

SEDIMENTATION PROCESSES IN THE NORTHERN AND CENTRAL ARAL SEA (CENTRAL ASIA)

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A survey of recent bottom sediments in the Northern Aral Sea was undertaken to elucidate the main direction of the alteration of sedimentation processes as a result of significant decrease in the level of the sea from the beginning of the 1960s. Investigations were carried out in 1991 from on board helicopter. Sediments were sampled by means of gravity coring and grab sampling (144 sampling sites). At several sites, water samples were collected. The observations have established that the fall in the level of Aral sea during last 30 years has caused a dramatic reconstruction in chemical composition of sea water, as well as, in lithodynamic and chemical sedimentation processes. Decreases in the amount of inflowing fresh water, high rates of evaporation, and a decrease in the total volume of sea water led to an increase in salinity and promoted a recent and intensive formation of new authigenic sulphates, mainly gypsum, and in coastal sediments, gypsum and mirabilite. In some areas, terrigenous sedimentation was replaced by chemical accumulation. The direction and intensity of clastic floods have been transformed. As a result of a deficit in the inflow of terrigenous material, the rates of clastic accumulation became lower. Areas widened where no sedimentation took place and even where erosion of the sea bottom occurred. Over the whole bottom, the mechanical and even detrital mineral composition in superficial sediments changed. The grain size of sediments became much coarser.