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Geochronology and tectonic evolution of the west section of the Jiangnan Orogenic Belt in South China

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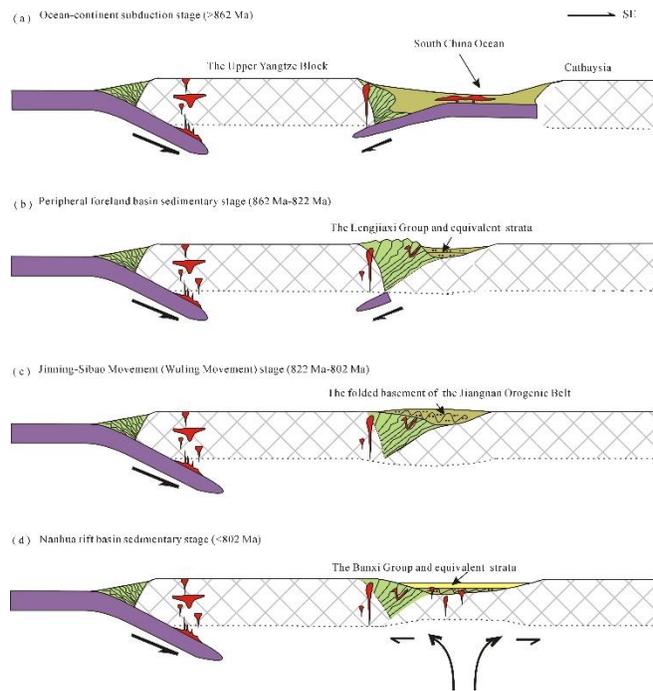
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As an important part of South China Old Land, the Jiangnan Orogenic Belt plays a significant role in explaining the assembly and the evolution of the Upper Yangtze Block and Cathaysia. The Lengjiaxi and the Banxi groups are the base strata of the west section of the Jiangnan Orogenic Belt.

The maximum sedimentary age of the Lengjiaxi Group is ca. 862 Ma, and the minimum is ca. 822 Ma. The Zhangjiawan Formation, which is situated in the upper part of the Banxi Group is ca. 802 Ma. The Lengjiaxi Group and equivalent strata should thus belong to the Neoproterozoic in age. The Jiangnan Orogenic Belt consisting of the Lengjiaxi and the Banxi groups as important constituents is not a Grenville Orogen Belt (1.3 Ga–1.0 Ga). The Jiangnan Orogenic Belt is a recyclic orogenic belt, and the prototype basin is a foreland basin with materials derived from the southwest and the sediments belong to the active continental sedimentation. By combining large amounts of dating data of the Lengjiaxi and the Banxi groups as well as equivalent strata, the evolutionary model of the western section of the Jiangnan Orogenic Belt is established as follows (*Figure 1*): Before 862 Ma, the South China Ocean was subducted beneath the Upper Yangtze Block, while a continental island arc was formed on the side near



the Upper Yangtze Block. The South China Ocean was not closed in this period. From 862 Ma to 822 Ma, the Upper Yangtze Block was collided with Cathaysia; and sediments began to be deposited in the foreland basin between the two blocks. The Lengjiaxi Group and equivalent strata were thus formed and the materials might be derived from the recyclic orogenic belt in the northwest. From 822 Ma to 802 Ma, Cathaysia continued pushing to the Upper Yangtze Block, experienced the Jinning-Sibao Movement (Wuling Movement); as result, the folded basement of the Jiangnan Orogenic Belt was formed. After 802 Ma, Cathaysia and the Upper Yangtze Block were separated from each other, the Nanhua rift basin was formed and began to receive the sediments of the Banxi Group and equivalent strata.

Figure 1: The evolution process of the west section of the Jiangnan Orogenic Belt

These large amounts of dating data and research results also indicate that before the collision of the Upper Yangtze Block with Cathaysia, materials of the continental crust became less and less from the southwest to the east in the Jiangnan Orogenic Belt; only island arc and neomagmatic arc were developed in the eastern section. Ocean-continent subduction or continent-continent subduction took place in the western and southern sections, while intra-oceanic subduction occurred in the eastern section. The combination analyse of U-Pb ages and Hf model ages of zircons, it can be give the conclusion that the main provenance of the Lengjiayi Group is the Cathaysia.

