



Hazard and vulnerability to climate change of the Skalka dam in Czech Republic

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The catchment of the Skalka dam (over 600 km²) lies on the German-Czech border (mostly in Germany). Most floods are caused by snowmelt or snowmelt with rainfall but the largest floods can be caused by summer rainfall on part of the catchment. In the contribution we partly follow the work of Prudhomme et al. and our own work (Blazkova et al., 2009) using limits of acceptability with the GLUE methodology. As the vulnerability we use 19 of the 39 simulations (parameter sets) which met all the 114 criteria set up before running the model and simulate series of the length 100 thousand years in hourly time step to estimate exceedance probabilities under current climate conditions. Those series have actually been used in practice for re-estimation of the safety of the dam. To assess the changing hazard under climate change we use a redistribution of temperatures according to Aladin simulations (results of Ensembles Project). Since it is very uncertain to model precipitation in GCMs and Central Europe is on the border between oceanic and continental climate we use precipitation from our own uncertainty analysis, i.e. the ranges from which we have been sampling the precipitation parameters. Those ranges have been set up on the basis of 5 minute data series of about 10 years period and daily data for periods of 30 years. Uniform sampling of the rainfall parameters has been performed and the ranges have been made a bit wider than determined from the data to allow for potential future change. The results show that the effect of randomness in the series can mask the differences brought about by a mild climate change, even in this case where temperature change will affect the accumulation and melt of snow in the winter events that generally cause the largest floods in the basin.