The project aims to recognise the depositional environments that dominated the landscape during the Upper Cretaceous in the central part of the Carpathian Foredeep. This will be possible with the seismic data and information from drilled wells. Sea level changes and tectonic processes controlled the sedimentation of carbonate-clastic formations in this basin. The degree of recognition of these formations is relatively low, and published works so far are limited to analysis of borehole data mainly to the composition of these intervals and paleo flora and fauna. The central part of the Carpathian Foreland is a marginal part of the Upper Cretaceous basin that can be characterised by intensive tectonic processes, closely related to the strong erosional episodes. Previous seismic surveys did not help in detailed recognition of internal variability of Upper Cretaceous complexes but only provided generalised information on their structure. The majority of these old seismic surveys were only 2D projects (composed of 2D seismic profiles), for which the latest algorithms of processing and interpretation could not have been applied. The planned research will be based on the interpretation of new, high-resolution 3D seismic data completed within the research area in the last ten years. These surveys are of good quality that enables the application of various computational procedures to bring more insight into the genesis of the Upper Cretaceous formations. The most critical step of the research will be using sequence stratigraphy (which give information on the relative timing of specific episodes) and tectonostratigraphy (which helps to indicate fault planes and their temporal relations) methods for depositional architecture recognition. For this purpose, a chronostratigraphic image built on the set of simultaneous horizons will be constructed. The horizons will be flattened and organised according to their relative geological time. Such a representation is called the Wheeler diagram domain, and it is used to identify depositional sequences. The final result of these studies will be a detailed reconstruction of deposition mechanisms and paleoenvironmental variations in the mentioned sedimentary basin. The results will be delivered in graphical forms as maps and sections.

The reconstruction of depositional architecture will help to answer what are the sources of the clastic (sandy-like) material in the Upper Cretaceous deposits and with which elements of the landscape are they associated. As a result of the project, the main erosional surfaces within the Upper Cretaceous deposits will be identified. Moreover, the tectonic processes that influenced the Upper Cretaceous interval will be interpreted and incorporated in the interpretation. The project will fill the gap in geological knowledge on the Upper Cretaceous interval in the marginal part of the sedimentary basin.