



Geodynamic evolution of Drake Passage in Post Miocene time, West Antarctica.

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At present it is assumed that within continental margin of Drake Passage the process of transformation from active type of margin to passive one has been taking place since the spreading on ridge Aluk stopped 3.3 million years ago. In spite of strict geological-geophysical scrutiny of the region the nature of Bransfield Strait is not clear until now. Most explorers do not doubt in rifting nature of the strait, however the model of the formation of the rift is under discussion. Some theories assume that the sharp decrease of subduction velocity from 6.4 to 2.6 cm/year 7.8 million years ago and then the ending of subduction 3.3 million years ago caused the moving of heavy subduction lithosphere slab of the plate Phoenix towards the ocean and led to the formation of the rift zone. Alternative model states that the formation of the rift zone comes out of tectonic deformations propagation from the direction of the ridge Southern Scotia.

New data on the structure of the relief, the sediment and the ocean crust were obtained during marine geological-geophysical expeditions of German RV Polarstern and Russian RV Academician Boris Petrov. This information allows one to understand some properties of the evolution of the continental margin of Drake Passage and the origin of Bransfield Strait.

Joint analysis and interpretation of new data and available geological-geophysical information on the region show that the stop of spreading on the ridge Aluk 3.3 million years ago led to the redistribution of complex geometry of expansion and compression axes because of mutual drift of Antarctic, Scotia and Phoenix plates and was a trigger mechanism for the beginning of expansion deformations propagation from the direction of the ridge Southern Scotia and the formation of Bransfield Strait ridge.