



Role of tectonics in deposition processes along the western Algerian margin (Oran-Tenes) from echo-character

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The northern offshore Algerian margin, south-western Mediterranean, is mainly controlled by active blind thrusts. However, the western part (Oran-Tenes) seems less seismically active as few active structures have been identified. Conversely, past large seismic events occurred onland, as evidenced by the 1980 El Asnam or the 1891 I=X Tenes-Gouraya earthquake, which shook the entire region and generated large turbidity currents as well as cables ruptures. Therefore we suspect the presence of offshore sedimentary instabilities there. That is in fact what we observe, some of them being clearly associated in space with salt domes or faults. In this study, we aim at presenting the results of the combined interpretation of the echo-character distribution maps with the backscatter imagery and the cores, for the regions of Tenes and Oran, using the Maradja 2003 cruise data. The EM300 multibeam bathymetry and backscattering data enabled us to identify the drainage network of the margin (canyons and channels) and to identify active regions in terms of sedimentary processes (activity of canyons, instabilities and sediment waves). The CHIRP (2-5 kHz) data was used to identify and classify the echo-characters in about ten categories, the main ones being "transparent", "hyperbolic", "rough" and "bedded", using the method of Damuth (1980 and 1994). Finally, we tentatively associate each type of echo-character with a sedimentary type, using the available Kullenberg cores, and with a depositional process. For the Oran zone, the area with the highest density of sedimentary instabilities is the sector between Arzew and the Western Habibas islands. This sector also presents large areas

with chaotic echo-characters and buried gravity deposits. The occurrence of turbidites and debris flows can be correlated with the presence of the strike-slip fault identified offshore the Habibas Islands (Yusuf fault) or with avalanches corridors that drain periodically the sediments remobilised by the Oranese seismicity. We also notice that this part of the margin presents a high local slope. In the Tenes area, although the lack of data in the deep basin and the steep slopes make the data interpretation difficult, we observe less mass deposits on the sea-floor than in the Oranese region, but more buried ones, sometimes with evidence for recurrence. The sector West of El Marsa seems controlled by the deep-sea fan of El Marsa (levees destabilisations and sediment waves). We also observed small-scale destabilisations on the salt diapirs flanks. East of Tenes, the perturbation of the sediments may have a tectonic origin (Khair al Din reverse fault) mixed with hydrodynamic processes, as we see sediment waves or contourites on the bathymetry. For the whole region, as areas are presenting recurrent mass-deposits, we suggest that this may be in favour of a tectonic control (at least in part) on the sedimentary instabilities. This seems in good agreement with the studies of the cores by Giresse et al. (see poster in same session). These results need to be confirmed by sampling datations and more corings, in order to be able to correlate instabilities with historical seismicity.