

Paratethys is the large epicontinental sea that extended from Central Europe to inner Asia since more than 30 million years ago. It consisted of a couple of basins, temporarily separated from each other or from other oceans and repeated isolation of particular basins resulted in the development of endemic biota. About three million years ago many of these basins disappeared and at present, only the Black Sea, Caspian Sea and Aral Sea remain of what was once a vast inland sea.

A turning point in the history of Paratethys happened 13 million years ago when a succession of events have resulted in the so-called Badenian-Sarmatian Extinction Event, that indicates the boundary between two regional stages. This Badenian/Sarmatian boundary that marks the transition from normal marine to restricted semi-marine conditions due to the separation of the Paratethys from the Mediterranean, is a major turnover in faunal elements and indicates the development of extremely stressed environments related to mesohaline salinity, elevated alkalinity and eutrophic conditions. Its nature is controversial, however, and we aim to resolve the existing controversies through the integration of quantitative micropalaeontological (foraminifers, dinoflagellate cysts and palynofacies), geochemical (stable isotopes, organic geochemistry) and sedimentological analyses, that will be controlled by stratigraphical information supplied by calcareous nannoplankton and Sr isotope studies, of several borehole sections in SE Poland and several outcrop sections in western Ukraine. This region was chosen because it supplies a possibility to study various environments in the geological setting making possible to discriminate, with a reasonable probability, between the local and general factors.

The intended micropalaeontological study and then the comparison of fossil assemblages of foraminifers with recent assemblages whose environmental requirements are known will make possible to establish changes in water salinity and other environmental parameters such as productivity and oxygen level in bottom waters. Stable isotope study of foraminiferal tests will be used to determine the water temperature in which the foraminifers lived, and organic geochemistry methods would retrieve a detailed picture of the palaeoenvironmental conditions that were present in the bottom water and the sediment. The micropalaeontological characteristics and geochemical data of the Upper Badenian and adjacent, lowermost Sarmatian strata will be the basis for reconstruction of the evolution of water-column stratification as well as the changes (in time and space) of particular environmental factors and their impact on facies development that finally have resulted in the Badenian-Sarmatian Extinction Event.