GUO Zhaojie, 2018. Extensional structures in the ophiolites from Cuba and China: New constraints to slowly-spreading ancient oceanic lithosphere. *Acta Geologica Sinica* (English Edition), 92(supp.2):12.

Extensional Structures in the Ophiolites from Cuba and China: New Constraints to Slowly-Spreading Ancient Oceanic Lithosphere

GUO Zhaojie*

Peking University, Beijing 100871,China

Abstract

A group of low-angle normal faults developed in banded gabbro of Moa Ophiolite, Cuba. The dark gabbro was cut into puddings by several normal faults, while light gabbro was just swelling in layer thickness. In Hongliuhe ophiolite at eastern segment of South Tien Shan Suture Zone in China, the extensional deformation concentrates on fine cumulus gabbro which is typically mylonitized. Abundant structural features were discovered in HLH ophiolite such as S-C foliation, C' foliation, extensional crenulation cleavage, small toughness normal fault, low-angle normal faults and high-angle normal faults.According to the above tectonic phenomenon from the ophiolite belts in Cuba and China, we will get the conclusion: the maximum principal compressive stress (b1) is vertical to cumulus bedding, and the maximum tensile stress (b3) is paralleling to cumulus bedding. Considering of the above evidence, the extensional tectonic event should developed at mid-ocean ridge. Due to seafloor spreading, the maximum tensile stress is paralleling to cumulus layer, and extensional tectonic is kept in cumulus gabbro. In this way, normal faults developed in dark gabbro, while brittle-ductile extensional developed in light gabbro. A large number of domes, folds paralleling to ocean ridge and detachment faults represented by low angle normal fault were discovered near ocean ridge in Indian Ocean and Atlantic Ocean. In this way, materials from deep oceanic lithosphere (e.g. gabbro, mantle peridotite) outcrop at the crust surface of ocean basin. The above evidences from China and Cuba are consistent with extensional tectonic and metamorphic core complex from slowly and super-slowly spreading Indian Ocean and Atlantic Oceanic lithosphere based on ODP. Therefore, extensional deformation in the ophiolite belt is of significant meaning for clarifying the formation process and mechanism of ancient oceanic basin.

* Corresponding author. E-mail:zjguo@pku.edu.cn