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GEODYNAMIC MAPPING OF THE EQUATORIAL ATLANTIC LITHOSPHERE BY THE DATA OF CLUSTER ANALYSIS ON GEOLOGICAL AND GEOPHYSICAL PARAMETERS AND DATA OF A MAJOR PETROLOGIC TYPES OF BASALTS LOCALIZATION

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The a typification of Atlantic ocean lithosphere between 15° S—25° N on geologic and geophysical parameters by a cluster analysis method which allows to allocate the steady combinations of parameters inaccessible at the visual analysis has been done.

For cluster method the following parameters have been chosen: thickness of a sedimentary cover, bathymetry, surface Love waves phase velocity anomalies, Bouger anomalies, isostasy, heat flow. These parameters provide complete prescription of general physical properties of lithosphere, allowing to research its heterogeneity.

The main and necessary condition for matrixes of all used parameters is the homogeneity of there presence and accuracy within investigated area. Output result will consist of clusters, which of them will provide some steady combination of parameters. In this work were used the matrixes on the grid of 1x1 decimal degree in accordance with less accuracy in the vector of parameters.

Cluster analysis was conducted in the software media of «STATISTICS». During the calculations it was established that the optimal number of clusters is 9.

By results of received clusters interpretation, the following geodynamic zones are allocated: «a shelf - continental slope», «ridge», «abyssal plains», «cold lithosphere». Sharp asymmetry of lithosphere of northern part of region concerning an axial zone of a mid Atlantic ridge and symmetry southern comes to light. Also sharp segmentation of a ridge along its axis is allocated.

Comparison of received results with a major petrologic basalt types localization data (Dmitriev et al., 2005), demonstrate that along the MAR basalt plume assemblages are characteristic for areas of ridge axis zone with high heat flow while spreading assemblages — with low heat flow. This is consistent with conception of relationship between both assemblages under slow spreading geodynamic conditions accompanied by «Hess crust» formation. At the same time deviation of this common trend is observed. These deviations reason is the subject of following research.