



Stratigraphic architecture of the Plio-Pleistocene sedimentary record, offshore western Niger Delta: A record of eustatic and autocyclic forcing.

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This study presents the stratigraphic architecture of the Pliocene-Pleistocene sedimentary record of the western Niger Delta over the last ~5.5 Myr based on detailed interpretation of high-resolution 3D seismic data calibrated with 5 boreholes located on the slope. The sedimentary record is subdivided into 'Upper and Lower seismic Units' based on seismic reflectivity and architectural elements. The Lower seismic Unit (LSU) overlies hemipelagic drape (HDP) dated at ~5.5 Myr, and is characterized by successions of erosive mass transport complexes (MTCs) with two events that are in turn overlain by channel levee systems (CLS) ultimately capped by HDP. These architectural elements represent deep-water depositional sequence. The MTC events and CLS are interpreted as sediment transfer from platform borders to the deep-basin during major lowstands and/or slope failures. The HDPs represent slow sedimentation rates during transgressive/highstands systems when sediments were probably trapped on the shelf. The Upper Unit is marked at the base by the most laterally extensive MTC event, overlain by thin CLS draped by HPD. These architectural elements are followed by the alternation of high-amplitude, well-developed CLS, thinner MTCs and HPDs. The preponderance of CLS in the Upper seismic Unit could indicate overall progradation and mark episodes of sediment export from the shelf punctuated by hemipelagic deposits during periods of sediment sequestration. The sequential distribution of architectural elements and seismic facies in this unit are drastically different from those observed in the Lower Unit. We propose that the Lower and Upper seismic Units respectively individualize 400 kyr and 100 kyr Milankovitch cycles. Comparing the eastern and western domains of the Niger Delta, our data support an overall increase in sediment supply to the western Niger Delta over the Pliocene-Pleistocene in contrary to the eastern part, which from previous studies, undergoes a general retrogradation and reduction of sediment fluxes.

Keywords: Niger Delta; Stratigraphic architecture; Pliocene-Pleistocene; Milankovitch cycle; Sediment fluxes.