TECTONIC OF CENTRAL ATLANTIC: FRACTURES, VOLCANIC EDIFICES AND OCEANIC LITHOSPHERE DEFORMATIONS

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15 computer maps have been created on Central Atlantic and adjacent continents (25N-15S; 60W-10E) and data base (10 Mb) which contain information about radiometric ages (839 records) of the ocean bottom, islands and continental magmatic rocks, rock features on the base of dredges (1816 stations, 1153 - Russian), geographic names, research history of 428 cruises (93 - Russian), 900 seamounts and 52 islands characteristics, earthquake epicenters etc. Main results are:

1. Outside of the crest of the Mid-Atlantic ridge oceanic crust have been separated into several «tectonic corridors» (Atlantis-Kane, Kane-Cape Verde, Cape Verde - Sierra-Leone, Sierra-Leone - San Paulo, San Paulo -Chain, Chain -Ascension and probably till Cardno fracture zone).

2. Passive parts of the transforms could unsystematically change their strikes even up to performance of planar azimuthal discontinuity. They are complicated by different deformations, originated from ocean crust neotectonic vertical movements of different direction occurring outside of spreading zone. The intensity of these movements alternates in geological time and in space as well.

3. Active hydrothermal fields of slow rate oceanic ridges are located in discontinuities where strong motion seismicity is very low or absent.

4. Formation of the volcanic edifices have started in different time and its genesis is not connected with hot spots.

5. Oceanic crust of Central Atlantic is very mobile outside of spreading axis and its properties were changing through geological time.

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CORRELATION OF MANTLE BOUGUER ANOMALIES WITH RESULTS OF UPPER MANTLE SEISMIC TOMOGRAPHY AT CENTRAL ATLANTIC

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Mantle Bouguer anomalies, estimated for the region of central Atlantic, provide good correlation with seismic wave propagation velocity anomalies in upper mantle, obtained by tomography method by research group from Harvard university. Mantle Bouguer anomalies were estimated from satellite altymetry data and GEBCO bathymetry data. Regular Bouguer anomalies were estimated for average density of oceanic crust 2.75 g/cm3. Mantle Bouguer anomalies were estimated under condition of constant ocean crust thickness of 6000 meters and average density of upper mantle under ridge zone 3.23 g/cm3. After that it was estimated correction of anomalies for thickness of cold lithosphere with density 3.33 g/cm3 respect to crust age revealed from magnetic anomalies. As a result of described estimations were performed wide positive mantle Bouguer anomalies, matching with negative anomalies of seismic velocities on tomographic slice at depth of 50 km.

Obtained spatial correlation of anomalies revealed from data of different methods allow to make following preliminary conclusions. Indirect confirmation of lithosphere structure conformity to hypothesis of lithosphere thickening with age and cooling is received. Large diapir structures, defined from seismic tomography at depth slice of 50 km with minimums of velocity variation values corresponds to maximums of mantle Bouguer anomalies, that probably reflects the relation of these anomalies to the arc surface of diapir structures but not to the density variations of diapir material.

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