Fluvial and tidal meanders of the Holocene Venetian-Po Plain: from morphodynamics to stratigraphy

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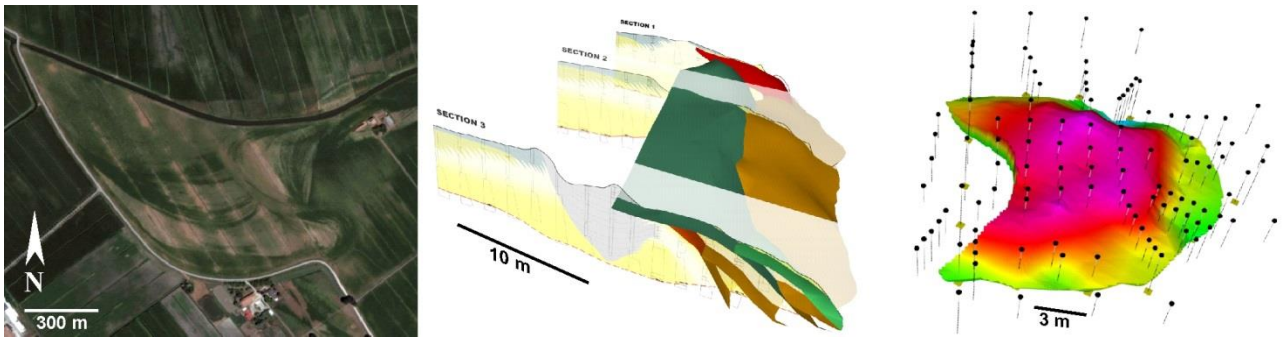
Densely-populated coastal and alluvial plains are often drained by sinuous fluvial, tidal and fluvial-tidal channels (SFTC), which, over the past millennia, modelled the landscape and accumulated heterogeneous sedimentary bodies. In the area at the boundary between the Po Plain and southern Venetian Plain (Italy), SFTC sedimentary bodies are widespread, and their internal depositional features control circulation in the most surficial aquifers and influence local subsidence. The proposed project focuses on these sedimentary bodies and develops through an integration between remote-sensing, sedimentological, geophysical analyses and 3D modelling.



The project aims at establishing a link between deposits accumulated by SFTC and their morphodynamic evolution. Towards this goal the PhD candidate will combine morphometric and sedimentological analyses, in order to provide quantitative 3D facies models. Specifically, Middle-Holocene SFTC, which are still extraordinarily visible through remote sensing (e.g. the relict meander belt of Adige between Conselve and Pontelongo), will be analyzed in terms of paleo-planform geometries and transformation styles. Internal sedimentary features will be defined through direct (e.g. sediment cores) and non-invasive (e.g. geophysical investigations) techniques in order to characterize the spatial distribution of their sedimentary facies and textural properties. Morphological, sedimentological and architectural data will be integrated to define 3D models depicting spatial distribution of different sedimentary facies.

Expected Results

The results of this project will allow the PhD candidate to:

i) establish how different morphodynamic processes affecting SFTC are recorder in related deposits.

ii) provide new insight to develop a new generation of fluvial facies models for deposits generated by SFTC

iii) highlight similarities and differences between fluvial and tidal channel bends and related point bar deposits

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