

Abstract

Climate changes occurring on Earth influence most of the natural processes. This also includes snow storages which have been decreasing in many mountain regions over the last decades. Besides increasing air temperature, changes in snowfall fraction, snow storages and snowpack duration also occur. For snow dominated mountain catchments, runoff timing from snowmelt is essential. Due to air temperature increase, runoff occurs earlier. Additionally, evapotranspiration increases as well. This thesis summarizes current knowledge regarding snowpack and runoff changes in mountain catchments. It further analyzes changes in 14 Czech mountain catchments over a 50-year period (1965-2014) using a Mann-Kendall trend test which identifies trends in selected time series. The trend analysis was followed by quantification of trends using Sen's slope estimator. The results showed that the day of 50% of total annual runoff occurred earlier in all catchments. Increased winter runoff was found in the Krkonoše catchments. Significant and extensive negative trends were detected in May for most of the catchments. There were almost no significant trends detected in the Beskydy catchments.

Key words: snow, snowmelt runoff, trends, climate changes