

# Hydraulic works on the lower course of Adige River system as represented in the 16<sup>th</sup>-19<sup>th</sup> century cartography

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Adige and Po, the main Italian rivers by length, both cross the southern Venetian plain. On the one hand, they have formed and shaped it and, on the other hand, have made it an interesting place for settlements, urban, agricultural and industrial growth. Over time, Adige and Po Rivers have also supplied significant sources of water, food and energy, supported worship sites, fluvial navigation and trade but represented also a dramatic hydraulic risk factor.

The present-day course of Adige River in the southern Venetian plain is related to an important avulsion occurred in Bonavigo (in the middle part of the river course) during the High Middle Ages. It has shifted the river from the Montagnana-Este course (at the piedmont of Euganei Hills) to the present-day one, about twelve kilometres more to the south. After the fall of Roman Empire and this hydraulic event, that can be related with the climate deterioration of the Late Antiquity, the area suffered swampy conditions attested until the land reclamation operated by the Benedictine monks in the Low Middle Ages and by the Venetian Government in the Modern Age.

Paduan territory, which included the lands reclaimed by the Benedictine monks of Santa Giustina (one of the main monastery in the city of Padua) and was ruled by the powerful Da Carrara family from 1318, after many territorial conflicts, passed under Venetian rule in 1405 and so remained until the fall of the Venetian Republic in 1797. The conflicts between Padua and Venice continued between private landowners and the State, especially along the Adige River, which ever had an important role in the salt trade.

During the Venetian rule, local and external stakeholders acted important hydraulic works on the Adige River in order to improve its fluvial system. Among them, some had significant repercussions not only in the geomorphology of the area but also in the political and social conditions of the inhabitants.

The “Mappa del Padovano, del Polesine di Rovigo, del Dogado, della parte meridionale del Vicentino, del Trevigiano e della parte settentrionale del Ferrarese” of Giovanni Valle (1801) illustrates a portion of the Po Plain that spans, in latitude, from Treviso to Ferrara and, in longitude, from Legnago to the Piave River mouth, with a scale of about 1:150000. It shows the hydrography in late 18<sup>th</sup> century and also, as reported in the cartouche: “...the modern and ancient names of coasts, ports and rivers, the dates when new canals and meanders were cut-offs and also those when new channels were originates by the crevasses...”. As the author continues, the map depicts “...great and wonderful works on the rivers and on the seas as siphon bridges, rectification of rivers and channels, artifacts useful to social uses, to trade, to the navigation and to preserve the city of Venice by the infilling of the lagoon caused by the rivers sedimentation...”.

This Giovanni Valle map, very large-scale maps and project documentations from different authors that span from 16<sup>th</sup> to 19<sup>th</sup> century can describe in detail the hydraulic works on the low Adige fluvial system.

Among them, the Pettorazza artificial meander cut-off was performed in 1782-83 by the Venice Republic to preserve the surrounding area by the floods and represents an emblematic case of river regulation. It is one kilometer long and led to the cutting of about 3 kilometers in the river course.

The broader agenda of river management of the Venice Republic included also the artificial cutting of Adigetto Canal (1760) which is related to the building of Botti Barbarighe siphon bridge, the flooding of Po in 1951 and the subsequent formation of the Lezze little Lake (Gorgo).

Many of the water-related elements represented in the cartographical documentation presented in this work are suitable to be natural and cultural heritages, as well as interesting to study the evolution in the management of a large river system such as that of the Adige River.