Второй циркуляр

Рабочее Совещание Russian Ridge' 2015

Москва, 1-2 июня, 2015

Внутренние океанические комплексы и гидротермальный процесс

Предварительная программа Совещания

Внутренние океанические комплексы и гидротермальный процесс

Oceanic Core Complexes and Hydrothermalism

Rusian-Ridge'15 Workshop program

1 июня – понедельник

June 1, Monday

9.00 - 9.45 – Регистрация (Registration)

9.45 - Открытие Совещания. *Н.С. Бортников*. Вступительное слово.

Opening statement of *N. Bortnikov*

10.00 – 10.15 – *С.А.Силантьев (ГЕОХИ РАН).* Информация национального корреспондента России в InterRidge.

Information of Russian national correspondent in InterRidge – *S.Silantyev*

Приглашенные доклады

10.15 – 10. 55 - *Др. И. Дж. Чен (Институт теоретической и прикладной геофизики, Пекинский Университет, Китай)* - Главные направления исследований и основные результаты Международного проекта InterRidge в 2013-2015 гг.

10.55 – 11.35 - *Черкашев Г.А. (ВНИИОкеангеология)* Международные работы по изучению гидротермального оруденения в СОХ в рамках контрактов на разведку с МОМД (Международный Орган по Морскому дну)

11.35 – 11.55 – Перерыв / Coffee Break

11.55 – 12.35 *Силантьев С.А., Бортников Н.С. (ГЕОХИ РАН, ИГЕМ РАН).*

Внутренние океанические комплексы Срединно-Атлантического хребта: черты сходства и различия

INSTABLE LOCATION OF RIFT AT POLYTRANSFORM FAULT SYSTEMS (ON EXAMPLE OF SAN-PAULU TRANSFORM FAULT SYSTEM, ATLANTIC OCEAN)

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Tectonic evolution of Mid Atlantic Ridge (MAR) was accompanied by different phenomena of system instability: rift jumping, rift overlapping, nontransform shifts and etc. Meanwhile tectonic evolution and oceanic crust accretion within the limits of polytransform fault systems performs another type of rift segments instability restricted in space by transform troughs of hundreds kilometers in length.

Polytransform fault systems [4] are arranged as sequence of (3 and more) sub parallel closely spaced (about 25-30 km) transform faults with total width of first hundreds of miles. They comprise pretty complicated morphologically ocean bottom regions, at least of two classes. First class is characterized by numerous transverse and median ridges (Arkhangelsky-Doldrums-Vernadsky), second class do not has these features at all (San-Paulu).

Within the restriction of transform sequence occur the jumping of rift at the distance significantly greater than rift length. Picture shows the map of San-Paulu polytransform fault system (5 troughs) together with elements of geodynamic interpretation.

Equatorial Atlantic rift segments of MAR are shifted by polytransform fault system of San-Paulu (from south to north) in westward direction with increasing amplitude of the shift (see fig.). Modern earthquakes marks an active parts of faults. It is possible to detect single events at passive parts of transform faults and 50 km far from them. Eastern and central rift segments are characterized by reduced seismic activity, while western rift segment expose intense seismic activity.

Axial Bouguer anomaly beneath MAR to the south from San-Paulu polytransform fault system has northward continuation up to 1°50'N, and at its end one could observe wide isolated deep which according to single channel seismic profiling data is filled by sedimentary cover with thickness of more than 1100 m [2], together with symmetrically allocated around it cluster of big volcanic edifices (low local Bouguer anomaly values), pointing at the ability of bulls-eyes pairs from magmatic impulses. The topography of acoustic basement [2] at eastern part of polytransform fault system points by their morphological features at the configuration of paleo rift segment before jump from paleo nodal deep. The data of bottom sampling [3] at south base of one of the noted volcanic edifices presents the basalts and breccias of volcanic glasses (station S0738). According to [1] it was established the indications of further shift of active spreading segments to west-north-west direction. The location of paleorift on spreading basement according to rough detection from magnetic age grid correspond to 27 Ma.

Thus, having sublongitudinal overlap of about 120 km of two significant spreading segments - from San-Paulu at the west to the north and at the east to the south - the system of active spreading elements makes self restructuring in such way, that the transfer between thier endings would have the shortest distance in latitudinal direction. One can also observe the tendency of straightening by transform zone of the transition between large MAR segments. Similar azimuth and interval cycle in polytransform fault systems could be observed northward from San-Paulu region at systems of Arkhangelsky-Doldrums-Vernadsky polytransform faults and in double-transform fault system of Maraphone-Mercury and is defined by large scale plate kinematics.

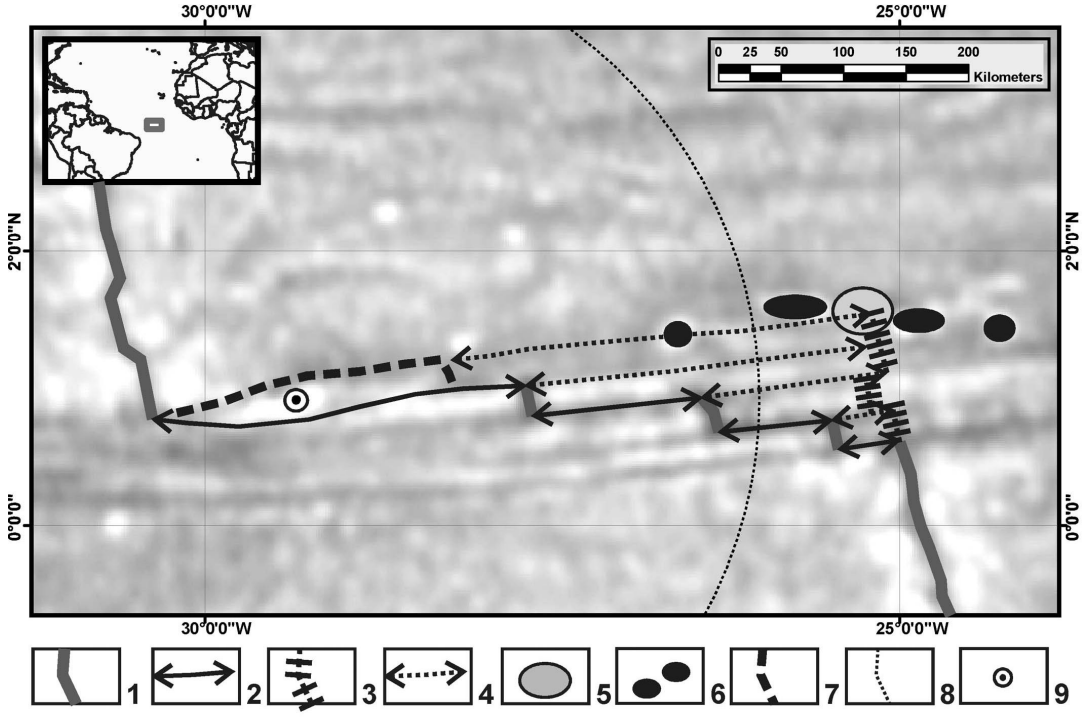

Fig. The scheme of MAR active segments migration at polytransfom fault system of San-Paulu. Basemap is compiled from satellite altimetry.

1-3 – segments: 1 - active rift, 2 - active transform fault, 3 - paleo rift, 4 - possible track of rift ending jump, 5 – paleo nodal deep, filled by sediments (> 1100 m), 6 - large volcanic edifices, 7 – track of modern jump of active segments of transform fault [1], 8 - Brazilian exclusive economic zone, 9 - St. Peter and St. Paul rocks.

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Publications:

[1] *Motoki K. F., Motoki A., Sichel S. E.* Gravimetric structure for the abyssal mantle massif of Saint Peter and Saint Paul peridotite ridge, Equatorial Atlantic Ocean, and its relation to active uplift //Anais da Academia Brasileira de Ciências. – 2014. – Т. 86. – №. 2. – С. 571-588.

[2] *Mazarovich A.O., Sokolov S.Yu., Agapova G.V., Dobrolyubova K.O., Efimov V.N.* Computer technologies used to obtain new information on crustal structure in oceanic fracture zones: A case study on the active segment of Sao Paulo Fracture Zone, Central Atlantic. // Russian Journal of Earth Sciences. V. 3. #. 1. March 2001.

[3] Report of 7-th cruise of R/V "Akademik Nikolaj Strakhov" (1.04.1988-4.08.1988). «Geological structure of equatorial part of Mid Atlantic ridge and adjacent basins». Cruise chief Udintsev G.B. M.: GIN AS USSR, 1988. V.1. 304 p.

[4] Mazarovich A.O. Geology of the Central Atlantic: Fractures, Volcanic Edifices and Oceanic Bottom Deformations. Moscow. GIN RAS. 1998. 36 p. (Abs. Of Doctoral Thesis).