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Landslides in Hokkaido,2010

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Many disasters by slope failures and landslides, besides river floods, occurred in Hokkaido during a summer season in 2010 caused by frequent local heavy rains. Slope failures triggered by earthquake (December 2, Kiyota, Sapporo, MJ=4.6) also happened. We show some cases of these slope failures with their geologic background.

(1) August 13-14, Teshio and Enbetsu towns in northern Hokkaido: A lot of slope failures occurred at hillslopes and slopes in a low-relief mountainous area. Most of the slopes are consists of fine-grained sandstone and mudstone interbeds of the Pliocene Yuuchi Formation, and subsequently consists of diatomaceous mudstone of the Miocene Enbetsu Formation. The failures show transitional movement from surficial slide to debris flow. Some cases, at the slope consists of the Enbetsu Formation, show movement type of weathered-bedrock failure to debris flow (Ishimaru et al., 2011).

(2) August 22, Nokanan, Ashibetsu City in central Hokkaido: A landslide occurred at a slope consisting of mudstone and tuff of the Cretaceous Yezo Supergroup.

(3) From August to present, Kamikubonai, Sobetsu Town: A relatively small landslide, 250 m in width and 350 m in length, arose at a slope of the Toya pyroclastic deposits and underlying Neogen mudstone and tuff. Persistent displacement of 1 cm/day has been observed after a heavy rain in December 3.

(4) December 2, Kiyota, Sapporo City: Slope failures occurred in a golf course above the epicenter of the earthquake (MJ=4.6). The golf course was developed on a hill area consisting of the Shikotsu pyroclastic flow deposits. Two failures happened at artificial embankments built in the brook. One of slides show large displacement suggesting flow-type movement.

Keywords: landslide, geologic cause, heavy rain fall, earthquake