ABSTRACT (EN):

Study of historical flood events is important as a base for hydrological studies, as well as for proposal of flood control measures and real-time flood forecasting helping forecasters to support their decisions. This work deals with proposal of Flood Archive (databa of flood event) and its application in the scope of flood protection of Otava river basin to Písek water gauge. The objective was to propose Archive of historical floods containing information about casual synoptical situation, connected weather phenomena (precipitation, temperature) and runoff response.

Flood formation mechanism in Otava river basin was described using this Archive. A forecasting technique based on analogue method was designed. This technique searches historical records for flood events of similar causes and estimates possible development of runoff response.

Archive consists of 72 flood events that occurred between 1890 and 2006 and their peak flow in all cases exceeded given threshold discharge in Písek closing profile (10-year return period for 1890-1961 and 1-year return period for 1961-2006). Available historical data was gathered and processed into graphic form (maps, graphs, tables). Flood Archive is part of the dissertation thesis.

The most outstanding features of flood formation mechanism in Otava river basin were described and explained in relation to geographical environment in the second part of the thesis. One of the distinctive features is the predominance of summer floods in Otava river basin, which is more obvious concerning floods of more than 10-years return period. The basin is not very sensitive to floods caused by mainly snow melt. Only in 4 out of 72 flood events the snowmelt contribution predominate rain precipitation.

Distinct difference was found naturally between weather causes of winter and summer floods. Winter floods are generally the consequence of strong western circulation with crossing frontal systems. On the other hand summer floods are caused mostly by cyclonic precipitation of stable low pressure formation in Central European area. Different air circulation type results in different wind ward effect of precipitation and consequently different runoff response. Analysis results were used create complex

categorization of floods. It recognizes 9 patterns in Otava river basin based on common characteristics of causes as well as of runoff response.

In the third part of the thesis, an analogue technique based on archive was proposed to estimate flood response of the basin. The archive is searched for the most similar event in the meaning of causing factors: season of flood occurrence, antecendent saturation of the basin, precipitation totals and its spatial distribution pattern.

An index which expresses similarity of flood causes was developed using mathematical comparisons of causing factors and response (peak discharge and flood volume). Selection of historical analogues is based on the value of that index. The technique was calibrated for forecasts of peak discharge and runoff volume during four days following the time of forecast issuing.

The method was verified using 56 flood events from the Archive. Each event was excluded from the archive and than its runo ' volume and peak flow was estimated using the rest of the archive. Eva.uation showed e.g. that for 44 out of 56 flood events the runoff volume was estimated with less that 30 % difference. Therefore even this simple technique has potential to be used for fast estimation of expected runoff response.