

# The example of reconstructing carbonate sedimentation process on the basis of seismic-stratigraphic and paleogeomorphological analysis

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## Abstract

The article deals with the implementation of the seismic-stratigraphic analysis for carbonate deposits. The analysis is based on the sedimentation simulation conducted using paleogeomorphological analysis data. The seismic stratigraphic analysis was performed from the time section of the reflected waves obtained by the method of the common depth point on one of the deposits of the north-western part of the western slope of the South Tatar arch. For the reconstruction of sedimentation and subsequent diagnosis of carbonate sediments were carried out seismic-stratigraphic binding reflections (reflections identification) using the well logging data within the study area. Density and acoustic logs were used and synthetic density and acoustic velocity curves were calculated for wells in which these logs were not performed. We traced all seismic reflections identified in the seismic-stratigraphic reference throughout the study area. We mapped time of the seismic wave run to the horizon of interest. Seismic attributes were calculated for the prediction of the distribution of facies in the study area. Forecast of seismic facies zones was carried out on the basis of well data and well logging. Paleogeomorphological and seismic facies analysis were performed based on predicted depositional facies zones and logic. To perform these analysis, well log data, seismic wave travel time maps, paleogeographic maps of the interest horizons, and seismic attributes were used. Presented geological interpretation has allowed to identify promising area in carbonate rocks with improved reservoir properties-bioherm formed in almost all carbonate sediments represented by the section.

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## Keywords

Bioherm building, Paleogeomorphological analysis, Seismic complex, Seismic facies, Wave field, Well logging

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