Oral | Symbol H (Human Geosciences) | H-DS Disaster geosciences

[H-DS29_28AM1]Geohazards in humid, tectonically active countries and their precursors

Convener:*Masahiro Chigira(Disaster Prevention Research Institute, Kyoto University), Satoru Kojima(Department of Civil Engineering, Gifu University), Hiroshi YAGI(Faculty of Art, Science and Education, Yamagata University), Taro Uchida(National Institute for Land and Infrastructure Management), Chair:Ryoko Nishii(University of Tsukuba), Shintaro Yamasaki(Kitami Institute of Technology)

Mon. Apr 28, 2014 10:00 AM - 10:45 AM 415 (4F)

This session covers mass movements of landslide, slope failure, debris flow, and gravitational slope deformation in tectonically active, humid countries, and aims to discuss on their mechanisms, characteristics of occurrence sites, the significance in geological time scale, and the methodology to mitigate their affects by researchers with various related research fields.

10:00 AM - 10:15 AM

[HDS29-P09_PG]Landslides of granite porphyry induced by Typhoon Talas 2011 around Mt. Myoho at Nachikatsuura, Wakayama, Japan

3-min talk in an oral session

*Yasuto HIRATA[1], Masahiro CHIGIRA[2] (1.Department of Geophysics, Graduate School of Science Kyoto University, 2.Disaster Prevention Research Institute, Kyoto University)

Keywords:landslides, Typhoon Talas, granite porphyry, Nachi Katsuura

Typhoon Talas brought heavy rain in Kii Peninsula, Japan on September 2-5, 2011, causing a large number of rock-avalanches and debris flows in the southeastern part of Kii Peninsula. We mapped the landslide scars on aerial photographs at the scale of 1:20000, made rainfall distribution maps by using the rainfall data analyzed by radar-AMeDAS, and compared position of landslides with rainfall distribution and the geological map by Geological Survey of Japan. The result shows that almost all of the landslides occurred in both over 80 mm/h of rainfall zone and Kumano granite porphyry area. In order to clarify the geological topographical background of the landslides, we also made field investigation around Mt. Myoho at Nachikatsuura, Wakayama Prefecture, where the landslide disaster concentrated.The field investigation showed that the landslides had different attributes at inside area of granite porphyry mass and at the edge of the mass. Mt. Myoho consists of the Kumano granite porphyry around the top and the Kumano group (sedimentary rock) of Miocene age which occupies at the lower part of surrounding slope and below plain land. Slope is gentle around the top and gets steeper from the surrounding slope break, and eventually becomes gentle again below the boundary between granite porphyry and the Kumano group. The granite porphyry shows typical spheroidal weathering with corestones in the surface layer of gentler slope. The corestones were included in deposits caused by the landslides. Accordingly, landslides within granite porphyry area had scarps at the slope breaks, where weathered and/or reworked material of granite porphyry seemed to have collapsed. At landslides near the boundary between granite porphyry and the Kumano group, the shale of the Kumano group was altered to dark gray clay. Talus deposit of the saprolite and corestones on the clay seemed to have collapsed there.We estimated volumes of some rock-avalanches around Mt. Myoho to be range from 10^2 to 5×10^5 cubic meters, and their equivalent friction coefficients were 0.20-0.46 on the basis of

positions from the rock-avalanches and following debris flows plotted on topographical maps at the scale of 1:25000. These landslides of granite porphyry were similar to those of granite in Hiroshima Prefecture induced by heavy rain on June 1999 in terms of volume and equivalent friction coefficient. In the case of weathered granite in Hiroshima, however, corestones were formed slightly and it was a different type of landslide that saprolite collapsed and transformed into debris flows.