

Abstract

The thesis is concerned with a prominent phenomenon of the mountain areas – the anemo-orographic systems which occur as a consequence of the collaboration of prevailing winds and of the large windward valleys, the summit flattened surfaces and the leeward slopes. Their presence has a vast influence of numerous physical-geographical realms, mainly due to the highly uneven spatial snow cover distribution within these systems. The focus of the thesis lies on the highest elevations of the Hrubý Jeseník Mts. which reach or exceed the alpine treeline. In this area, the anemo-orographic systems were already defined earlier but a thorough description and of their presence and activity has not been carried out so far, which is the main aim of the thesis.

A detailed and spatially compact mapping and measurement of the flag or banner trees has been performed, as these, thanks to their deformed asymmetric shape, attest to the prevailing or mean wind direction as well as its velocity with a high accuracy. As a secondary and comparative data source the meteorological measurements from the summits of Praděd and Šerák Mounts and a modern and detailed wind model has been used. A verification measurement of snow cover depth at selected locations under presumed strong wind action was executed as well.

The acquired data generally affirms the already existing concept of the four anemo-orographic systems in the Hrubý Jeseník Mts., those of Divoká Desná, Hučivá Desná, Merta and Branná, established previously by Professor Jeník, it, however, provides an accuracy improvement of the knowledge of their activity at certain locations. Together with the data from the Šerák station it suggests a presence of so far unknown less prominent and only occasionally active anemo-orographic systems connected with the catchments of the sinistral tributaries of the Bělá river. It also adumbrates the importance of the influence of some smaller landforms such as the isolated peaks and it bears witness to the presence of other influences which need subsequent survey as well. The comparison of the data sources confirms the suitability of using the flag trees as primary source, it, however, also testifies in favour of the irreplaceability of the meteorological data. Use of the models, on the other hand, for description of the wind behaviour in complex mountain terrains seems to be inappropriate.

Key Words: anemo-orographic system, flag tree, banner tree, wind flow, snow cover distribution, windward valley, windward slope, leeward slope, flattened surface