Abstract Submission Form

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Submarine Landscape Forming Factors of the Sea of Japan

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The aim of our work was to determine the landscape forming factor of the coastal zone of the Sea of Japan. Taking of the Far Eastern Coast of the Sea of Japan we made landscape mapping of bottom natural complexes (BNC) in the shallow-water according to synchronous data obtaining by echo sounding of the depth and relief, dredge and diver’s sampling of benthos and sediments, and surveying hydrological parameters. At each reference point (totally 205) we calculated the velocities and directions of drift-gradient currents. Then; we drew a geomorphological and a lithogenic base maps of the coast and floor, a map of water body zoning, a map of distribution of benthos communities, and a map of BNC. The data received were interpreted by factor analysis based on the method of the main components. This method allowed us to select from the whole number of measured variables some "hidden" factors that characterize the main mechanisms of formation and features of BNC functioning. It is fixed, that during the human impact the landscape forming factors are changed. Proposed methodical approach permits to substantiate the forecasting evaluations of the changeableness of the components of the BNC of the sea shallowness under the different level of human impact.

Key words: relief, coastal zone, submarine landscape forming factors, factor analyses.
Morphostructural Patterns and Evolution of a Sheared Passive Margin and Aborted Rift Zone: the Northern Brazilian « Nordeste »

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By reinterpreting the morphostructural patterns of the Sertaneja depression and surrounding plateaus (northeastern Brazil), it is shown that they are widely controlled by structures related to the Early Cretaceous rifting which preceded the oceanic opening. Identification of exhumed pre-Cenomanian palaeoforms leads to question the classical interpretations of the stepped morphological patterns. It suggests that some major features of the relief were created by faulting, pediplanation, and subsidence during syn- and post-rift stages. The ultimate evolution was influenced by interference between intracontinental rifted patterns and those related to the transforming oceanic opening, including subsidence of thinned crust regions and moderate block or flexural uplift of the surrounding regions. It explains dissection, exhumation or relief inversion of Cretaceous basins and differential erosion into the basement. The moderate or unequal amount of post-Cretaceous shaping of the relief is confirmed by the characteristics of Tertiary sedimentation. Nevertheless the local presence of mountains near the coast may suggest the occurrence of differential tectonic movements, possibly related with Oligocene magmatism and continued until recent times.

Key words: morphostructure, palaeoforms, rift, passive margin, planation surface
Catchment Scale Variability in Bank Erosion Rates and Processes in the River Swale, U.K.

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A systematic testing of the rates and timings of bank erosion was undertaken on the River Swale, U.K. Nine sites were monitored from the upland source area to lowland floodplains 120 km downstream. A total of 288 erosion pins were measured at a fortnightly interval over 2 years. The erosion pins provided temporally lumped erosion rates whilst 11 Photo-Electronic Erosion Pins (PEEPs) were used to measure bank surface elevation changes at 15 minute intervals. Catchment erosion rates were modelled using quadratic equations, simulating a mid-basin peak of 3.58 m a⁻¹. Rates of erosion were low upstream, 0.07 m a⁻¹, and also downstream, 0.12 m a⁻¹. Subaerial processes, especially frost action, dominated upstream. Fluvial entrainment was most influential mid-catchment. Mass failures were most efficient downstream, but were more frequent mid-catchment. Piping, sapping and cantilever failures did not follow the same trends and were modelled separately. The length of the erosion season increased downstream as the number of active processes increased.

Key words: bank erosion, catchment scale, process dominance, downstream change