Probable periglacial mass-movement in a low mountain peak in northeastern Japan.

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This study presents new data on surface stone migration and temperature fluctuation in three winter seasons on a low mountain peak in the Goreibitsu pass (900m a.s.l., 37.5 degree North in latitude), northeastern Japan. Wind-beaten bare ground and patterned ground are very locally developed on the peaks near the Goreibitsu pass surrounded by forest. We observed air temperature, ground temperature, paint line movement, soil water content and wind speed on ground surface on the wind-beaten bare ground. Air and ground temperatures were recorded every 60 minutes throughout the 2004/2005, 2005/2006 and 2006/2007 winter seasons. In the case of 2004/2005 winter, maximum and minimum air temperatures were 28.8 celsius and -10 celsius, respectively. Maximum and minimum ground temperatures were -9.3 celsius and 25.9 celsius, respectively. Diurnal and seasonal freeze-thaw cycles were confirmed on air and ground temperatures. The maximum downslope dislocation of stones from originally painted lines were 100cm. Characteristics of the paint lines movement indicates that surface stone migration was occurred on all surfaces at the slope. We observed needle ice on this bare ground at 2/12/2006. A stone was lifted 2.5cm by needle ice. These observations suggest that mass-movement including frost creep, gelifluction and talus creep are operative on the slope lower than the general forest limit of this region.