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Scenarios of long-term mean annual runoff changes in Slovakia

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This poster summarises the results of the investigations of the expected change in the long-term mean annual flows in selected regions and basins over the territory of the Slovak Republic. First several models relating runoff-forming factors to the long-term mean annual runoff have been compared. The models of Dub, Friga and Parajka & Szolgay, which were developed for the territory of Slovakia, and the models of Turc and Liebscher, which were derived for European rivers, were considered. Based on model comparison, the Turc model was selected for determining the impact of a changing climate on the mean annual runoff. Grid-based maps of mean annual potential evapotranspiration, precipitation, temperature and runoff were used to calibrate the relationship in a GIS environment over the whole territory and measured runoff data was used to verify it in a number of catchments covering a wide range of runoff-forming conditions. The model has been subsequently used to simulate the impact of various climate change scenarios. Several GCM and analog climate change scenarios downscaled to climatological stations were used to construct maps of changes in the long-term mean annual precipitation totals and temperature. Several watersheds and/or regions covering a variety of hydrometeorological conditions have been selected as representative areas for climate change impact assessment. They are located in three geographical zones: the northern, central and southern zone. This division follows some climate change scenarios, which expect different climate change impacts for the northern and southern parts of Slovakia. Grid maps of the long- term average runoff for the whole territory of Slovakia have been computed from the Turc model for all the selected scenarios of climate change. Basin averages of runoff have been extracted from the selected basins and representative areas. These were compared

with their corresponding values extracted from the baseline long-term average runoff map. The climate change impacts were evaluated using the basin averages in order to eliminate possible anomalies in the input maps caused by interpolation in areas with strongly changing isoline fields.