

This thesis focuses on examination of the ability of regional climate models (RCMs) to simulate precipitation patterns in the Czech Republic and on evaluation of uncertainties due to different global climate models (GCMs) driving the same RCM and due to different RCMs driven by a single GCM. Model outputs of regional climate models RCAO and HIRHAM driven by global climate models HadAM3H and ECHAM for period 1961-1990 were analyzed. It was shown that spatial variability of mean annual precipitation totals is mainly influenced by RCM. The global driving model determines areal mean and minimum values of precipitation totals for the Czech Republic. Both regional models overestimate the mean annual precipitation totals over most of the area, more markedly with driving model ECHAM. After the analysis of the further precipitation characteristics in selected grid points, it was shown that models RCAO and HIRHAM simulate most of the characteristics differently. Most of the characteristics were not expressed well by the models; the results of the model RCAO were better. Further, the model results distinctively differ between chosen areas. This variability is more noticeable for HIRHAM.