Non-destructive approaches applied to the environment of the archaeological site of Cerro de la Mesa, VII-II cent. BC (Alcolea de Tajo, Toledo, central Spain)

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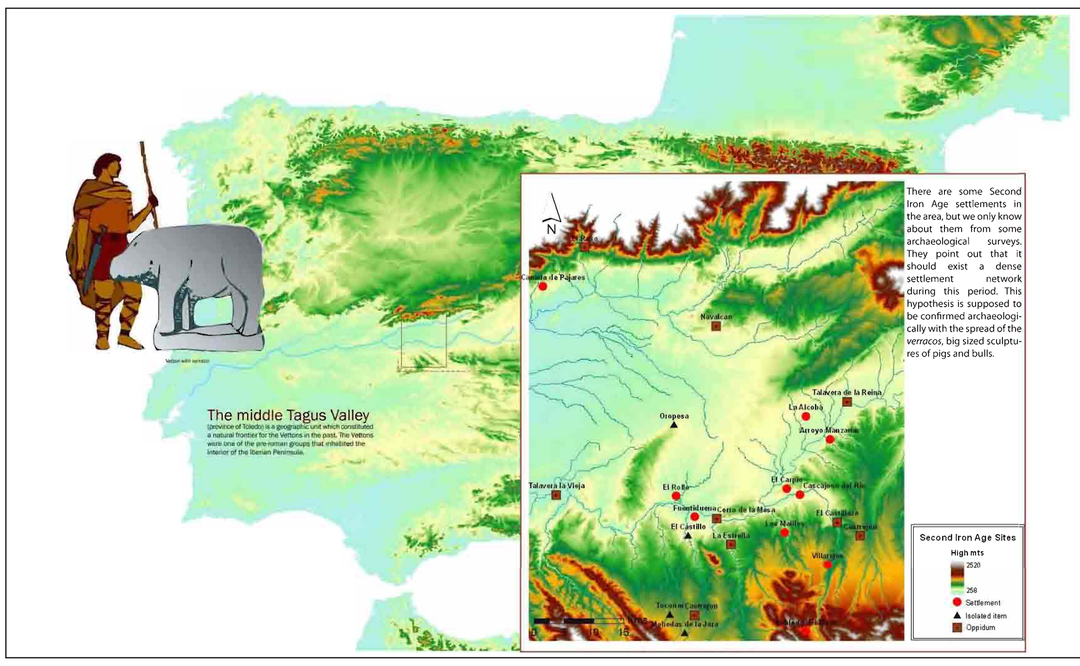
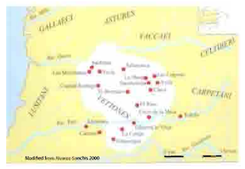


There are some Second Iron Age settlements in the area, but we only know about them from some archaeological surveys. They point out that it should exist a dense settlement network during this period. This hypothesis is supposed to be confirmed archaeologically with the spread of the *verracos*, big sized sculptures of pigs and bulls.



The archaeology of the area is still very little but particularly interesting because it is supposed to be a border space among some contemporary pre-roman groups.

The Cerro de la Mesa settlement is an Iron Age site placed on a ford over the Tagus river that had a crucial strategic relevance from the final phases of the Bronze Age till Roman times.
The Orientalising phase seems to have been very important, regarding to its location and archaeological materials and structures.
The last phase of occupation corresponds chronologically with the peninsular Second Iron Age (ca. IV-I cent. BC)

Summary

The protohistoric settlement of Cerro de la Mesa has a strong link with both topography and landscape. Located just at the end of a confined rock stretch in the middle basin of the Tagus River, it is situated beside a natural ford on rock (also called "permanent"), from which emerges the fertile floodplain of the river. The value of these natural resources is even greater if we consider the surrounding environment of granites, arkosic sands and aeolian mantles of low fertility.
The relationship between prehistoric activity and this landscape and its natural resources created a complex site, whose context is being approached from a non-destructive perspective, both geoarchaeological and geomorphological.
Fluvial geomorphology is essential for the analysis of the bedrock fords (now under the dam of Azután) and the alluvial bed downstream, with special emphasis on such issues as their distribution, duration and periods of use, or their relation to the most favourable paths on either side of the river.
We are approaching the presence of nearby aeolian deposits, detected in the course of archaeological survey, from a sedimentological point of view, so that we get to know their chronology, origin and extent. These deposits are of great importance for the attempt to reconstruct the landscape context of the site and the configuration of the agrarian landscape.
The techniques and working methods we are using include GIS tools to analyse LiDAR models, high-resolution satellite imagery and aerial photographs from the 50s, among others. The latter are fundamental to study the evolution of the landscape, such as the fords currently hidden by the dam.
Fieldwork has been carried out to describe and sample different Quaternary deposits, in order to analyse their mineralogical and sedimentological properties, as well as their absolute chronology (OSL).
Finally, by using petrographic analyses it has been possible to identify the source of the raw materials employed in ornament and wall structures.

METHODOLOGY

Geoarchaeology

PALEOZOIC

Petrography

Petrographic analyses from the studied samples and several granitic outcrops from different areas have been developed in order to constraint the raw materials used in ornamental and wall structures.
The results suggest that the materials used for the walls were taken from the surrounding granitic outcrops.
On the contrary, other different granitic rocks, vissually more decorative and located far away from the current deposits, were used for the elaboration of the ornamental structures.

Samples		Provenance	Pluton
Cerro de la Mesa	EMP	Surroundings	Aldeanueva
	MURO	Surroundings	Aldeanueva
	ESC	11 km NW	Valdeverdeja
	INS	11 km NW	Valdeverdeja
Verraco sculptures	VB	12 km SW	Valdeverdeja
	DB	15 km SW	Valdeverdeja
	VR	Surroundings	Aldeanueva

Left: Some of the sampled elements
Right: Thin section microphotographs (4x)

PLEISTOCENE

Sedimentology

Landscape reconstruction around the archaeological site.

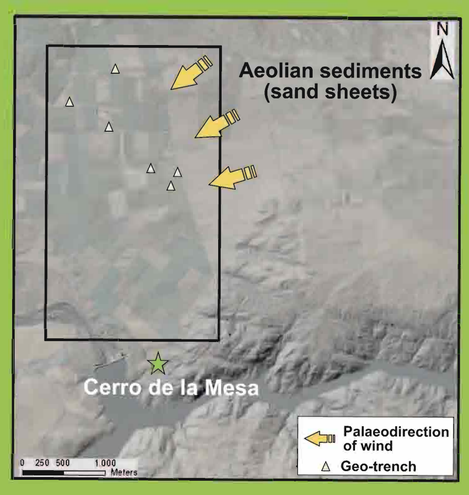
Aeolian deposits:

- Covering archaeological remains?
- Poor or good for agriculture?

Deposits characterization:
spatial distribution, age, depth, origin, size, mineralogy, shortness

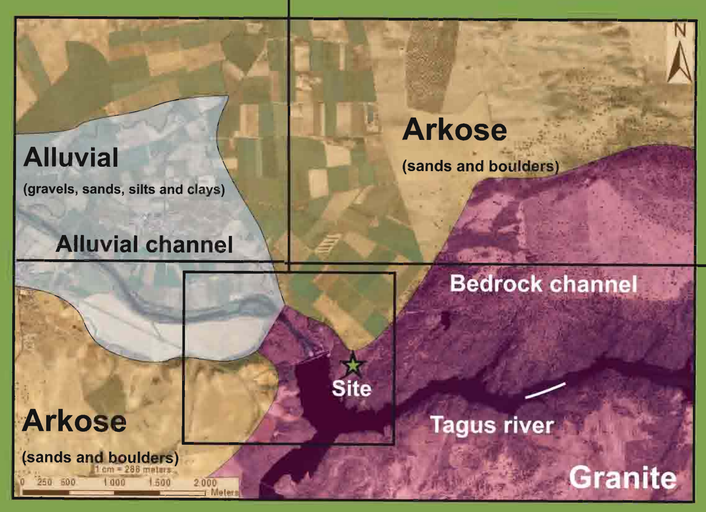
?

Non invasive techniques:
Geomorphology based on LIDAR
Stratigraphy description
Sampling campaign
Laboratory analysis



HOLOCENE

Fluvial Geomorphology



Alluvial channels: riffle-pool sequence

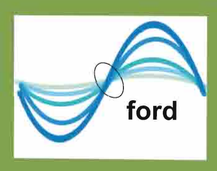
Fords (riffles) use to be in inflection points between consecutive meanders.
Wide and shallow.

Relative short-time:

~10-100 years: No change

>100 years: Difficult to locate due to:

- channel migration and cutoffs
- floodplain rework



Bedrock channels: step-pool sequence

Fords controled by rock characteristics: lithology, dykes, faults, etc.

Narrow and deep

Long-term (**~100-1000 years**):

- No change
- Difficult **to locate** due to anthropic changes (Azutan, dam construction)

ANTHROPOCENE

GIT

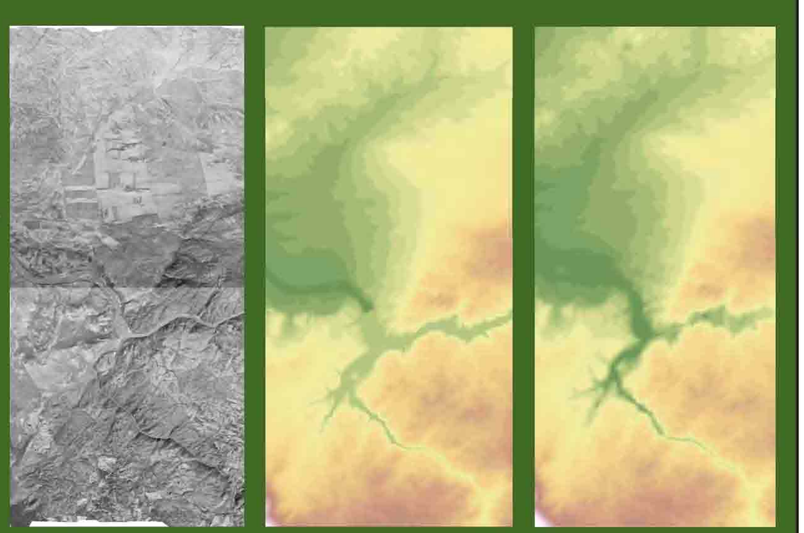
Non invasive techniques:

Geomorphology and DTM reconstruction from aerial photos of 1956

Digital Photogrammetry
GIS
Remote Sensing
GPS archaeological survey

Landscape analysis
Photointerpretation

Results + Conclusions
Thematic Cartography



Orthophoto from 1956 | Current topography | Pre-dam topography

NDTechniques