

Petro-tectonic assemblies and geodynamic process of Mesozoic igneous rock provinces in the Southeast China

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In the Southeastern China outcrop large-scale Mesozoic igneous rocks which make up an important part of circum-Pacific Asian continent margin. These rocks can be divided into 3 igneous rock provinces, and each province has its specific petro-tectonic assembly.

1. Intra-continental collisional igneous rock province in the Nanling area: 250-190Ma collisional S-type granite-rhyolite (containing cordierite); 175-150Ma post-collisional S-type and S-I-type granite (dacite-rhyolite); and 176-150Ma post-collisional tensional bimodal high-Ti basalt (shoshonite)-rhyolite.

2. Extensional continental margin igneous rock province of the coastal southeastern China: 145-115Ma I-type high-K calc-alkaline (andesite)-dacite-rhyolite; 125-120Ma high-F rhyolite-(local) topaz granite porphyry; 115(100)-80Ma tensional bimodal low-Ti basalt-rhyolite, I-type gabbro-granite, and A-type granite.

3. Collision-overlapping extensional igneous rock province in the Lower Yangtze-north margin of Dabie-Tanlu area: 174-(?)Ma collision-type granite; 135-120Ma shoshonite series and high-K calc-alkaline series (high-K alkali-rich diorite-granodiorite); 105-80Ma tensional high-K trachyte-pseudoleucite phonolite-haüyne phonolite.

The petro-tectonic assemblies reveal a synthetic temporal-spatial dynamic process of intra-continental collision and paleo-Pacific plate oblique subduction toward Asian plate, and associating strike-extension. These assemblies and their Sr, Nd, Pb isotopes all record deep crust-mantle interactions, in which the underplating plays an important role.