# Evaluation of landslides hazards potential on a quadrangle geological map of 1:50,000 scale

# Hidehisa Nagata[1], Makoto Kawamura[2], Toshio Kawamura[3], Kohki Yoshida[4], Mitsuru Nakagawa[5]

[1] Fu-Sui-Do Co. Ltd., [2] Earth and Planetary Sci., Hokkaido Univ., [3] Miyagi Univ. Edu., [4] Geology, Shinshu Univ, [5] Hokkaido Branch, GSJ, AIST

Recently hazards maps are tend to be required for the effective management of land use. Usefulness of hazards map was actually shown in the case of Usu Volcano eruption in 2000 for example. For landslides hazards, however, more large-scale map should be prepared, because they are generally occurred in smaller area than the hazards accompanied with volcanic activities. Thus, on the 1:50,000-scale map, not individual landslides hazards, but hazards potential of divided geological or topographical units should be evaluated. We introduce the examination in the case of Hayachine-san area, Iwate Prefecture, which is composed of almost non-volcanic mountainous region. Landslides hazards including rock failures, debris flows, and deep-seated slow rock slides are dominant in this area. Iona-zawa collapse induced by heavy rainfall in 1948 has the largest dimension in the area.

Procedure of the examination is as follows, i) research and investigation of individual hazards, ii) analysis of geologic and geomorphic factors of each hazard, iii) geologic and topographic division in the area, iv) evaluation of each geologic unit or topographic division for landslides hazards. Geology of this area is clastic rocks, limestones, cherts, and basalts belong to Paleozoic (partly Mesozoic) strata of the Hayachine, South Kitakami, and North Kitakami belts. Serpentinized ultramafic plutonic rocks are thrusted up, and Cretaceous granites intruded both the Paleozoic strata and the ultramafic bodies. Minor amount of Tertiary and Quaternary sediments are distributed. Topographical division is as follows, Ia: old erosion low-relief surface, Ib: monadnock, IIa: dissected mountains, IIb: dissected depression, III: valley floor. Regional rock control acts in this area, e.g., the division Ia corresponds to the area that the serpentinites distribute, and the IIb corresponds to the granite stocks.

Results of the examination, characteristics of landslides hazards potential have good correspondence of topographic divisions in this area. For example, occurring of debris flows succeeding to surface failure like the Iona-zawa collapse are restricted to the division Ia, because the debris prepared under the periglacial environment, slope and high altitude of monadonoc are the factors of these landslides. Consequently, topographical division map can be read as the hazards potential properties map in this area.

There may be various cases of relationship between hazards potential and geology or topography. Because hazards potential maps are useful to plan the land use, more studies should be continued.