



A Model of Passive Ocean Margins Evolution under Changing Sea Level Conditions

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2D model of evolution of passive ocean margins is developed. The main process controlling the evolution of passive margins is sedimentation, namely sediment transport both in near-bottom layer and in water column.

The modeling shows that if ambient conditions of sedimentation including ocean level remain unchanged then evolution of the ocean margin reaches with time its self-similar regime. The ocean margin propagates seaward with constant rate and profile shape. A transient process from initial profile to steady self-similar one depends on relation between steepnesses of two profiles.

Modeling of idealized situations when one of the key sedimentation factors is switched off showed their contribution to the ocean margin evolution.

A process of sediment compaction does not disturb the self-similar regime but only reduces the propagation rate and makes the continental slope more concave.

But a process of the sea level fluctuations deranges the self-similar regime. Interlaced rises and lowerings of the sea level lead to formation of sediment complexes with concordant and non-concordant bedding.

The model results are verified by numerous seismic profiles obtained on passive continental margins.