

## Geology and archaeology: the contribution of the archeo-database to the formation of Emilia-Romagna Geological Cartography (CARG project)

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### INTRODUCTION

For several years now the Department of Archaeology of Bologna University and the Geological, Seismic and Soil Survey unit of Emilia-Romagna regional authority have been working in tandem on an interdisciplinary study: the aim is to glean an understanding of the mutual conditioning of anthropic and environmental factors in the recent evolution of the regional landscape. In particular, one research project already underway focusing on the evolution, in terms of geology and geomorphology, of the Emilia-Romagna plain, is intended to help in the compilation of CARG cartography. The relatively recent origin of the plain and the role played by man in its organization means that geological analysis must be integrated with a historical study of its population. The presence or indeed absence of man and the various depths at which archaeological remains have been found, are elements that enable us to date the processes of soil formation and morphology, especially where that archaeological data is contextualised within the history of the population of the territory and the various forms of activity and settlement.

With this aim in mind, a special form was developed for documenting and recording all the information necessary for a clear picture of archaeological sites; this form facilitates management and updating of data as well as verification of its reliability and accuracy. Collected data has so far enabled around a thousand sites to be recorded, and it is therefore possible to outline the initial results of this study for a significant area of the region.

Figure 1– data collection form

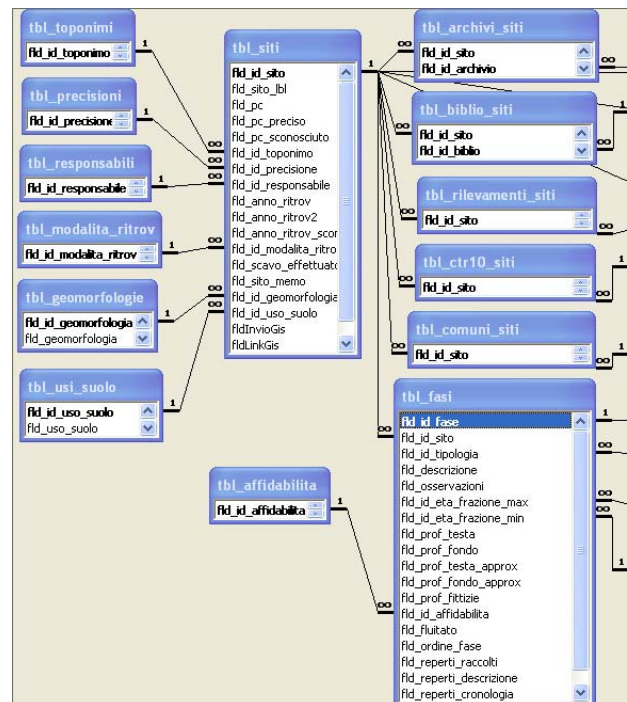


Figure 2– archeo-database schema

**THE STUDY AREA**

The collection of archaeological data in accordance with the new form and interdisciplinary analysis of the recent evolution of the plain have focused on a strip of land corresponding to sheets 200, 201, 202, 203 and 204 of the regional cartography, the CARG sheets of which are currently being published. This is quite a vast study area and can be considered representative of most of the problems affecting the Emilia-Romagna plain. The area stretches from the terraced plateaus of the Reggio Emilia foothills, with outcrops of very old soils indeed, characterised by the presence of numerous Palaeolithic sites, all the way to the extremely variable environments of the Po river delta.

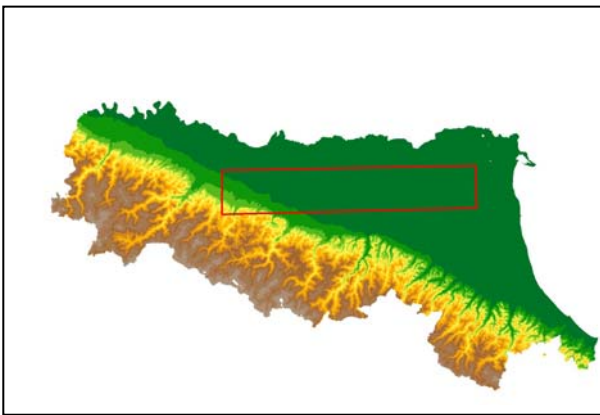


Figure 3 –The study area.

**INITIAL RESULTS**

The variety of landscapes studied revealed a number of recurring themes which reconfirmed the

importance of the interdisciplinary approach chosen. For example, one factor that came to light was the mutual influence of anthropic and environmental factors in shaping the landscape and determining settlements, in particular the fundamental morphogenetic importance of fluvial dynamics. For the reconstruction and dating of the latter, archaeological and archivist sources proved crucial, highlighting periods when anthropic action was able to control and determine the evolution of the territory, as well as periods when the territory underwent the greatest natural changes, for example due to climatic factors. These same sources, in particular data pertaining to the depth of archaeological finds, proved equally important for pinpointing and verifying the limits of surface units mapped on CARG sheets. As a double check, separate processing of data was carried out for some sectors, analyzing historical-archaeological data on the one hand, and geological-pedological data on the other. Comparison and evaluation of the independent results was subsequently carried out; this procedure revealed that although individually obtained reconstructions were substantially correct, the interdisciplinary approach offered greater accuracy in terms of defining the boundaries of units and the absolute chronology of phenomena.

Lastly, analysis of historical sources and the distribution of the main settlements helped determine the importance of the paleodrainage of rivers, evidence of which was found by studying aerial and satellite images. For example, these enabled us to identify dried sections of river bed of the Po river delta as principal distribution channels, based on their ability to attract early population.



Figure 4 – In the study area, the distribution of archaeological sites (outcropping unless otherwise stated) and the preservation of the division of land into two hundred-juger plots testifies to the diverse preservation of ancient soils lying east and west of San Giovanni in Persiceto.

### **EXPECTED DEVELOPMENTS**

Results obtained to date have encouraged us to continue with this project, firstly in order to compile other CARG sheets, which following verification of the suitability of the method described above will be compiled in an increasingly integrated and interdisciplinary manner, starting from initial data collection itself.

Other fields of application for the same method are being studied, for analysis of specific problems in sectors having similar characteristics, for example the dating of coast lines and the reconstruction of the relative paleoenvironments.

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