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Relief and snow avalanches in the Tatra Mts.

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Snow avalanches are among the main factors influencing the high-mountain environment of the Tatra Mts. and their denudation system in the three uppermost geoecological belts. Dirty avalanches are assumed to be an important morphogenetic factor but also relief affects spatial differentiation of snow avalanche activity.
The research aims to recognize the geomorphological conditions for avalanches and assessment of the morphogenetic role of avalanches in the whole Tatra Mts.
For recognition of geomorphological conditions of snow avalanches activity was made map of avalanches paths, based on maps of snow avalanches occurred in the recent past, air- photos and digital terrain model. Starting zone and transition zone were specified within each path. For each type of designated zones the morphometric analysis was made, taking in account slope aspect and inclination.
The map presents more than 3700 avalanche paths. The number of avalanche paths is more than double in the High Tatras than in the Western Tatras. Morphometric features and altitudinal range of avalanche paths also differ in individual parts of the Tatras what correspond with the relief differences. Length of avalanche paths reach up to 3138 m and in average is the biggest avalanche in the Bielanske Tatra. The paths are located about 200 m higher in the High Tatras than in other parts of the massif. There is no clear relationship between exposure of the slopes and the distribution of the avalanche path, while relationship with slope inclination is distinct. Over 70% of the avalanche paths occur on slopes 26-55o. Similar patterns were found in the distribution of avalanche accumulation zones.
Detailed studies of morphogenetic role of avalanches are conducted in four chosen avalanche paths located both in the Western and the High Tatras. Measuring points of erosion, transport and accumulation installed there in the autumn 2012 are checked two times a year. It was found that effects of snow avalanches on the relief is characterised by temporal and spatial variability.
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