



Cartographic evidence of the disastrous ice flood of 1809 and its aftermath (Danube River, Slovakia).

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The 18th and early 19th century river maps are important data sources for studying past landscapes. This is not only as a result of improved surveying techniques, but also because they depict landscape during probably the most important climatic and land-use changes since the Middle Ages. In this phase of the increased river activity during the last onset of the so-called Little Ice Age period, several major flood events occurred. Local manuscript maps, which often depict the channel in major detail, help us to obtain a better understanding of their geomorphic and other impacts.

The catastrophic ice flood, which occurred on the Middle Danube river at the end of January 1809 was undoubtedly the most disastrous event of its kind in Slovakia, although it also hit a number of settlements in Lower Austria and Hungary. Several people drowned and the flood also resulted in great damage to settlements and livestock. Devastating effects of this flood particularly as to the towns of Bratislava and Komárno/Komárom were comparable with effects of disastrous floods of February 1830 in Vienna (Austria), March 1838 in Buda/Pest (Hungary) or 1845 flood in Prague (Czech Republic), respectively. In case of the present Slovakian capital Bratislava, on January 29, 1809, two ice barriers suddenly rose the water up to 10 m above the zero level and the river quickly overflowed its banks inundating the low-lying parts of the town. The flood blacked out communications with neighbouring regions. Record-breaking height of water led to breaches of the important right-bank embankment (constructed in 1770s). Through several openings water flooded the right bank, almost completely destroying the adjacent village of Petržalka/Engerau. The damage to Vienna highway levee was so massive that it only could be repaired 16 years later, in 1825-6 (although this was also due to Napoleonic wars). The flood also reactivated the Chorvátske rameno anabranch, 33 years after its abandonment.

A number of local manuscript maps depict the river before and after this event. Combined with written literary reports, the maps allow us to describe the course, the devastating effects and the aftermath consequences of the 1809 flood precisely, particularly as to the territory of the city of Bratislava itself. Moreover, many of these maps comprise a wealth of information about flood in their detailed explanatory legends and remarks. The most important maps and plans are those currently deposited in the National Archives of Hungary (= maps from the collection of former Governing Council, the central supervisory authority of the Habsburgs for the Hungarian Kingdom), in the Municipal Archives of Bratislava and the Slovak National Archives, respectively.

Effects of the 1809 ice flood, as evidenced by historical maps and plans, can be generally summarised as follows:

- a) direct destruction (by ice floes) or collapse of houses, bridges, buildings, boat mills, groynes and bank revetments
- b) heavy lateral erosion of the river channel during this single event (then referred to as „damage to banks“)
- c) breaches of protective dikes
- d) formation of new water bodies – temporary lakes - created by spilled water on the landside of levees
- e) reactivation of upstream entrances of some side channels
- f) pronounced changes of floodplain configuration
- g) damage to floodplain forest.

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