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Impact of snowmaking on stream flows in the Giant Mountains in the Czech Republic

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The paper analyses effects of snowmaking on stream flows in the Giant Mountains (Northern Bohemia). Data from 22 small river watersheds, which include different physical-geographic characteristics, have been assessed. Some of watersheds represent natural areas, while other represent significant anthropogenic influence. Thanks to this mix of different conditions, the impact of snowmaking can be analysed in detail both in terms of a decrease in flow rates during water consumption, and of an increase in runoff during snow melting. The impact on groundwater is also studied.

Changes of runoff are observed directly by continuous measurement, and indirectly by mathematical modelling. In the monitored area changes of soil properties are compared: at snow-covered slopes and non snow-covered slopes, and also out of slopes. We further analyse physical properties of snow and snow chemical characteristics, depending of possible additives in artificial snow.

Observed data are compared with the data obtained from the state administration and from the operators of ski resorts. Based on the project findings various measures are recommended, which should eliminate negative effects of snowmaking on the natural environment.