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Sedimentological analysis and long term chronostratigraphy (> 30 ka) of turbidite record offshore the central Algerian margin

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The Algerian margin is a Cenozoic passive margin located at the diffuse plate boundary between Eurasia and Africa, presently reactivated in compression. It is among the most seismically active areas of the Western Mediterranean and it suffered from numerous devastating earthquakes, for example the El Asnam earthquake in 1980 (Ms = 7.3) and the Boumerdès earthquake in 2003 (Ms = 6.7). A consistent dataset of sediment cores was collected between 2003 and 2007 during the MARADJA and PRISME cruises. Previous work has focused on the Holocene and allowed to highlight a consistent paleosesimological record in the central area of the Algerian margin (Algiers area). The purpose of this work is to extend the sedimentary analysis of turbiditic deposits over longer periods of time (throughout the Last Glacial Maximum), in order to determine whether the record of seismic events is exploitable, or if the impact of climate-driven and eustatic variations is dominant in turbidite triggering and accumulation.

A sedimentological and stratigraphic approach was performed on the three most distal sediment cores of the area: PSM-KS21, PSM-KS23 and PSM-KS27. The establishment of an age model is based on radiocarbon dating and measurements of oxygen stable isotopes on planktonic foraminifera collected from the pelagic intervals (hemipelagites) interfingered with the turbidites. A homogeneous clay bed identifiable by its grey colour is a marker to correlate the three cores and it is dated between 18 and 19 ka BP. The PSM-KS23 core has the longest sedimentary record, thus it was used as a reference. Preliminary results show a significant increase in the number and thickness of individual turbidites between 10 and 20 ka BP. The expected results of this work are: 1) to determine whether the number of turbidites is consistent and correlates among the three cores; 2) to assess if the paleo-earthquake signal related to turbidites can be extracted beyond the Holocene; 3) to identify the recurrence interval of recorded paleo-earthquake events.