



Palaeoenvironmental changes in the Holocene deposits of the Romanian Black Sea inner shelf

Andrei Briceag (1), Marius Stoica (2), Gheorghe Oaie (1), and Mihaela Melinte-Dobrinescu (1)

(1) National Institute for Marine Geology and Geoecology, Romania (andrei.briceag@geoecomar.ro), (2) Faculty of Geology and Geophysics

The evolution from a lacustrine palaeoenvironment to a marine one in the Black Sea during Holocene times is a matter of debate in the world scientific community. There are two main hypotheses regarding the Holocene Black Sea sea-level rising: catastrophic and gradual. The scenario concerning the catastrophic flooding of the Black Sea was published by Ryan et al. (1997), attracting the greatest attention and arousing a great deal of controversy and further research. Another scenario, based on a huge amount of collected data (for a synthesis see Yanko-Hombach et al., 2007), indicates that no catastrophic flooding of the Black Sea has occurred, and the Neoeuxinian Lake gradually transformed into a marine basin.

The planktonic organisms are very useful in deciphering palaeoenvironmental fluctuations in general, and changes that took place during the Holocene in the Black Sea in particular. This work discusses fluctuation in planktonic organisms (i.e. foraminifers and nannofloras), as well as changes in benthic communities, which were observed in several cores from the Romanian inner shelf.

All the investigated cores yielded, above the fresh-water clays of Unit 3 (sensu Ross and Degens, 1974), a layer that contains fresh-water, brackish and marine molluscs. Above this level, blooms of the calcareous nannoplankton species *Braarudosphaera bigelowii*, followed by blooms of *Emiliania huxleyi*, were recorded. The changes in plankton composition and abundance indicate that salinity increased during Holocene times in the NW Black Sea, from a brackish setting to a marine one, similar to modern times. Taking into account the quantitative nannofloral analyses, a sudden increasing of the salinity could be assumed for deeper parts of the Romanian shelf (i.e. below 40 m of water depth), while for the extremely shallow areas a progressive salinity increase could be supposed.

References

Oaie, G. & Melinte, M.C., 2010. Holocene litho- and biostratigraphy of the NW Black Sea (Romanian shelf). *Quaternary International*: doi:10.1016/j.quaint.2009.12.014.

Ross, D.A., Degens, E.T. 1974. Recent sediments of the Black Sea. In: Degens E.T. and Ross D.A. (Eds.), *The Black Sea: Geology, Chemistry, and Biology*. American Association of Petroleum Geologists, 183-199.

Ryan, W.B.F., Pitman, W.C., Major, C.O., Shimkus, K., Moskalenko, V., Jones, G.A., Dimitrov, P., Görür, N., Sakinç, M. & Yücel, H. 1997. An abrupt drowning of the Black Sea shelf. *Marine Geology*: 138: 119-126.

Yanko-Hombach, V., Gilbert, A.S., Panin, N. & Dolukhanov, P.M. (Eds.), 2007a *The Black Sea Flood Question: Changes in Coastline, Climate and Human Settlement*. Springer, Dordrecht, 971 pp.