



The influence of paleo currents upon the Santaren Channel and the adjacent carbonate platforms, Bahamas.

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The closure of the Central American Seaway and the reorganization of the ocean currents had a global impact on earth's climate. The sedimentation of the Great Bahama Bank (GBB) and the smaller Cay Sal Bank (CSB) are influenced by the Atlantic North Equatorial Current and the Florida Current. New high-resolution multichannel seismic data sets tied to the IODP leg 166 wells document that the shape of Bahama Banks and the sedimentation processes in the Santaren Channel (SC) between GBB and CSB are strongly related to changes in the strength of these currents.

Since the Upper Miocene, the SC is filled up by a huge package of drift sediments, namely the Santaren Drift (SD). The buildup of the SD causes a local high in the recent bathymetry perpendicular to the surrounding steep platform slopes. The SD shows a typical mounded morphology and progrades northwards in direction of the Florida Channel. The SD was established during the late Miocene. Seismic facies and internal configuration indicate an environment of a stable north flowing current with a major depocenter related to the center of the SC. Additionally, a second depocenter at the central eastern flank of CSB established and preserved till early Pleistocene when the slope sedimentation starts to dominate. This depocenter points to a strengthened countercurrent component in the eastern SC. From the lower Pliocene to the upper Pleistocene the volume of the SD expanded, associated with an intensification of the current in the SC along its eastern flank, indicated by deep erosional channels parallel to the margin of GBB in the northern part of the survey area. This trend probably was initiated as a consequence of current reorganization due to the final closure of the Central American Seaway. Lower slope sediments from GBB are eroded or only minor parts are preserved from lower Pliocene to upper Pleistocene. With late Pliocene falling sea-level, gravitational slope sedimentation from GBB into the SC increased with concurrent decrease in sedimentation rate of the SD. The drift depocenter shifted toward the margin of the GBB, approaching the modern situation.