



## A comparison of large 18th-century floods on Danube: Vienna - Bratislava - Budapest

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The documentation of historic floods can help in better understanding of factors that might cause and contribute to large and extreme flood events. In particular, the analysis of historic floods provides information about flood seasonality, its changes and anthropogenic impacts on river flood regime which in some cases strongly influenced flood behaviour.

The main objective of the present contribution is to document large and medium size flood events on Danube in Vienna, Bratislava and Budapest in the 18th century. In the present study, based on contemporary documentary evidence, for each of the three towns a five-scaled flood index series is developed to describe the magnitude and intensity of flood events. According to this classification, the 100-year flood event was characterised by the index value 5, while great destructive floods - depending on their extension, destructivity and further impacts - received the values 4 and 3, respectively. Less significant but still harmful flood events were classified as No. 2, and floods without further specification remained in the lowest category (No. 1). Beside classification issues, seasonality and flood frequency differences between the three towns are as well discussed.

The results indicate that a greater number of flood events took place in the last decades of the century, but only a few flood events of the same magnitude are documented simultaneously in all three towns. And whereas in 1775 no winter flood event was reported in Vienna, an important ice jam flood was documented in Bratislava, and a catastrophic ice jam flood event, greatest of the century, occurred in Budapest. In 1787 autumn the greatest flood event of the century occurred in Vienna, while hardly any flood waves were observed at Budapest. While in Vienna, summer (and partly autumn) floods had great importance, in Budapest a large number of ice jam floods were documented. In some cases the differences are likely caused by different hydrometeorological and morphological conditions, but the importance of human impact (e.g. different types and levels of flood protection in the towns, large-scale changes of land use in the catchment area) have to be as well emphasised.