Abstract

Sorted patterned ground are a group of periglacial microforms which create more or less symmetrical forms due to frost action and especially repeated freeze-thaw cycles. The origin of sorted patterned ground in the Giant Mts. is presumed in late Pleistocene and they are suggested to be recently inactive (with the exception of sorted circles). Their occurrence is linked to the topmost localities with flat surfaces and intense wind action which causes low snow cover and allow deep soil freezing. The submitted diploma thesis deals with the influence of site characteristics (such as microclimatic extremity, terrain morphology and lithology) on morphology and sorting degree of sorted patterned ground. Field research was carried out along a transect tracing the microclimatic extremity gradient (represented by altitude and so-called relative snow height) in area of Mt. Luční hora in the eastern part of the Giant Mts. which in relatively homogeneous from the viewpoint of lithology and wind exposure. The transect was further extended across the Modré sedlo Saddle to the Mt. Studniční hora where there also occur various types of fossil sorted patterned ground or quasi-active sorted circles in the Modré sedlo Saddle, respectively. However, there is a variability of lithological as well as altitude conditions. For each landform the morphometrical characteristic, such as pattern diameter, height and other, were measured as well as clasts size. Sorting degree of patterned ground was evaluated by sorting indices. At selected localities were also conducted continuous measurements of soil temperature and snow cover thickness. The method of remote sensing was used to characterize the internal arrangement of polygonal networks. The results show a relatively close relationship between the sorting degree and morphometrical characteristics of patterned ground. Horizontally larger as well as landforms with higher relative height seem to be better sorted than those with opposite characteristics. Within the transect on Mt. Luční hora there is an increase in relative height and sorting degree of patterned ground towards the microclimatically more exposed localities, and vice versa. Quite significant changes in morphological characteristics and sorting degree in a relatively small area show high sensitivity of sorted patterned ground to slight changes in local characteristics.

Keywords: sorted patterned ground, microclimatic extremity, frost sorting, morphology, Mt. Luční hora, the Giant Mts.