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Development history of a Tertiary shallow water carbonate system (Malampaya, offshore Palawan, Philippines): a new record from high-resolution 3D seismic and well data

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The newly acquired high-resolution three-dimensional seismic survey, associated with well analysis, allowed a better understanding of the internal architecture of the Malampaya buildup (Late Eocene to Early Miocene, offshore NW Palawan), i.e. a carbonate platform whose development was largely controlled by tectonic deformation. The Malampaya carbonate system was initiated in the Late Eocene, as an attached shelf controlled by significant clastic supplies. The Late Eocene – Early Oligocene shelf has undergone syn-depositional extensional tectonics (eastward tilting and block faulting) that promoted the formation of small size buildups on structural highs. After a prograding phase eastwards, deposits on the carbonate shelf, commonly affected by subaerial exposure, have aggraded, from the earliest Late Oligocene to the Early Miocene. During this period, recurrent reactivation of highs along the western and northeastern of the system margins has controlled asymmetry and internal architecture of the system.Finally, the demise of the buildup occurred in the late Early Miocene. It has probably been caused by an increase in subsidence rate and/or a strong increase in nutrient delivery. However, other factors as ssea level changes, inimical oceanographic conditions and production rates of the carbonate producers partly have contributed to the ultimate demise.