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# Upper Cretaceous and Eocene litho- and biostratigraphy of the Istria Basin (NW Black Sea)


Eliza M. ANTON[1,2], Ioan MUNTEANU[3], Corneliu DINU[2], Mihaela C. MELINTE-DOBRINESCU[1]

1) National Institute of Marine Geology and Geo-cology (GeoEcoMar), Dimitrie Onciul 23-25, Bucharest, Romania,
e-mail: antoneliza@geoecomar.ro
2) University of Bucharest, Faculty of Geology and Geophysics, Traian Vuia 6, Bucharest, Romania
3) Repsol S.A., UK Exploration team, Mendez Alvaro 44, Madrid, Spain


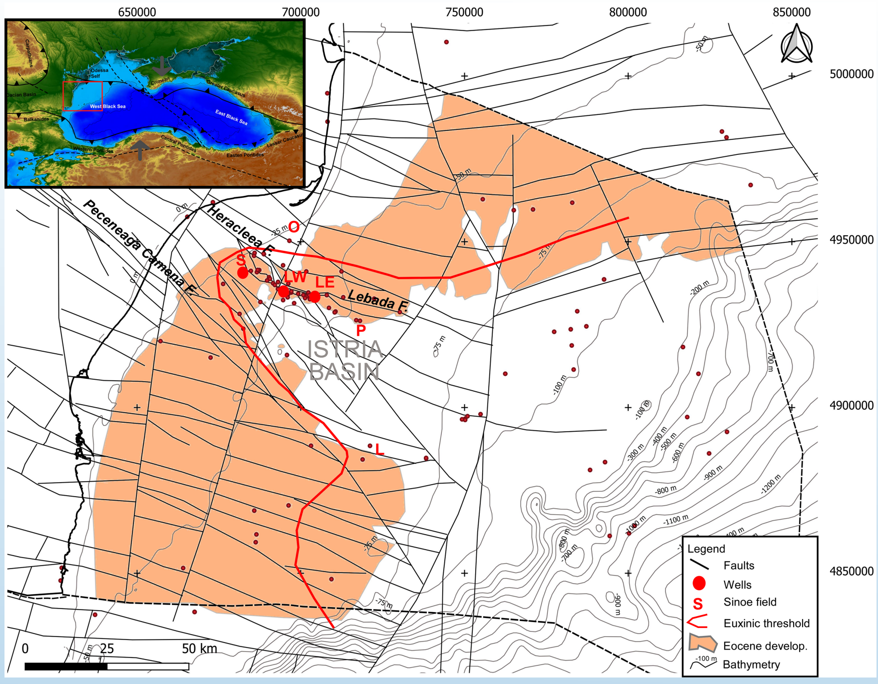


*Fig. 1 - Tectonic map of the Romanian Black Sea shelf (adapted from Dinu et al., 2005; Munteanu et al., 2011). The Eocene deposits distribution was adapted from Țambrea (2007), Țambrea et al., 2002 and interpretation given herein. Inset tectonic sketch of the Western Black Sea region after Munteanu, 2012. Istria Basin (contour with red line) includes structures names: L-Lotus, LE- Lebăda East, LW- Lebăda West,O-Orion, P- Pescăruș, S- Sinoe. Bathymetry from GEBCO.*

The Istria basin, situated offshore Romania records in its lithological succession most of the Meso-zoic - Cenozoic evolution of the Western Black Sea Basin (WBSB). The WBSB opening initiated in the Early Cretaceous, during Barremian - Aptian time interval, in a back-arc regime.

The WBSB rifting and expansion continued throughout Late Cretaceous - Paleocene times, with gradual establishment of passive margin sedimentation in the Istria Basin.

In the Middle Eocene, compressional settings and associated inversion structures are widespread in the Black Sea area due to collision of Pontides and Taurides belts, which, respectively, led to compres-sional inversion in the Istria basin (Okay and Tüysüz, 1999; Dinu et al., 2005). The continuing compression shaped this basin until Middle Miocene, with the formation of inverted anticlines such as Lebada, Sinoe, Delfin and others belonging to the Istria Basin. These anticlines were drillled by tens of wells in the search for and exploitation of hydrocarbon since the early '70s (Ionescu et al., 2002).

In this study, we have re-interpreted the results of numerous cores containing litho- and biostratigraphic data, from the wells situated on the northern border of Istria Basin, with special focus on the Eocene time period, when major changes in basin evolution took place.

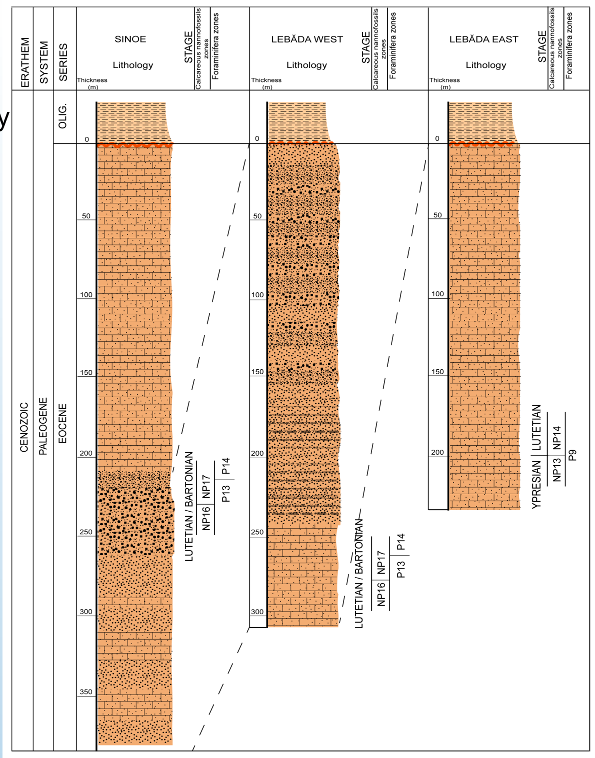


*Fig. 3. An example of correlation of the Eocene deposits from the investigated wells (Sinoe, Lebada West and East structures) from the Istria Basin.*

Our results suggest that the observed E-ward large thickness variation of Eocene deposits, on the northern rim of Istria Basin, is a consequence different structural settings. The western part (*i.e.* Sinoe area) is situated in the hanging-wall of an inverted normal fault filled with Early Eocene deposits and was inverted by high angle thrus fault during the Late Eocene - Oligocene interval.

In the eastern part (*i.e.* Lebada area), there is an uplifted normal fault foot-wall, showing a reduced thickness in comparison with the western part (Munteanu et al., 2011). The erosion level increased eastward, removing the entire Upper Eocene and the top of the Middle Eocene. This feature may be linked to a large sea level drop towards the Eocene top, with subaerial erosion and development of large-scale canyons system at the shelf to slope transition, in a similar matter with the more recent Pliocene - Quaternary Viteaz Canyon of the NW Black Sea.

Regarding the Upper Cretaceous interval, based on identified calcareous nannofossil biozones, a continuous deposition was found in the Cenomanian - Maastrichtian interval, different from other area where large stratigraphic gaps are recorded. This might be due to continuous deposition on a normal fault hanging-wall depocenter.

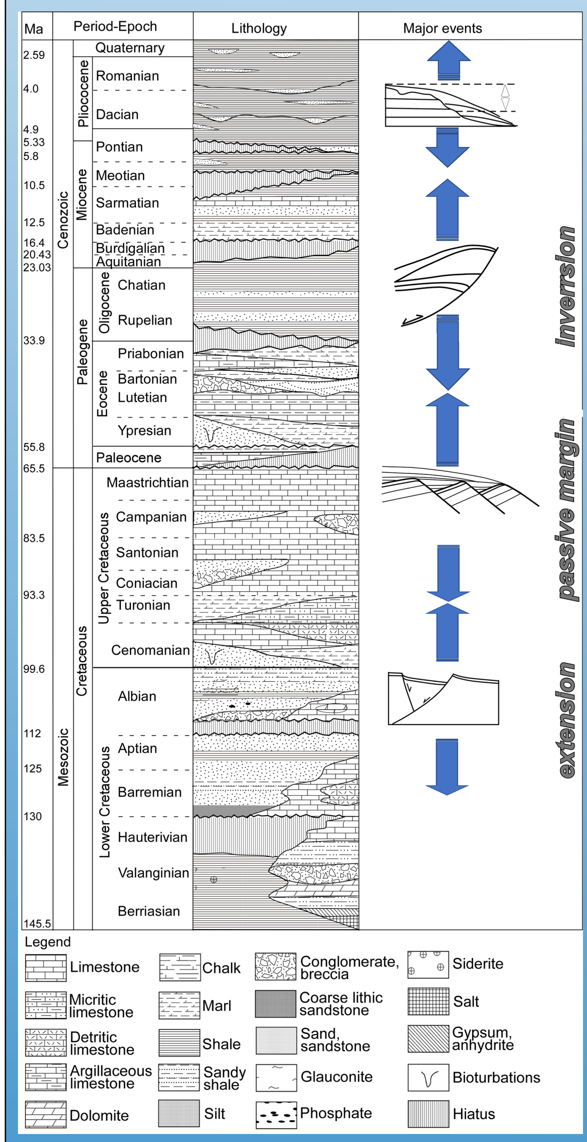


*Fig. 2 - Tectono-stratigraphic chart of the Romanian Black Sea shelf (adapted from Dinu et al., 2005; Munteanu et al., 2011).*

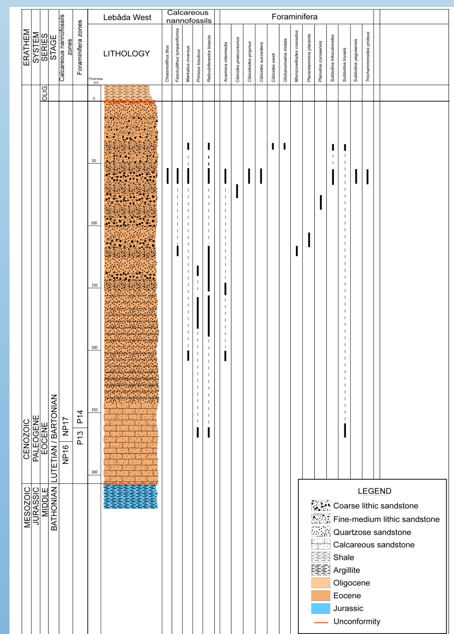

*Fig. 4.Eocene lithostratigraphy and biostratigraphy based on calcareous nannofossils and foraminifera of the Lebada West well.*

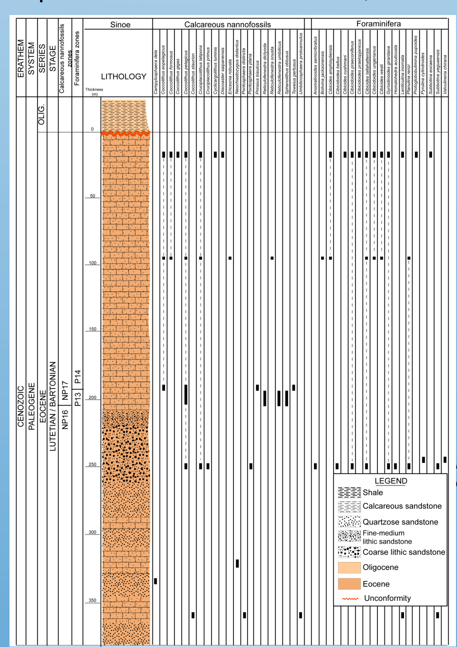

*Fig. 5.Eocene lithostratigraphy and biostratigraphy based on calcareous nannofossils and foraminifera of the Sinoe well.*

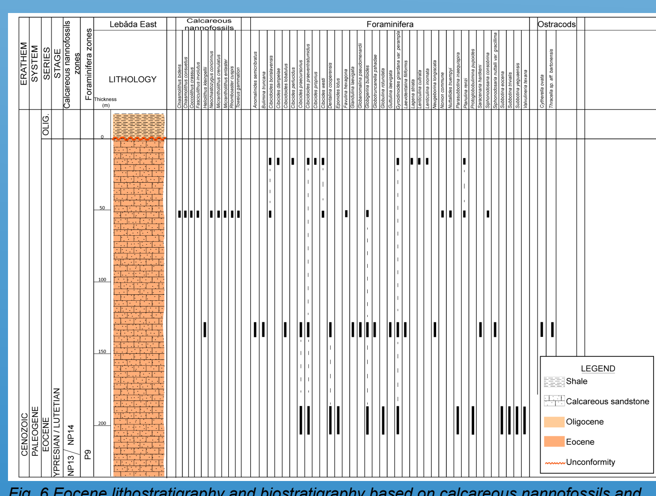

*Fig. 6.Eocene lithostratigraphy and biostratigraphy based on calcareous nannofossils and foraminifera of the Lebada East well.*

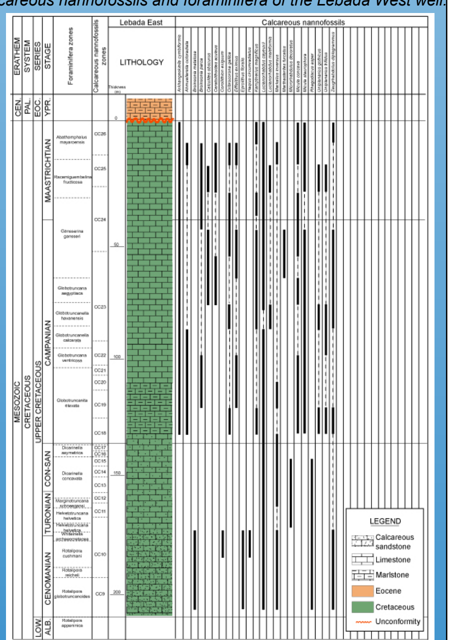

*Fig. 7.Cretaceous lithostratigraphy and biostratigraphy based on calcareous nannofossils from the Lebada East well.*


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