

FLOOD FORECASTING IN Odra RIVER BASIN VIA THE RAINFALL-RUNOFF MODEL HYDROG-S

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The Czech part of Odra River Basin represents the headwaters of Odra watershed. The area covered by this part of the basin is 6252 km² "about 6.6% of the total area of this rivershed" which is a mountainous area represented by Beskydy and Jeseníky mountains. This is the area where flooding usually starts, as the flood event in July 1997 reminds us. This flood caused a huge damage in the order of about 62 billion CZK (Czech Crowns), or 1.8 billion USD, 50 deaths, 5400 damaged or destroyed houses, partial or total destruction of 1850km of roads and 950km of rail-tracks. This heavy damage led the decision-makers to take a solid step in order to mitigate flood consequences and to develop flood forecasting and flood warning systems. For this purpose the rainfall-runoff model HYDROG_S has been used in Czech Hydrometeorological institute - Branch Ostrava. This version is designed for simulating rainfall-runoff processes and to give the operational forecast of the water discharge in the drainage network and above all the total runoff in the closing profile. It is possible to use the model in river basins with or without dam reservoirs. Input data are causal antecedent rainfall and the forecasted one in the watershed and measured discharge in selected profiles of the stream, which serves for correction of the simulated discharge. Good prediction of river flow rate relies on how well rainfall has been forecasted. For this purpose a French numerical model ALADIN is in use for which experts from Czech Hydrometeorological Institute played an important role during the development of this model. ALADIN is used to predict rainfalls and temperatures 24 to 48 hours in advance in the form of total rainfall for each 3 or 6 hours as time step.

HYDROG_S as a hydrologic model, is a distributed model, has been in use to predict flow rate in the river Odra since July 1999. HYDROG-S is a simplified version of program HYDROG. The full-integrated version of HYRDOG program includes control algorithm as well, which can do operative control on the outlet flow from reservoirs during flooding.