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Post Tyrrhénian deformation analysis in the Sahel coast (Eastern Tunisia): seismotectonic events implication

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The eastern coast of Tunisia is characterized by Pleistocene coastal deposits considered as a reference of interglacial high sea levels. In this region, the stratigraphy of Tunisian Pleistocene deposits was first established on the basis of geomorphological, lithostratigraphic, biostratigraphic criteria and U/Th data. They have been subdivided into three superimposed formations, from the oldest to the recent “Douira, Rejiche and Chebba” including coastal marine (Strombus bubonius), lagoonal and eolian sediments. These marine formations are organized into parallel bars to the actual shoreline overlaying unconformably the Mio-Pliocene and “Villafranchian” deposits.
A luminescence dating method IRSL applied to alkali feldspar grains from the two sandy marines units of the Douira formation demonstrate for the first time the presence of two successive interglacial high sea level events correlative of MIS 7 and MIS 9. These sandy marine units are separated by a major erosional surface and by a continental pedogenised loamy deposit related to a low sea level event which might be assigned to MIS 8.
Variations in the height of these marine unit (+13 to +32m) in the Sahel coast reflect a significant tectonic deformations and show precious geomorphological and tectonic markers. An extensive brittle deformations analysis has been carried out in several sites. A detailed analysis of fracturing is based on studies of fault-slip data population and of joint sets. It allows reconstructions of post Tyrrhenian stress regimes which are characterized by N170-016 compression and N095-100 extension.
In this paper we present, the combination of IRSL data applied to these raised marine deposits and a reconstruction of tectonic evolution in term of stress pattern evolution since the Tyrrhenian allowed us to assign an accurate the recent tectonic calendar. These reconstituted events will be replaced and will be discussed in the regional setting of sismotectonic activities of the north western African margin.