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Preliminary paleontological and mineralogical study of the diatomites from Adamclisi, South Dobrogea, Romania

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Diatomite samples taken from the Urluia – Adamclisi localities, South Dobrogea region (Romania) have been studied by scanning electron microscopy (SEM), FTIR and X-ray powder diffraction. The study shows that benthic pennate diatoms prevail (more than 60%), with a low rate of species diversity. Large chain-forming centric diatoms also occur together with other microfossils (dinoflagellates, phytolites, sponge spicules, different types of fish teeth) assemblages common for the Sarmatian (middle Miocene) marine deposits of Eastern Paratethys. The diatom assemblages characterize a shallow marine basin environment, with littoral or freshwater contributions. The monotone development of diatom communities was controlled by stable water level (stratified and relatively stagnant water periods) in contrast with blooms periods (with variable salinity) linked to possible upwelling currents provoked by freshwater inputs. The mineralogy of Urluia - Adamclisi diatomites is dominated by the presence of amorphous silica, quartz, feldspars and clay minerals. Based on the broad hump registered between 15 and 20° 2 theta on XRD patterns and on the characters and intensities of the bands centered around 3350 and 1630 cm⁻¹ in the FTIR spectra, the amorphous silica from the diagenesis-affected diatom frustules was identified as opal-A. In order to reconstruct past conditions we can identify and measure seasonal variations in climate for the Eastern Paratethys area and evaluate relationships between inferred changes in the aquatic and terrestrial environments.

