

Abstract

The thesis aims to point to the importance of the proxydata, in particular their significance for hydrology and water management. The historical hydrology, the subject of which the proxydata are, offers the whole range of techniques for extrapolation of the knowledge on hydrological phenomena into the relatively distant past.

The thesis includes the review of the scientific literature targeted in particular to the processes and history of the records of hydrometeorological phenomena, the origin of the historical hydrology, its methodology and potentialities. The author's own work focuses on the application of the techniques already in use and apart from that it presents the very new methodological approaches. This includes the reconstruction of the culmination discharges using the combination of several techniques, the reconstruction of the hydrograms of the historical floods, etc. The main goal has been to reconstruct the time series of estimated peak discharges in Prague for the period of 1118–2002. This meant to reassume the former results published in the form of the chronologies of interpreted and verified documentary sources. These were completed by the corrected Klementinum records of the water levels. Recently localized epigraphic sources have been utilized and the analysis of the flooding of the historical terrain of Prague based on the description of earlier floods has been prepared. Using the new techniques and new sources enabled the reconstruction of the floods in 1582, 1784, 1830, 1876. All data linked to the historical hydrology have been gathered in a unique database KROLMUS, created and developed by the author.

The transfer of information from document sources and early instrumental records into discharges has been done under assumption of relative stability of the urban environment of the Old Town of Prague, in the period between the construction of the Charles' Bridge and the end of the 19th century. The culmination levels are related to the oldest profiles “*U Křížovníků*” and “*Staroměstské mlýny*”.

The time series length facilitated to study the fluctuation of the seasonal types of floods. The results indicate that the frequency of occurrence of extreme floods in relation to 179-year cycle of the SIM is significant. During the last six periods of the cycle (covering 900 years) at the minimum, we can observe the accumulation of the floods within the first 70 years and the decrease of their number at the end of the cycle. Thus a dangerous situation characterized by decreasing of the frequency of the extreme floods replaced later by the abrupt rise in frequency and extremity of the floods arises repeatedly. The results of this effect we experienced in 2002 for the last time.