Palaeohydrography of the Southern Venetian Plain in the Bronze and Iron Ages

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Introduction

The Adige and Po rivers occasionally intersected in the Southern Venetian Plain during the last four millennia: the two sedimentary systems do not have well-defined boundaries. Regional reconstructions of the late Holocene palaeohydrography, such as Castiglioni (1978), Peretto (1986) and Marcolongo & Zaffanella (1987), mostly rely on remote sensing data; the time of activity of the different river branches and their connection to the Po or to the Adige system were largely hypothetical and commonly based only on the interpretation of landforms and their association with surface archaeological remains. A comprehensive framework of knowledge concerning the late Holocene stratigraphic and paleogeographical setting of the area has been developed by Piovan et al. (2010 and 2012), based on high resolution stratigraphic data, radiocarbon dating and petrographical analysis. Specific investigations on the palaeohydrographical evolution around Adria and relations with the geoarchaeological setting has been carried out by Corrò & Mozzi (2017) and Mozzi et al. (submitted).

Here we present a review of recent advances on the palaeohydrographical evolution of the area with a focus on the Bronze and Iron ages.

Methods

• Remote sensing
• OTM processing and analysis
• Field survey
• Boreholes (from 4 to 9 m depth) and open sections
• Sedimentological analysis
• Sand petrography
• Radiocarbon dating

Results

Geomorphological sketch map of the Southern Venetian Plain

Palaeohydrography, alluvial ridges and deltas

The Friaulta alluvial ridge was formed by the Po R. in the Bronze and Iron ages. South of Rovigo, the Friaulta ridge divides in two branches, the Saline-Cola (SC) and Adria ridges (Piovan et al., 2010). The SC ridge runs SW-NW towards the Venice Lagoon and was active in the 3rd-2nd mill. BC. The Montagnana-Este Adige branch was its left tributary, thus the northernmost lobe of the Po delta was fed by both Po and Adige rivers (Piovan et al., 2012). The Adria ridge, which runs W-E towards Adria, was active in the early Iron Age until the 6th cent. BC (Balista, 2013; Mozzi et al., submitted), when the Tartaro R. started to flow in the area, with occasional inputs from the Adige R. as late as the 1st millennium AD (Corrò & Mozzi, 2017).

Holocene alluvial plain aggradation started as a consequence of the post-glacial sea level rise: the result has been a fine-dominated alluvial succession with common peat levels, up to 8 m thick in Conselve and Cona, starting from 5.5 ka cal BP (Piovan et al., 2010). This phase of major aggradation also resulted in the formation of sandy alluvial ridges by both Po and Adige channel belts, which fed large crevasse spays. Rates of vertical aggradation in the alluvial plain were particularly high since the Bronze Age. This suggests a possible influence of man-induced soil erosion, related to deforestation in the catchment, on the increase of the rivers’ sedimentary load.

References


Geoarchaeological analysis

Cross sections from manual cores

Digital Terrain Model of the Southern Venetian Plain (mod. from Piovan & Mozzi, 2013)

Adige Este to Po age:

The Adige Este adiges of the Southern Venetian Plain run NE-SW and were dominated by Roman times, spreading on the previous northern Po delta lobe.

Adige Adige to Po age:

The destruction of the Adige Este adiges of the Southern Venetian Plain run NE-SW and were dominated by Roman times, spreading on the previous northern Po delta lobe.

Bronze Age (3rd-2nd millennium BC)

Palaeohydrography and palaeodeltas (Piovan et al., 2012)

Iron Age (3rd-1st century BC)

Palaeohydrography and palaeodeltas (Piovan et al., 2012)