Geophysical Research Abstracts, Vol. 7, 04071, 2005
SRef-ID: 1607-7962/gra/EGU05-A-04071
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Climate Change Impact on Irrigation and Water Resources Demand in Zitava River Basin

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Present state and future affect of water management relationships of Zitava river basin (903 km^2) had been analysed by the physical model WaSiM-ETH with simulation step one day. Contemporaneousness in simulations had been represented by the time series of years 1951-1980. For the future it had been set time horizons to the years 2010, 2030 and 2075 according to scenarios of climate change CCCM (Canada) and GISS (USA). Direct measurements of actual background characteristics had been realized in years 1994-1999.

On the base of model results it had been changed climatic characteristics applied on the crop rotations, which had been proposed for Zitava river basin and by its structure the best represents structure of cultivated agriculture plants at the present time. At the calculation of the water amount reservation required for irrigation of individual plants, it had been considered with already existing water reservoirs, which are located in the river basin, whether for the present, or for changed climate relationship. An advantage is, that in interested area are constructed spacious irrigation systems, situated near by water reservoirs. Simulation results realized on the base of individual scenarios applications had been compared with the present water management balances of all 9 evaluated water reservoirs, those are using for an irrigation purpose. Differences in results are related to the change of the river basin climate relationship and required water guarantee amount change for irrigation consumptions according to individual scenarios.

On the base of results it is supposing, that climate change by its negative influence affects permanently on the water management relationship in the area and it will influence on quantitative and qualitative water resources in Zitava river basin.