

Eratosthenes Seamount: The evolution of an isolated carbonate platform at a major plate boundary (offshore Cyprus)

Papadimitriou Nikolas (1,2), Christian Gorini (2), Aurélie Tassy (2,3), Remy Deschamps (1), Fadi Nader (1), and Jean-Claude Lecomte (1)

(1) Georesources Department, Geosciences Division, IFP Energies Nouvelles (France), (2) ISTEP, UMR 7193, UPMC, F-75005 Paris (France), (3) CEREGE Centre Européen de Recherche et d'Enseignement en Géosciences de l'Environnement, Aix-Marseille Université (France)

The Eratosthenes Seamount is a 5-km thick isolated carbonate platform, located adjacent to the deep marine facies of the Levant Basin. In general, isolated carbonate platforms are attractive exploration targets and this was confirmed by the recent discovery of light oil in the Lower Cretaceous platform south of Eratosthenes Seamount. In this study, we applied seismic stratigraphy concepts to better understand the tectonostratigraphy, the sedimentary architecture and morphologies of successive shelf edges of the Eratosthenes carbonate platform from the Jurassic to the present day. The evolution of the Eratosthenes Isolated Carbonate Platform has been compared to the Egyptian margin and other ancient and modern isolated carbonate platforms. The onset of the carbonate platform is marked by a post-rift Jurassic retrograding and aggrading seismic unit. This unit is characterized by rapid lateral changes in the seismic facies that are interpreted as a succession of carbonate mounds. An upper unit is characterized by cliniforms which are interpreted as oolitic shoals. The upper unit is topped by a regional unconformity, and is succeeded by a Cretaceous aggrading carbonate platform characterized by a variety of different seismic facies interpreted as fore- reef deposits, buildups and lagoonal facies. Our seismic interpretation shows that the Cenomanian-Turonian platforms are characterized by an increase in accommodation space together with high carbonate production and followed by major regional flooding. From the late Oligocene to the early Miocene, the Levant Basin was inverted and Eratosthenes sea mount collided along the Cyprus Arc. A flexural regime led to the deformation of the Eratosthenes Seamount and the growth of shallow carbonate reefs. At that period, deposits in the Levant Basin were characterized by chaotic seismic facies interpreted as Mass Transport Deposits (MTDs) related to the collision between the Eratosthenes carbonate platform and the Cyprus Arc.