Supervised landform classification of Kanto and Kyushu regions using DEM-derived thematic map

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Natural disasters caused by earthquake and volcanic activity occur frequently in Japan. In addition, the occurance of landslides has also been taken into account because 70 percent of the geographical features are precipitous terrains. The generation of precise hazard maps that aim at disaster mitigation is one effective measure. However, this work needs detailed geographic information. The Geographical Survey Institute of Japan maintains land condition maps as basic data to support generation of hazard maps. These maps are generally called landform classification maps.

The present available landform classification maps are maps from digital national land information and those generated by the Ministry of Land, Infrastructure and Transport and Wakamatsu et al. (2005). These maps have 1 km, 500 m and 1 km of resolution respectively. However, to generate a precise hazard map, a higher resolution of landform classification map is essential. Our previous research (Prima et al., 2006) shows a successful automatic landform classification for Northeast Tohoku using 50 m DEM-derived thematic maps. The results from some training areas identified typical constructional/depositional and erosional landforms.

In this paper, we generated landform classification maps of Kanto and Kyushu regions using training areas of those being used to classify landform for Tohoku region. The obtained maps were evaluated by comparing them to the present landform classification maps. As a result, major distributions of volcanoes from both regions were successfully classified. Results of mountains, hills and plains were also acceptable. Some areas were wrongly classified such as Shirasu Table Land (deposits of volcanic ash and sand) and Abukuma Mountains. The former was classified as an alluvial plain and the later as hills.