



## Palaeo-environmental significance of North African Plio-Pleistocene calcrete deposits

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Continental carbonate deposition represents an important archive for the determination of climate changes (Marinova et al., 2014). Indeed, calcrete crusts have a wide geographical spread in many Mediterranean regions, where they constitute the Plio-Pleistocene boundary marker. However, the climatic significance of this important stratigraphic Formation is not well understood. From here came the idea to study very well-developed calcrete beds, reaching 2m of thickness, from North Africa along a north-south transect which crosses climate boundary between latitudes 33° and 36° N. The representative samples were collected from three sites: North (N36°.43.713 E10°.06.681), centre (N35°.07.077' E10°.14.545') and south (N33°.28.898' E10°.20.597').

Our aim was to determine the depositional environment(s) and the climatic conditions responsible of the formation of calcretes across North Africa during the Plio-Pleistocene transition using micromorphological and cathodoluminescence (CL) analytical techniques, and test whether all sites reflect the same conditions or not.

The samples from the north and centre sites are characterized by (i) bioclasts, rounded micritic clasts, coated grains, plant cells, organic matter and aggregate grains indicating a calcrete crust resulting from leaching of a soil or by (ii) peloids and bioclasts indicating a palustrine environment. In both environments crystal size varies from 70 to 700  $\mu\text{m}$  but the percentage of these crystals is bigger in the centre site. The south site is characterized by the dominance of peloids and with the presence of some bioclasts suggesting a palustrine environment. The percentage of crystals (76  $\mu\text{m}$ ) is larger compared to other sites.

Both types of environments show laminae with different directions varying from horizontal, vertical to oblique. Fissures and cracks are fully cemented by sparite and they cross the bedding. We interpret this feature as post sedimentary processes affecting the calcretes such as cracking, cementation and recrystallization.

All these micromorphological features are the result of complex interactions of biological, chemical and physical processes that make them sensitive recorders of climatic and environmental changes.

So, thick carbonates beds of North Africa are essentially pedogenic and palustrine deposits which suggest wetter conditions during the Plio-Pleistocene. The Centre and especially the South site are of particular interest because they are located in the today dry area of North Africa. They provide an important constraint on the magnitude and geographic extent of wetter conditions than at present.

In our poster we will show petrographic and CL photos highlighting the differences and similarities of deposits collected in the different sites from the north to the south of North Africa. We discuss the significance of our findings in terms of the depositional environment of these deposits to interpret the palaeo-climatic conditions and their geographical extent.

**Key words:** non marine carbonates, calcretes, palustrine deposits, palaeo-climate, palaeo-environment, Plio-Pleistocene, North-Africa.