AMIRANTE ARC IN WESTERN INDIAN OCEAN: NEW EVIDENCE FOR GEOLOGY AND ORIGIN

[1]LELIKOV E. P. and [2]TARARIN I. A

Amirante Arc and Trough form a parallel, arcuate system between Madagascar and Seychelles micro-continent slab in the Western Indian Ocean. These arcuate features are similar to some trench—volcanic arc complexes of the subduction zones, yet the Amirante region is presently aseismic; it lacks a significant accretionary sedimentary prism on its landward side. The volcanic and plutonic rocks have been dredged in Amirante Arc and Trough during cruise of RV ‘Professor Bogorov in 1990 have petrologic evidence of a mid-ocean ridge rather than of island arc resulted from volcanic activity induced by the interplate wrench component of motion.Rare fragments of Opx-Cpx-Pl basalt and Ol-Opx volcanic rock that have been sampled on some dredge hauls reveal mineralogical and geochemical signatures of initial island arc assemblages. It is suggested that these rocks were formed in Upper Cretaceous by subduction of oceanic crust of Somali Basin in the Amirante Trench. It seems that this subduction may be caused by the combination of the sea-spreading in Mascarene Basin and the counter-clockwise rotational compression of oceanic crust of the pull-apart Amirante Basin between the Seychelles micro-continent and Somali Basin as suggested Plummer (1996).