcano, a large-scale landslide has also some wetlands. It is considered to be a rotational slide and has many cracks parallel to the scarp. At the upper section of the body, the individual depression is large in size because back-tilted blocks have not substantially been dissected. Some poorly drained depressions become the wetlands, Bushiyachi, Naganuma, and Oyachi. By dating and analysis of the sediment of Oyachi we show its evolutionary history. It was formed as a depression made by large disturbance primary, then was buried by multiple earth flows from its unstable circumference, and finally became the moor through the pond. Koizumi(1982) pointed out that the beginning of peat deposition in nivation hollows in the snowy mountains of Japan Sea side is influenced by the increase in snowfall since late Last Glacial Age. The formations of peat lands in the landslides are also expected to be associated with the landslide activities and the consequential topographic patterns.

References

- Daimaru, H. *et al.* (2000): SEPPYO 62, 463-471 (in Japanese).
Koizumi, T. (1982): The Quaternary Research 21, 245-253 (in Japanese, with English abstract).
Takaoka, S. *et al.* (2012): Journal of Geography 121, 402-410 (in Japanese, with English abstract).

Keywords: mountain wetland, landslide mass, landslide depression, spatial distribution, development process