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The Deep Processes and Magmatism of China's Peri-Pacific

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In eastern China there are widely distributed mainly the Meso-Cenozoic magmatic rocks, which are part of the huge Peri-Pacific tectonic magmatic domain. According to the time-space characteristics of magmatism, the Meso-Cenozoic magmatic rocks in eastern China are divided into 3 tectonic magmatic belts^[1]: (1) The tectonic magmatic belt in continental interior, including some magmatic zone (belts), such as the Great Xing' an Range, Liaoning-Jilin-Eastern Shandong, South china, etc. There are mainly Late Jurassic-Early Cretaceous intermediate-acidic magmatic rocks. (2) The tectonic magmatic belts in continental margin, which are distributed in southeast coast and mainly Late Jurassic-Early Cretaceous terrestrial acidic volcanic rocks and granites. (3) The tectonic magmatic belts in island arc, which are only in Taiwan Island and mainly Late Cretaceous-Paleogene intermediate-basic volcanic rocks and granitoids.

The Meso-Cenozoic magmatism in China's Peri-Pacific area is divided into 3 cycles: (1) The Indo-Chinese cycle (Triassic) is in the set-up period of the magmatism, mainly distributed in the continental interior-tectonic magmatic belts. Most of them are acid intrusive rocks. (2) The Yanshan cycle (Jurassic-Cretaceous) belongs to the peak period. It is widespread throughout the continental interior and margin-tectonic magmatic belts and mainly intermediate-acidic intrusive rocks and terrestrial volcanic rocks. (3) Himalayan cycle (Cenozoic) is the terminal period and widely distributed in eastern China. Continental rift basalt is the main type of its rock. The Meso-Cenozoic magmatic rock has obviously zonation and the age of the magmatism is gradually tend to be more early from northwest to southeast in this area.

The restriction of deep geological process to magmatism is emphatically discussed here. This paper thought, because of the subduction and extrusion of Indian plate and the Pacific plate to the Asian continent, the strong extension in the Peri-Pacific region of East Asia, the lithosphere significantly thinning and the upwelling of the asthenospheric material cause the strong magmatism since Late Mesozoic in this area^[2,3]. The huge low-velocity bodies in the Peri-Pacific region of East Asia which show on seismic tomography might be the result of huge aggregation of the asthenospheric material.

References:

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