World Academy of Science, Engineering and Technology
International Journal of Geological and Environmental Engineering
Vol:10, No:11, 2016

Upper Jurassic Foraminiferal Assemblages and Palaeoceanographical Changes in the Central Part of the East European Platform

Authors : Clementine Colpaert, Boris L. Nikitenko

Abstract : The Upper Jurassic foraminiferal assemblages of the East European Platform have been strongly investigated through the 20th century with biostratigraphical and in smaller degree palaeoecological and palaeobiogeographical purposes. Over the Late Jurassic, the platform was a shallow epicontinental sea that extended from Tethys to the Artic through the Pechora Sea and further toward the northeast in the West Siberian Sea. Foraminiferal assemblages of the Russian Sea were strongly affected by sea-level changes and were controlled by alternated Boreal to Peritethyan influences. The central part of the East European Platform displays very rich and diverse foraminiferal assemblages. Two sections have been analyzed; the Makar'yev Section in the Moscow Depression and the Gorodishi Section in the Yl'yanovsk Depression. Based on the evolution of foraminiferal assemblages, palaeoenvironment has been reconstructed, and sea-level changes have been refined. The aim of this study is to understand palaeoceanographical changes throughout the Oxfordian – Kimmeridgian of the central part of the Russian Sea. The Oxfordian was characterized by a general transgressive event with intermittency of small regressive phases. The platform was connected toward the south with Tethys and Peritethys. During the Middle Oxfordian, opening of a pathway of warmer water from the North-Tethys region to the Boreal Realm favoured the migration of planktonic foraminifera and the appearance of new benthic taxa. It is associated with increased temperature and primary production. During the Late Oxfordian, colder water inputs associated with the microbenthic community crisis may be a response to the closure of this warm-water corridor and the disappearance of planktonic foraminifera. The microbenthic community crisis is probably due to the increased sedimentation rate in the transition from the maximum flooding surface to a second-order regressive event, increasing productivity and inputs of organic matter along with sharp decrease of oxygen into the sediment. It is following during the Early Kimmeridgian by a replacement of foraminiferal assemblages. The almost all Kimmeridgian is characterized by the abundance of many common with Boreal and Subboreal Realm. Connections toward the South began again dominant after a small regressive event recorded during the Late Kimmeridgian and associated with the abundance of many common taxa with Subboreal Realm and Peritethys such as Crimea and Caucasus taxa. Foraminiferal assemblages of the East European Platform are strongly affected by palaeoecological changes and may display a very good model for biofacies typification under Boreal and Subboreal environments. The East European Platform appears to be a key area for the understanding of Upper Jurassic big scale palaeoceanographical changes, being connected with Boreal to Peritethyan basins.

Keywords : foraminifera, palaeoceanography, palaeoecology, upper jurassic
Conference Title : ICGP 2016 : International Conference on Geosciences and Paleontology
Conference Location : Paris, France
Conference Dates : November 21-22, 2016