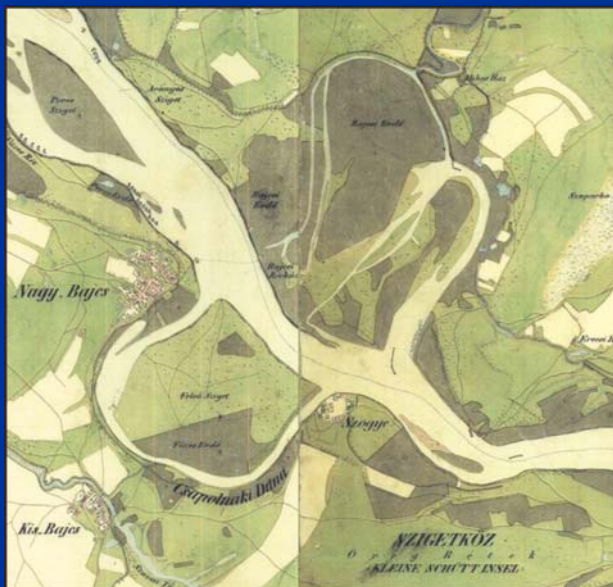


V.1.2 Historical changes of the Danube riverbed from Bratislava to Komárno

V.1.2 A Duna meder történelmi változásai Pozsonytól Komáromig



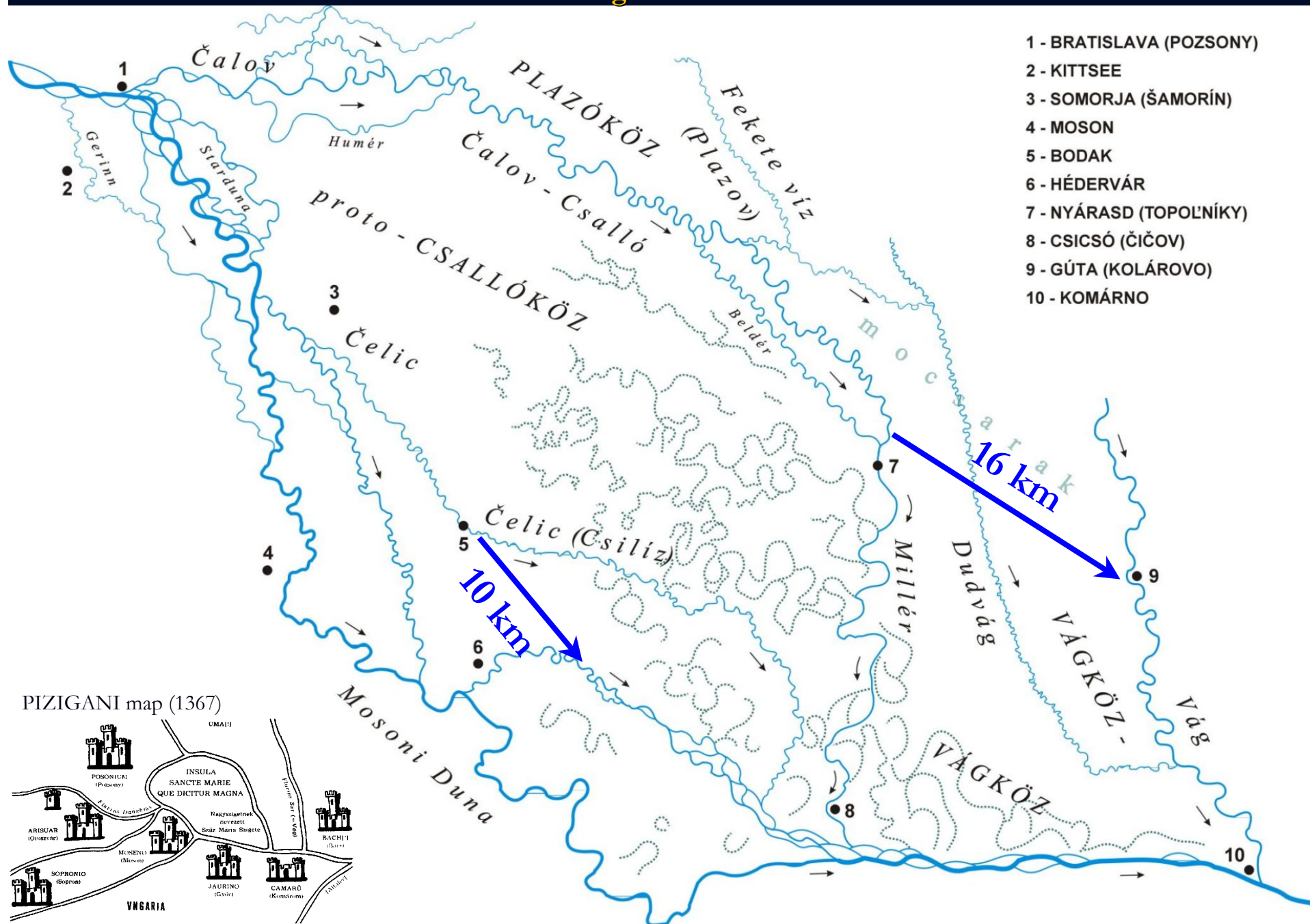
Peter Pišút
Institute of Zoology SAS
Bratislava

Methods

- Historical map analysis: medieval maps, 14th – 18th century military maps and scetches, I. (1783-4) and II. (1822-40) military mapping, local maps (16th – 19th Century), cadastral maps, modern topographic maps
- Written sources: 13th – 14th Century charters, borderline disputes, data on bridges, mills, history of toll, fishing etc.
- Flood records
- Climate data (records of frozen Danube, severe winters, wet /dry years)
- Air photos (tracing of palaeomeanders, old channels)
- Field evidence (vegetation cover, major gravel elevations, radiocarbon dating etc.)

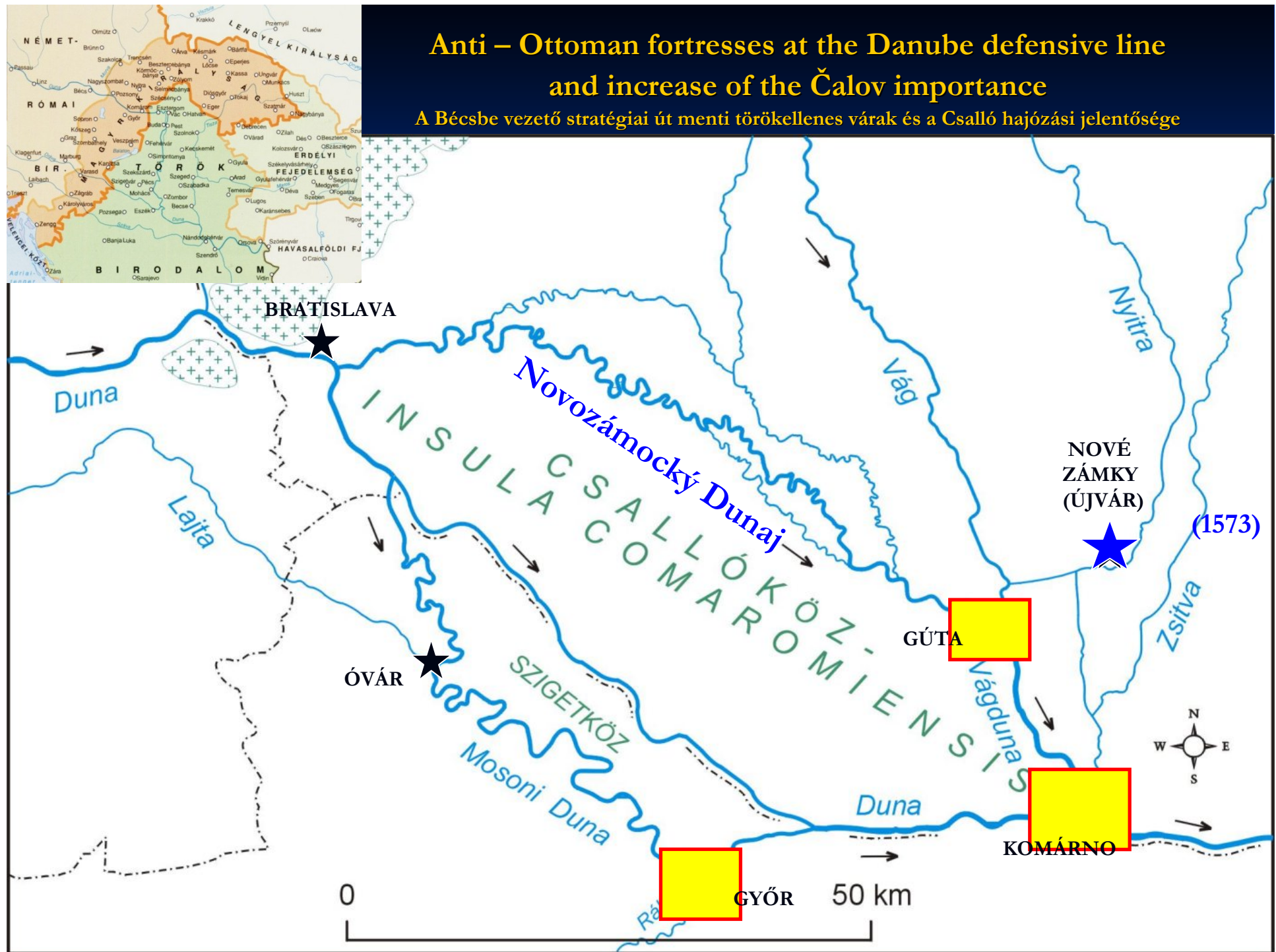


**The 13th – 14th Century river network (hypothetical reconstruction)
and channel changes between 1380 and 1426**



Anti – Ottoman fortresses at the Danube defensive line and increase of the Čalov importance

A Bécsbe vezető stratégiai út menti törökellenes várak és a Csalló hajózási jelentősége

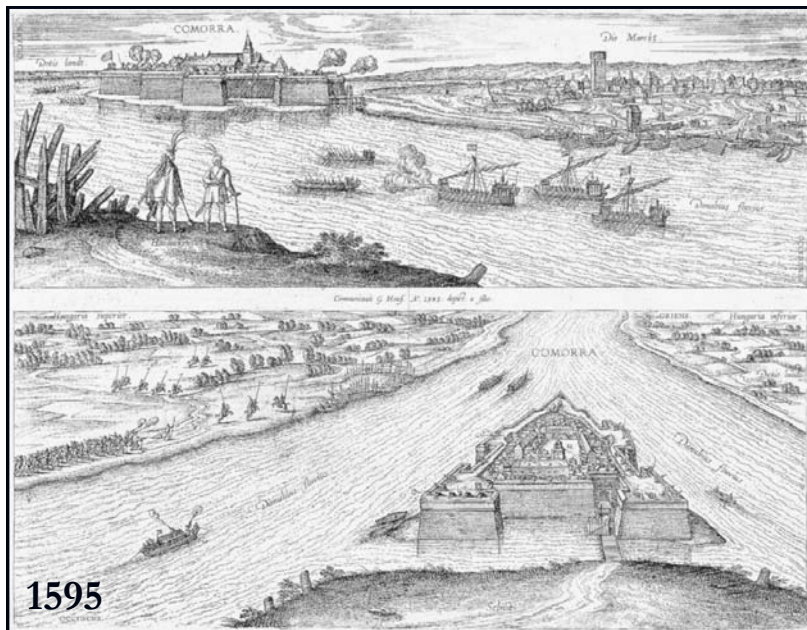


MOSON DANUBE:



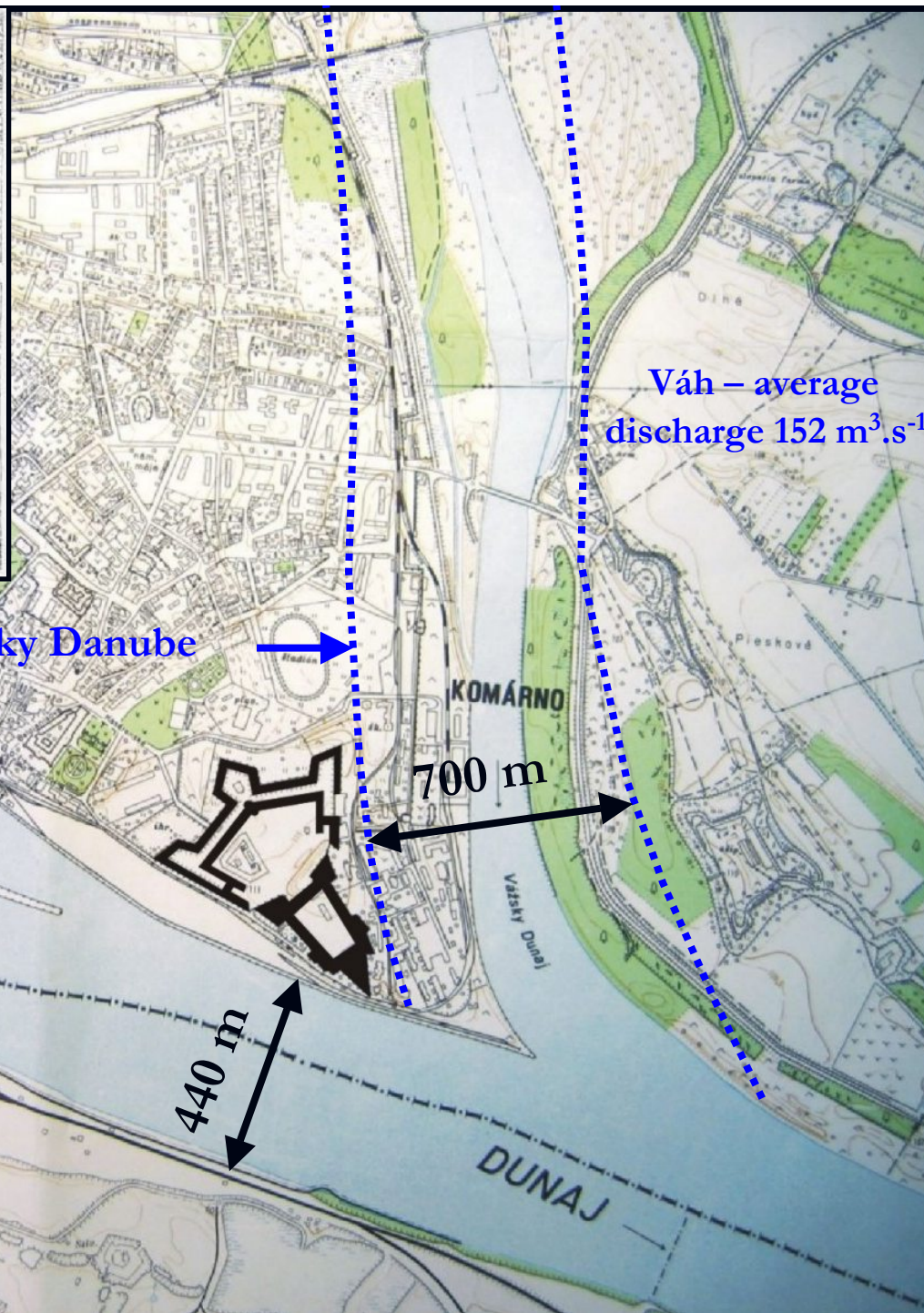
Ráb
(Győr)
fortress

1594



16th– 17th century width of Vážsky Danube

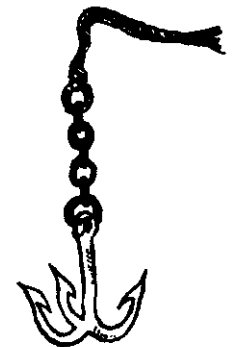
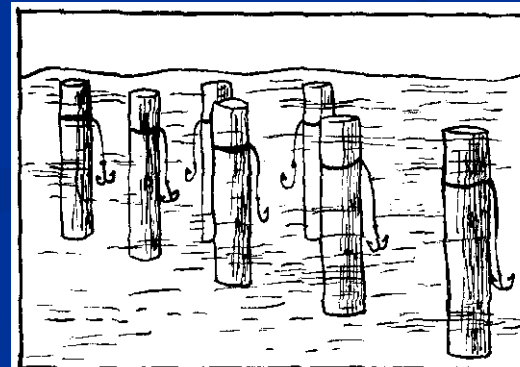
The Danube modern mean annual flow of $2000 \text{ m}^3 \cdot \text{s}^{-1}$



Beluga fishing on the „Little“ and Vážsky Danube in 16th Century

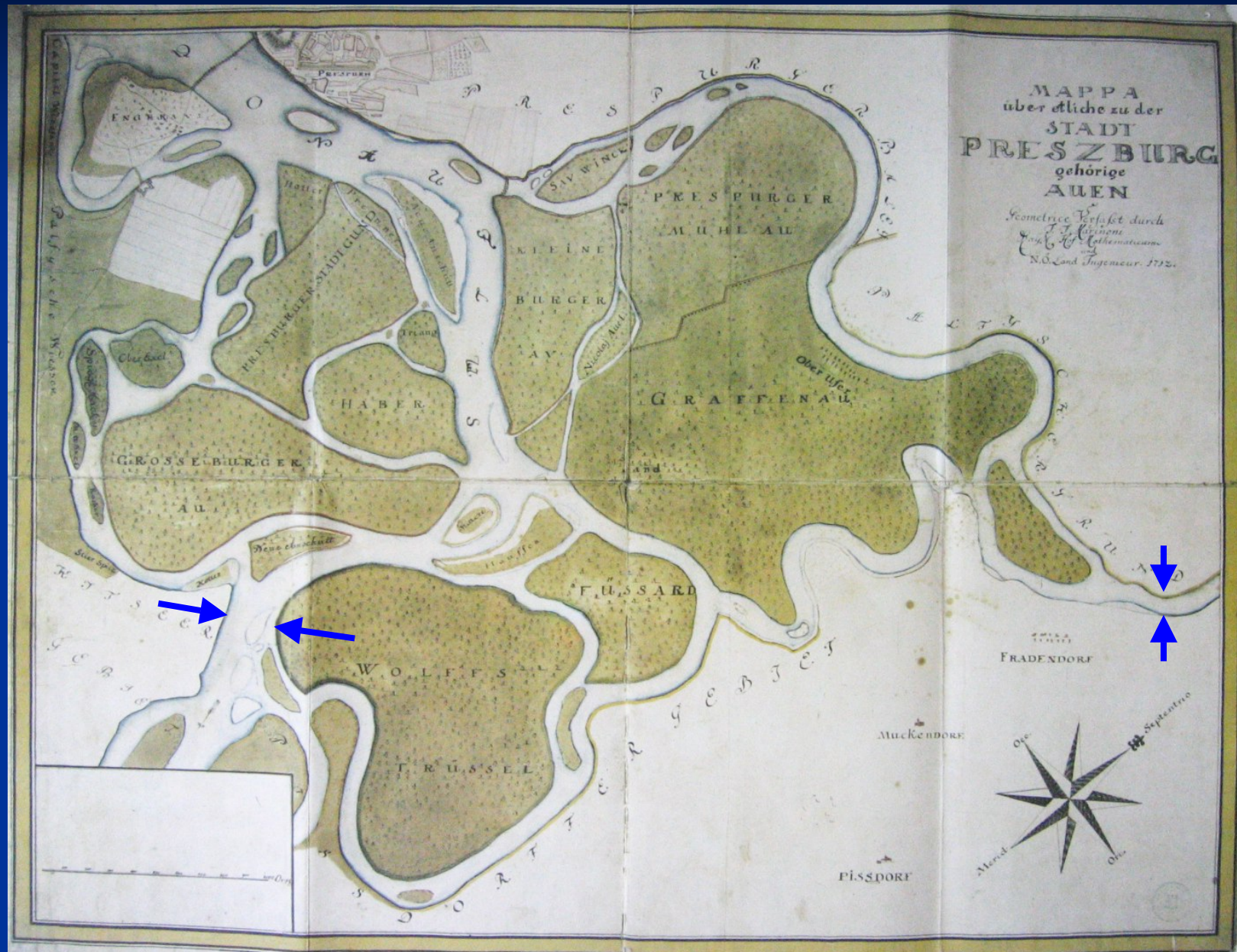


- Beluga fishing weir in Aszód: regularly 400 stakes were needed
- fishing results e. g. in autumn 1562: 160 belugas and 4 sturgeons captured at Aszód, 25 belugas in Komárno.

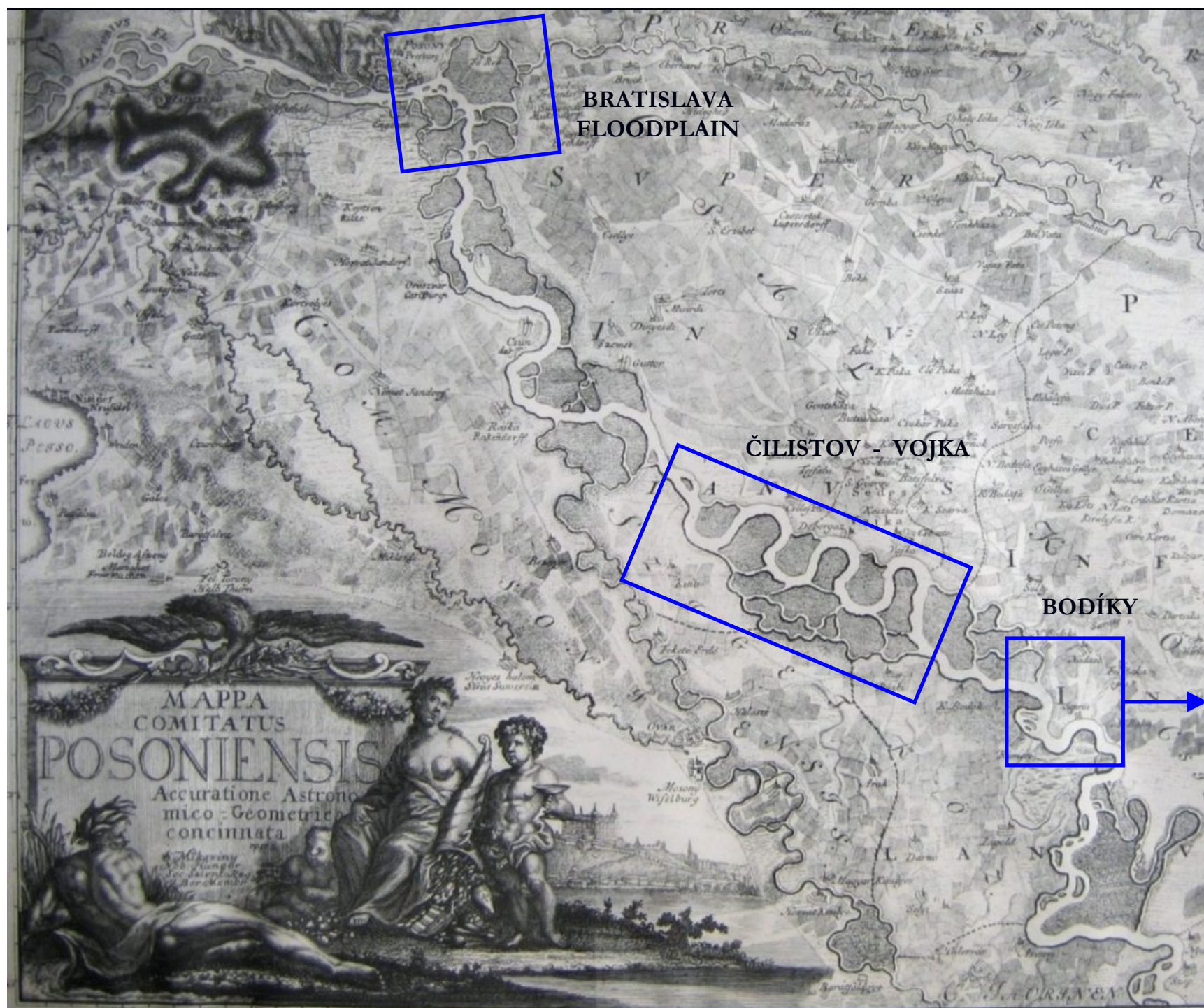


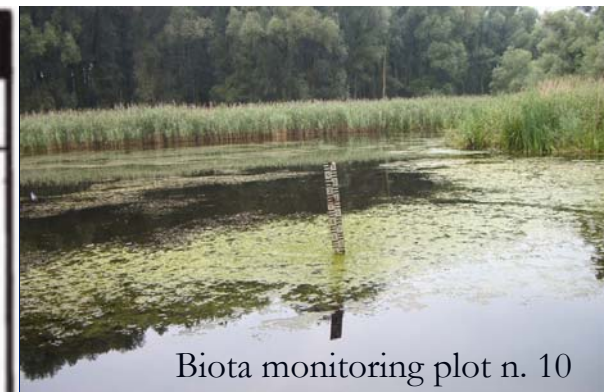
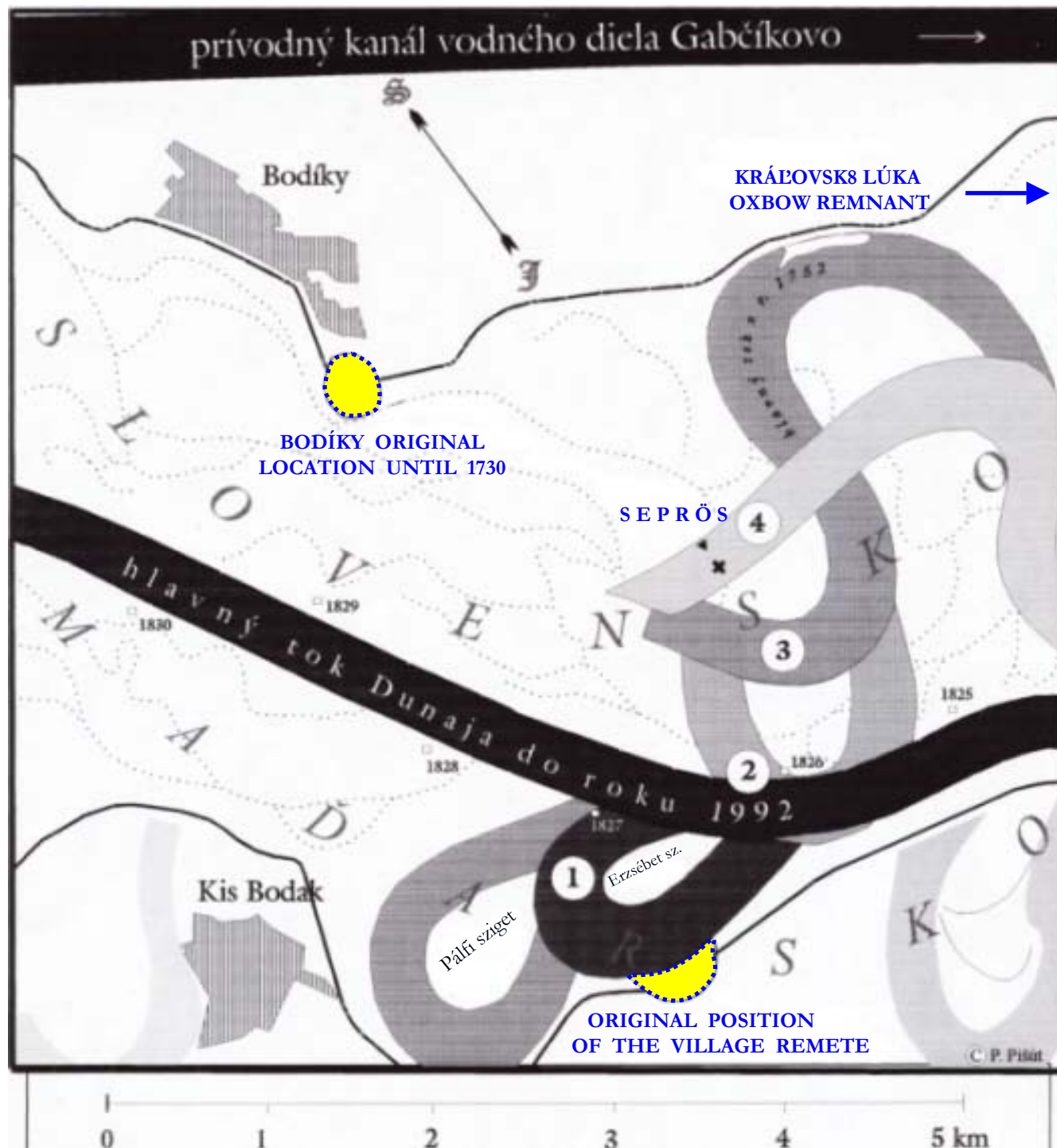
1712

The „archipelago“ of Bratislava (by J. J. Marinoni)



1735





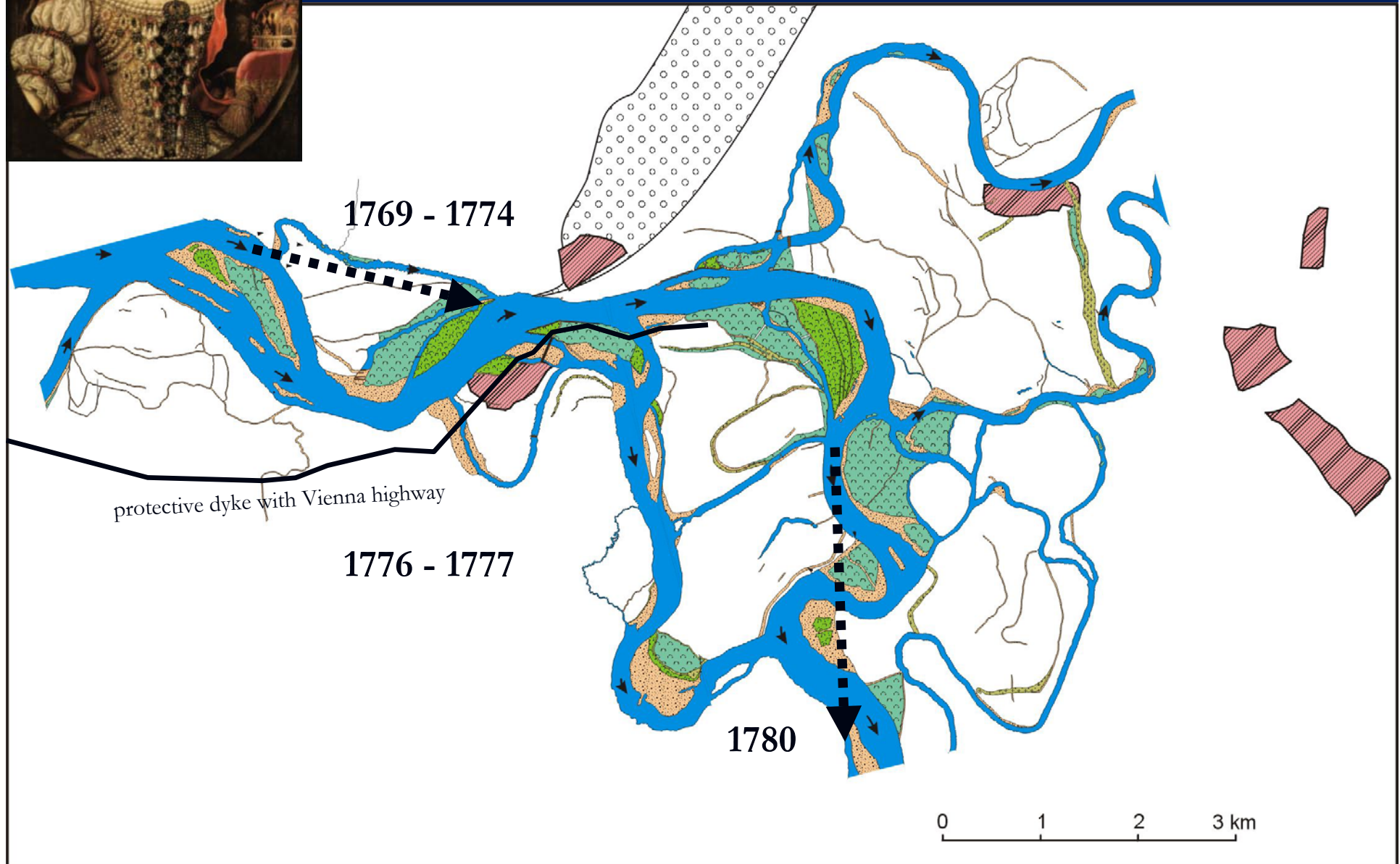
**Meandering
Danube at Bodíky,
development of 4
meanders which
were successively
cut off during 17th
century until 1752.**

**(reconstruction
based on two
A. E. Fritsch
detailed maps)**

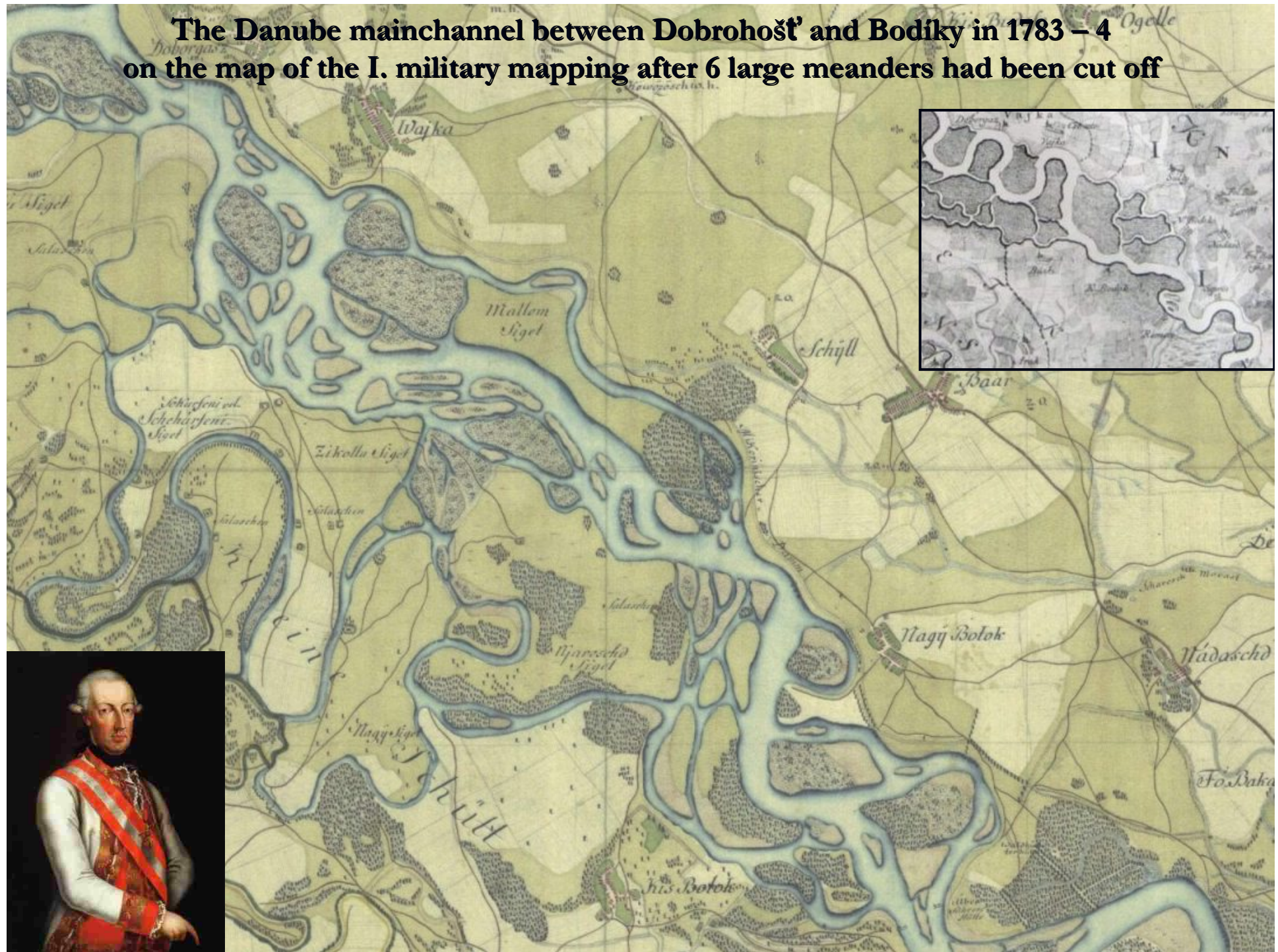


1753

Natural and human-induced channel changes of Bratislava's floodplain (A. FRITSCH map)



**The Danube mainchannel between Dobrohošť and Bodíky in 1783 – 4
on the map of the I. military mapping after 6 large meanders had been cut off**





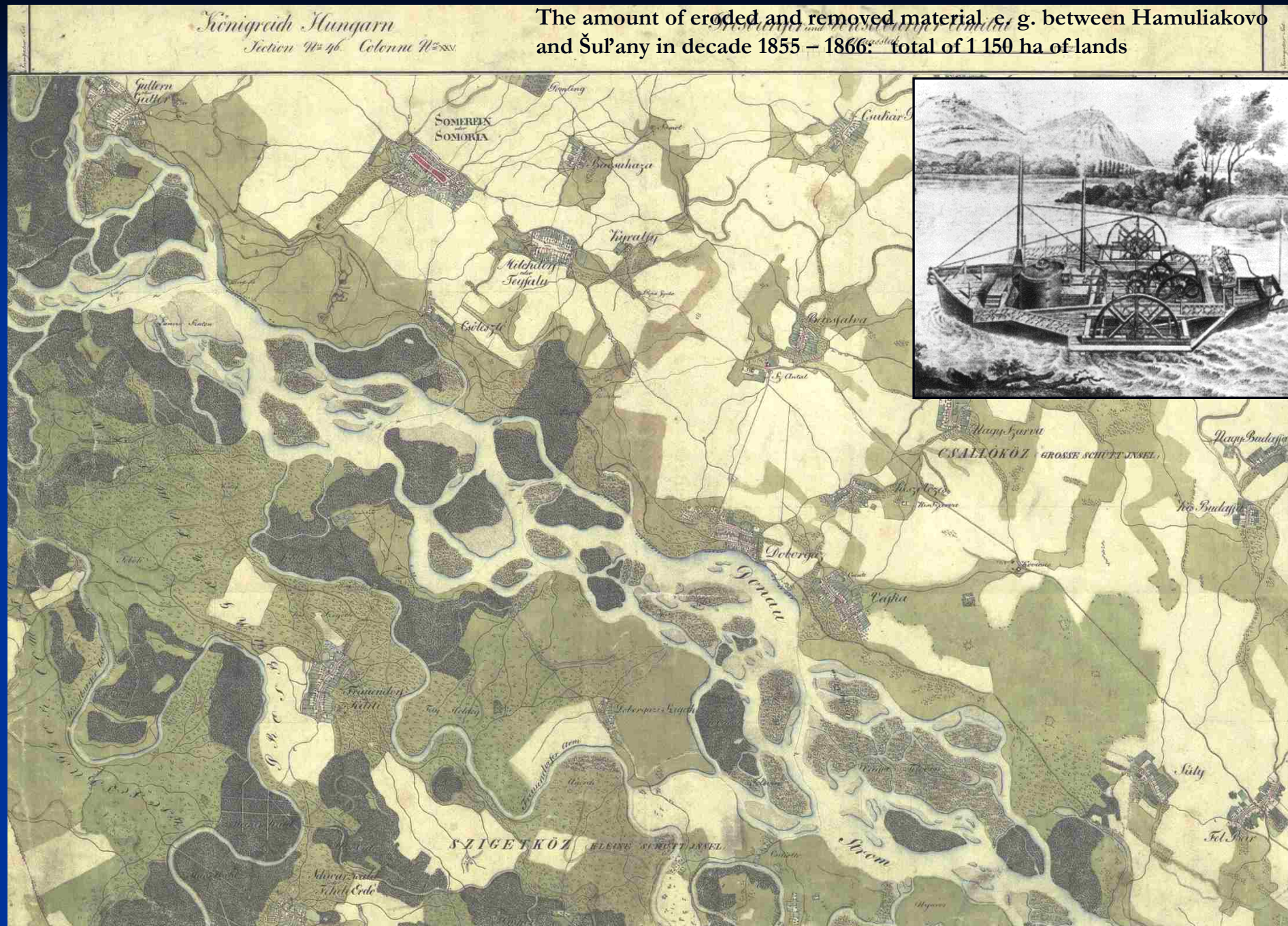
Old Danube riverbed, initial tree regrowth
on the bare gravel bar, river kilometre 1833.
State: 7 September 1994.

The same place 10 years
after (April 2004)



Danube mainchannel in 1840, on the sheet of the II. military mapping

The amount of eroded and removed material, e.g. between Hamuliakovo and Šul'any in decade 1855 – 1866: total of 1 150 ha of lands



Severest and most catastrophic ice floods of the late 18th and 19th Century

- 1709, ice jam flood
- 1730, May Vienna damaged, destroyed Bodíky (Nagybodak)
- 1740 200 meters long pile bridge pulled down during ice flood
- 1744
- 1753
- 1760
- 1767 – 8, great damage in Vienna, Bratislava and Pest counties, Vrakuňa bridge destroyed
- 1770, ice flood
- 1771, 10 June (highest water level since 1736)
- 1775, February
- 1778
- 1780
- 1784
- 1786
- 1787, October
- 1789
- 1790, lower Žitný ostrov flooded (Kolárovo, Komárno)
- 1799
- 1803-4
- **1809, január 29. - Bratislava**
- 1813
- 1815, February
- 1817
- 1829/1830 winter – the Danube at Žitný ostrov frozen 99 days
- **1830 - Vienna (70 people drowned); Bratislava**
- **1838 – in Pest destroyed 2281 houses, Buda 204, Óbuda 307, Esztergom 630 houses, 153 people died**
- 1841
- 1845, March (Praha elpusztult a Moldva vízgyűjtőjén)
- 1848-9
- **1850 - Bratislava**
- 1862, February
- 1876, February (lasted 51 days, 153 ember drowned)
- 1880, January
- 1883



Frozen Danube in Bratislava, winter 1927-28



Nature Reserve Ostrov Kopáč near Bratislava

Biota monitoring plot n. 1

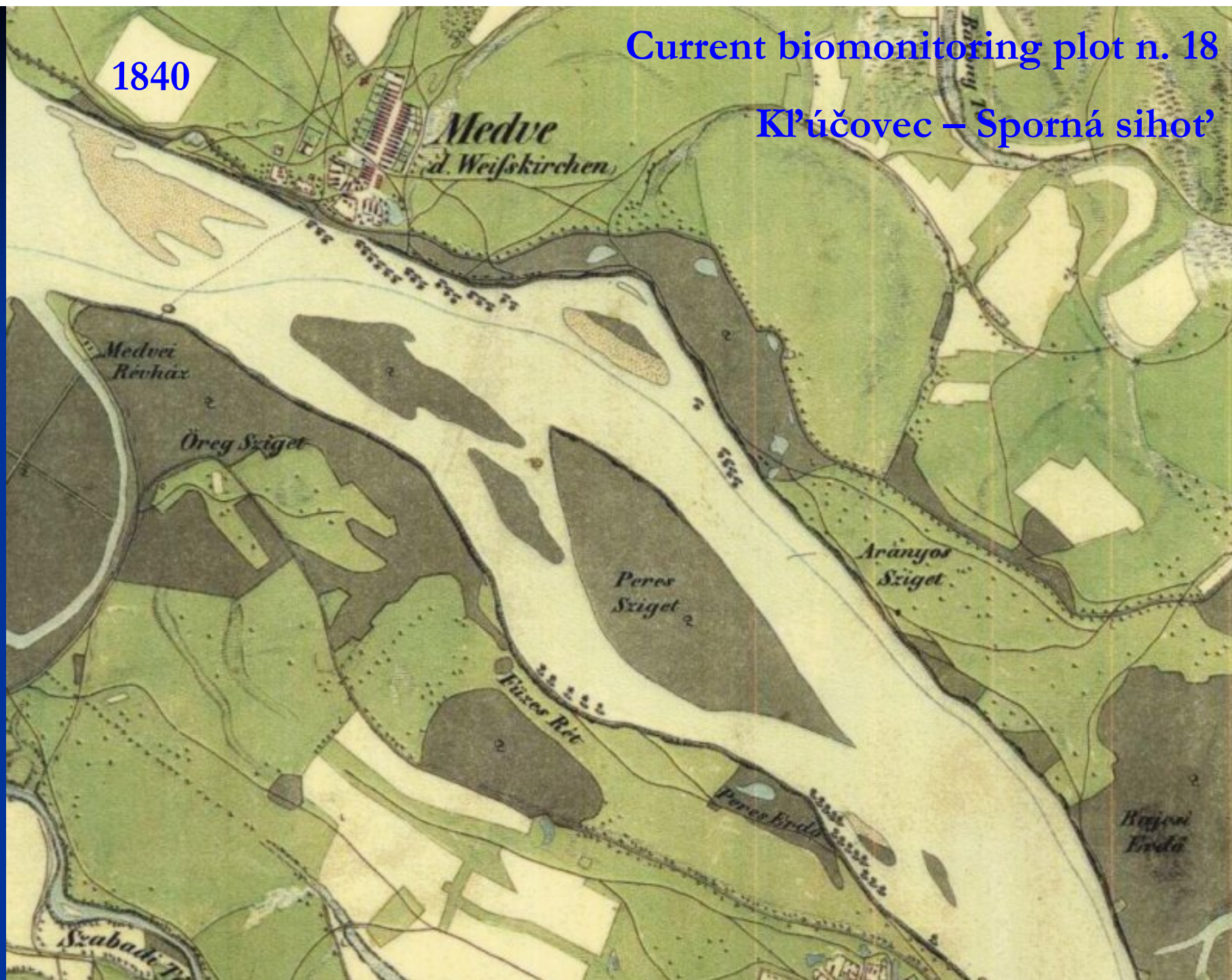
Similar sites: Szentendre, Hungary
Lobau (Vienna), Austria

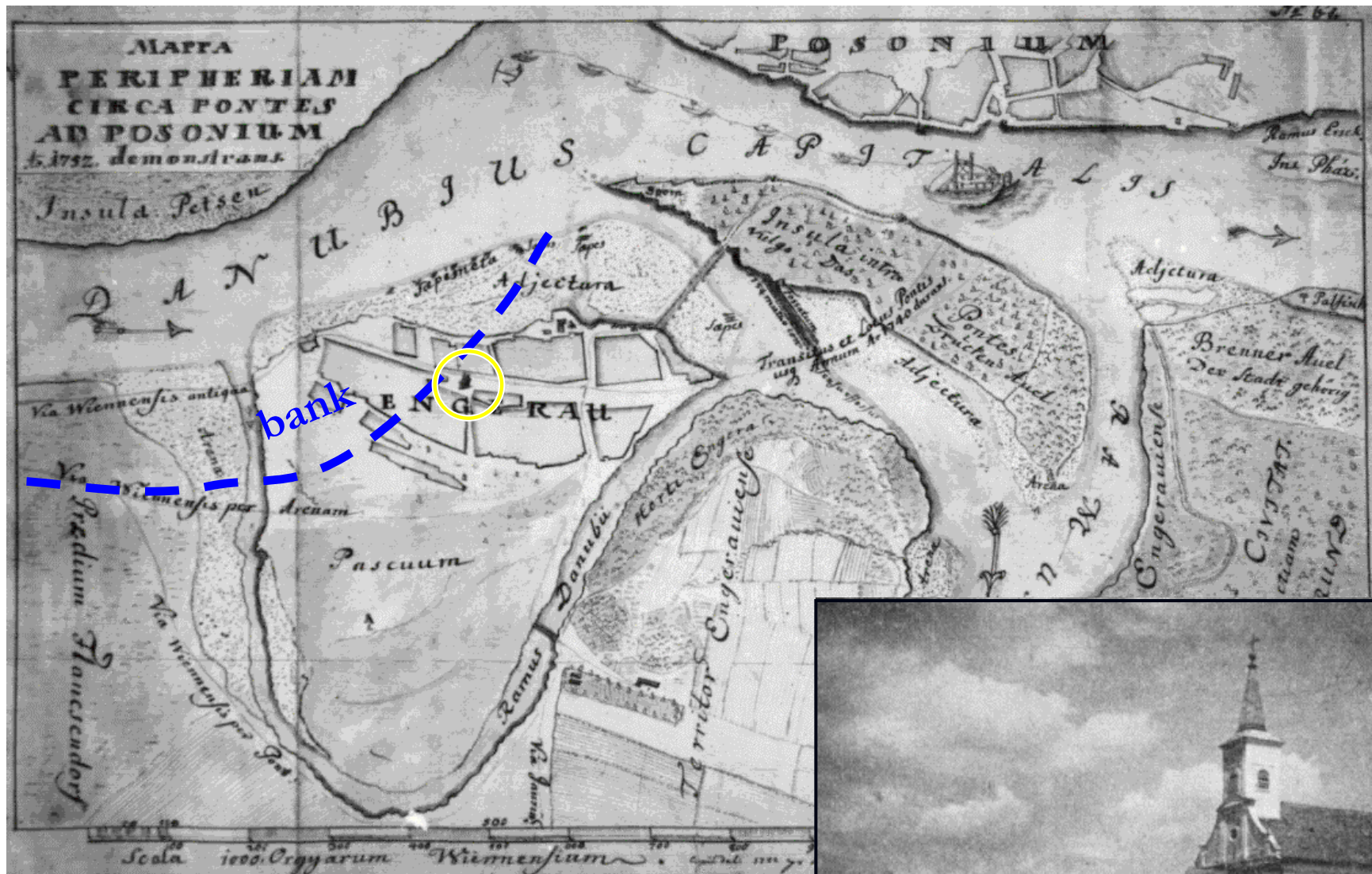


1840

Current biomonitoring plot n. 18

Kpúčovec – Sporná sihot'





between 1753 – 1769:
lateral shift of 150 – 200 m
annual erosion of 11 – 17.5 m.yr⁻¹



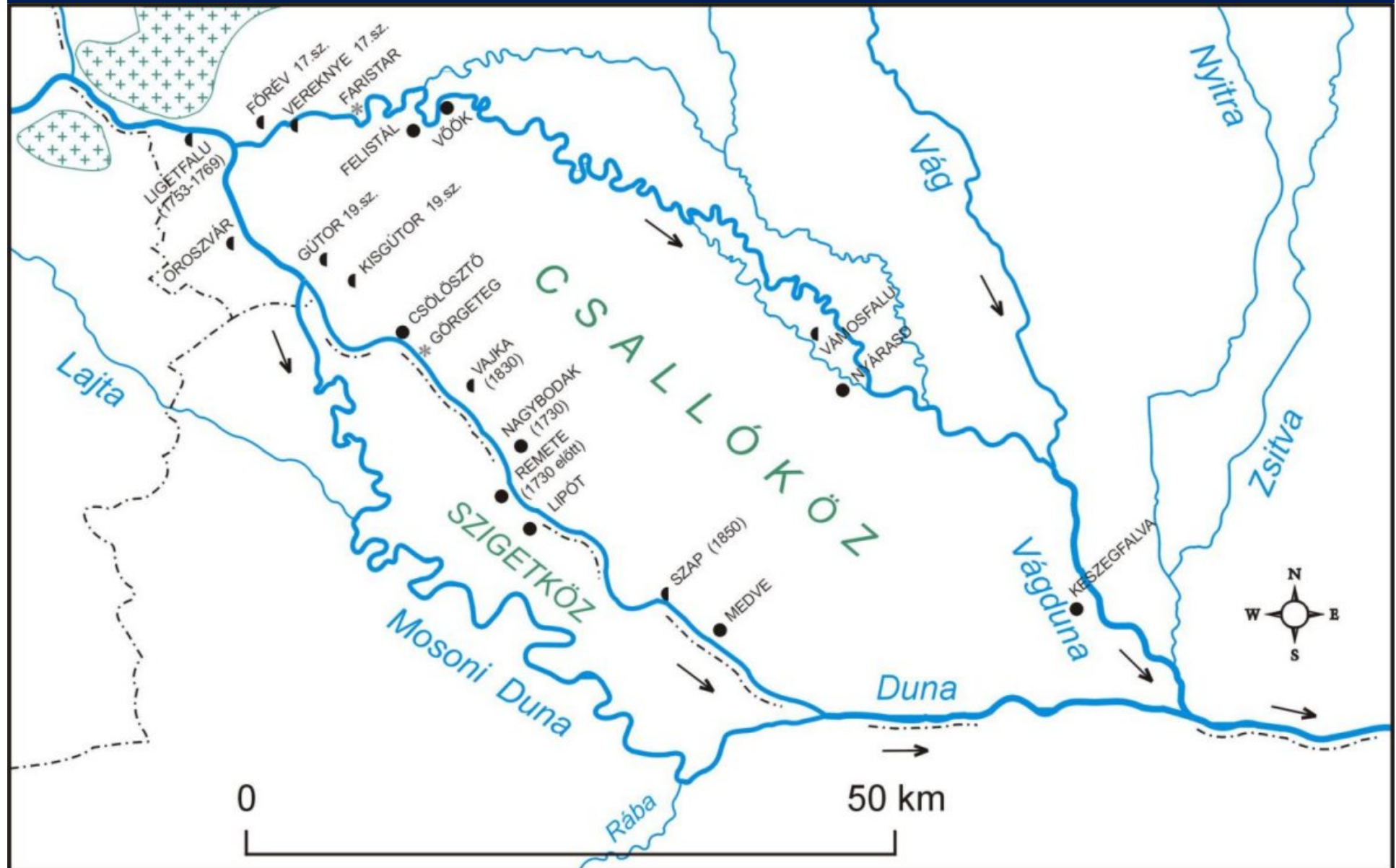
Artificial meander cutoffs in 18th century

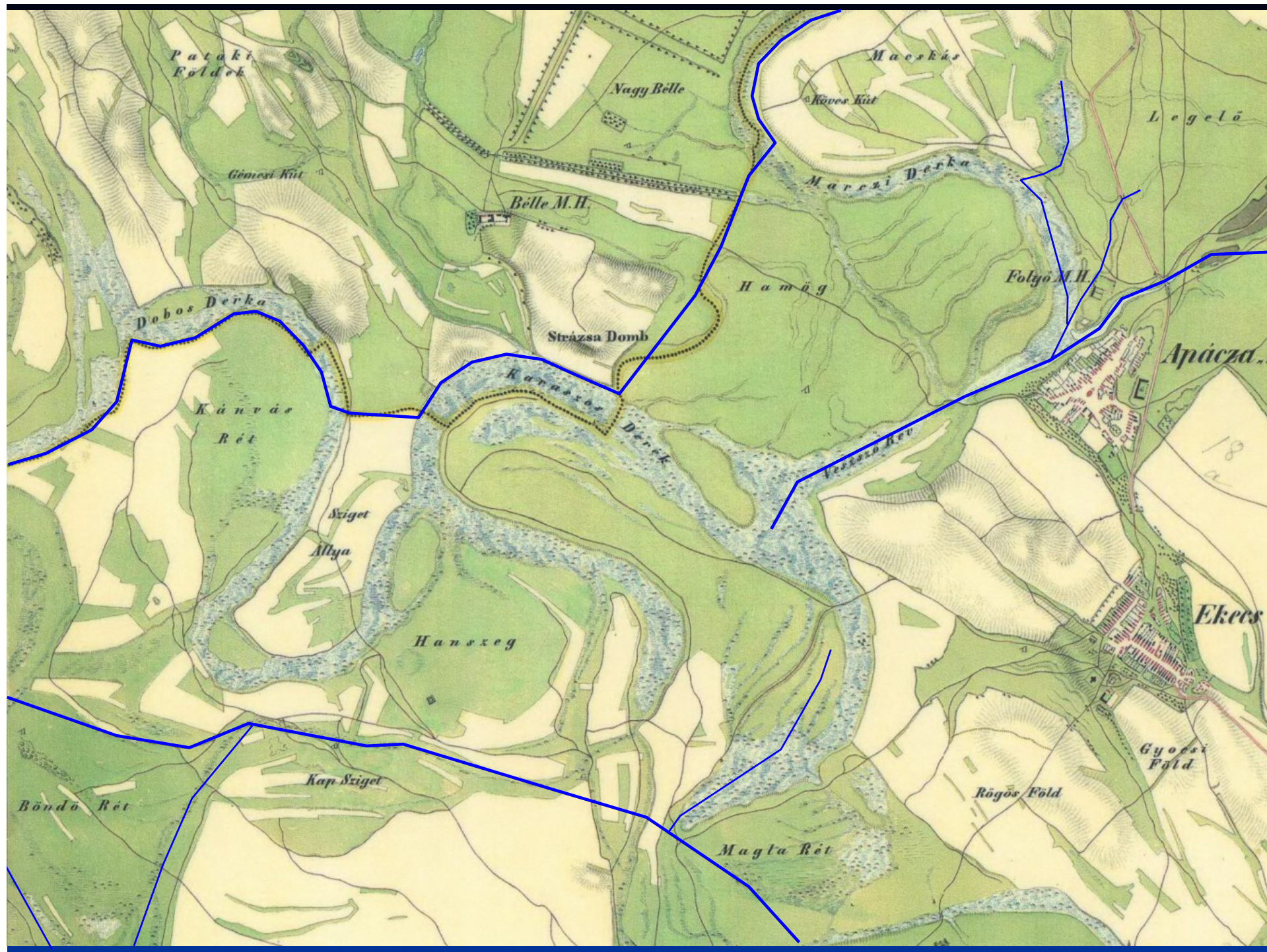
- **DANUBE MAINCHANNEL:** at Vojka around 1732 according to proposal of Samuel Mikovíni (for protection of Bodíky and lower Žitný Ostrov)
 - initial length 950 m, width 29 m
- 1817-18 Hamuliakovo (*Gútor*)
- **LITTLE DANUBE:** Trstice (*Nádszeg*): scheduled from 1751 onward, finally made in 1817, but already in 1827 and later in 1847 repeatedly re-dug by the county

-
- A photograph of a calm body of water, likely a lake or pond, surrounded by dense green trees and vegetation. A small wooden dock or pier is visible in the foreground on the left side. The water is still, reflecting the surrounding greenery and the overcast sky. The shoreline is lined with tall reeds and grasses. In the background, a dense forest of trees stretches across the horizon. The overall scene is peaceful and natural.

Csápolnaki (Holt)Duna - (at Nagybajcs)

Villages destroyed and/or removed to new localities by the Danube erosion





Recapitulation

- 1390 – 1426: → last major changes of the river network, disappeared **V á g k ö z**
- 16th – 17th century: maximum discharge and heyday of **Č a l o v**
- Increased flooding and lateral activity associated with **L i t t l e I c e A g e**:
 - ~ 1560 - 1580,
 - ~ 1650 - 1690 and
 - 1760 – 1860 (last onset of LIA – severe winters, ice floods, gravel accumulations)
- ~ 1780: meander cutoffs and tendency to braiding, partially as a response of channel changes in Bratislava
- Protective dykes: → problem of draining the „inner“ waters of Žitný ostrov
- 1886 – 96: Danube mid-flow regulation
- Relatively young age of floodplain-forest habitats, current rare and protected areas
- → **GREAT RESTORATION POTENTIAL OF THE DANUBE**

A photograph of a forest scene. In the foreground, a large, dark tree trunk leans diagonally across the frame. The ground is covered in dense green vegetation and fallen leaves. In the background, more trees and foliage are visible, creating a lush green environment. The text "Thank you for your attention!" is overlaid in the center of the image in a yellow, serif font with a black outline.

**Thank you
for your attention!**