



RCM based hydrological forecast for Eastern Baltic region

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The main goal of our study is to forecast possible changes in the discharge patterns in Latvian river drainage basin (130 thousand sq km), that covers the territory of Latvia and parts of Lithuania, Estonia, Belarus and Russia

In our study we used a modified Regional climate model (RCM) data based on SMHI RCAO forced by HadAM3H (which where modified comparing RCMs data with the observations in the reference period) and Mike Basin with a conceptual hydrological model NAM by DHI Denmark. Using these we simulated the runoff for the climate reference period (1961-1990) and for the future scenarios A2 and B2 (2071-2100). Observations for the reference period were used for calibration of the hydrological model. Analysing the data we compared the discharge patterns and total runoff of the rivers in both periods, using simulation results, and observation data for the reference period.

Although the changes will vary between rivers, as they have different characteristics, there where trends which can be found in all rivers: (1) Total runoff decline by 5-20 % (2) increase of winter runoff by up to 70% (3) decrease of spring and summer runoff, leading to smaller floods and even drier low flow periods. To assess the probability of these changes, we used the observation data after the reference period (1991-2008), and discovered that qualitative changes are already happening. But quantitative changes are not noticeable yet, which can be explained by the fact, that the increase of precipitation, have been fulfilled by about 50% of predicted, but the temperature, have risen only slightly, which leads to an increase in runoff.