

Submitted Abstract

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Abstract

Due to the climate warming and redistribution of snow cover over the past decades, ski resorts in all parts of the world are faced with a lack of natural snow for preparing slopes. In this regard, artificial snow production and snowmaking on ski slopes are increasingly used. However, climate warming also reduces the hours of possible operation of snowmaking devices (snow cannons) on slopes during winter periods. Regional factors of the effectiveness of snowmaking systems in the resorts of the North Caucasus are considered in this work. Particularly two ski resorts of North Caucasus Resorts JSC are compared: the Soviet-era Elbrus, located in a subtropical climate zone, and the newly built Veduchi, in a low-snow semi-desert zone. Knowledge of the regional features of the territory will allow the rational use of snow resources, as well as minimization of the economic costs of artificial snowmaking. Therefore, local factors such as ski slope exposition, insolation, air temperature, and natural snow cover thickness are investigated to describe local conditions during summer fieldwork. The target groups of skiers (local or visitors) are also considered to assess the reasonableness of snowmaking systems. The work is performed in the frame of state topic “Danger and risk of natural processes and phenomena” (121051300175-4) and “Evolution of the cryosphere under climate change and anthropogenic impact” (121051100164-0).