

Accepted Manuscript

Tectono-stratigraphic evolution of the western margin of the Levant Basin (offshore Cyprus)

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PII: S0264-8172(18)30050-3

DOI: [10.1016/j.marpetgeo.2018.02.006](https://doi.org/10.1016/j.marpetgeo.2018.02.006)

Reference: JMPG 3234

To appear in: *Marine and Petroleum Geology*

Received Date: 16 May 2017

Revised Date: 4 February 2018

Accepted Date: 6 February 2018

Please cite this article as: Papadimitriou, N., Gorini, C., Nader, F.H., Deschamps, R., Symeou, V., Lecomte, J.C., Tectono-stratigraphic evolution of the western margin of the Levant Basin (offshore Cyprus), *Marine and Petroleum Geology* (2018), doi: 10.1016/j.marpetgeo.2018.02.006.

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1 **Tectono-stratigraphic evolution of the western margin of the Levant Basin**
2 **(offshore Cyprus)**

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7 **Keywords:** Geodynamics, Levant Basin, Eratosthenes Seamount, Carbonate platforms,
8 Seismic stratigraphy, Seismic facies

9 **Abstract**

10 Stratigraphic interpretation of twenty-four 2D seismic reflection profiles coupled with
11 available well data from the Ocean Drilling Program (ODP) offshore Cyprus enabled
12 identification of the main unconformities and the seismic packages in the western part of the
13 Levant Basin and their correlation with major geodynamic events. The basic concepts of
14 seismic stratigraphy were applied to improve our understanding of the tectonostratigraphy
15 and the sedimentary architecture of Eratosthenes isolated carbonate platform. This platform is
16 composed of dominant retrograding and aggrading Mesozoic carbonate build-ups and its
17 evolution partly resembles that of the Egyptian margin. Deep-water mixed carbonates and
18 siliciclastics probably prevailed in the basin during the Early Cretaceous. During the Late
19 Cretaceous, these platforms were drowned. Following the convergence of the two plates, both
20 the Eratosthenes Seamount (ESM) area and the Levant Basin progressively became part of a
21 foreland basin along the Cyprus Arc. Different units in the Eratosthenes carbonate platforms
22 (ECPs) and the transition to the deep Levant Basin are detailed here for the first time. We
23 present a 3D conceptual model for the evolution of the western margin of the Levant Basin.
24 We discuss the effect of the Miocene collision between the Cyprus Arc and Eratosthenes to
25 understand the presence of upper Miocene Mass transport complexes (MTCs) in the deep
26 basin and the tilting of the top of the adjacent ECPs. We briefly examine the deformation
27 mechanisms of the Messinian salt near the paleo-shelves of the ECPs.

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