

Relationships between sagging geomorphologies and geological structure of Nogo-hakusan Granodiorite along the Gifu-Fukui

Naoya Iwamoto^{1*}, Satoru Kojima¹, Heitaro Kaneda², Tomoyuki Ohtani¹

¹Department of Civil Engineering Gifu University, ²Department of Earth Sciences Chiba University

Many landslides have occurred in Japan with steep landform, and have damaged people and properties. Therefore, it is very important to understand the site characteristics and warning signs of the landslides. Sagging geomorphologies are considered to be one of the warning signs of landslides. However, relationships between development of sagging geomorphologies and landslides are unclear. This study aims to clarify the relationships between the formation process of sagging geomorphologies and landslides by to examine sagging geomorphologies and geological structures of igneous rock.

Many sagging geomorphologies occur in Nogo-hakusan Granodiorite distributed around Mt. Nogo-hakusan on the Gifu-Fukui prefecture boundary. The sagging geomorphologic features were extracted from the detailed contour maps based on DEM data offered by Etsumi Sankei Sabo Office and Fukui River and National Highway Office. Geological structures such as joint systems and faults of the granodiorite were studied in the field. As the result, 189 places of sagging geomorphologies were recognized, and their dominant directions are parallel to the dominant strikes of the joint system. When the strikes of joints are subvertical to the strikes of the ridges, the sagging geomorphologies are poorly developed. The sagging geomorphologies are developed on the flat surface or gentle slope on the top of the mountains and the ridges, and many of them are mainly located behind post-glacial dissection fronts. Repetition of the following process and close relationships between the sagging geomorphologies and landslides can be supposed by these observations: 1) unstabilization of the flat surface behind the dissection front by landslide, 2) formation of sagging geomorphologies by the unstabilization, and 3) occurrence of landslide at the sagging.

Keywords: sagging, Mt.Nogohakusan, landslide, joint