
The Last 200 Million Years in Eastern Asia: Yanshanian Subduction and Post-Yanshanian Extension

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The pre-Yanshanian (pre-200 million years ago) geology of Asia can be interpreted as an unique record of numerous small plates, some of which were separate rifted blocks as early as 1,500 million years ago. The north-south agglomeration of these blocks to form the bulk of modern Asia began in the west during the Carboniferous (Hercynian events) and climaxed in the east during the Late Triassic (Indosinian events). In the eastern part of the continent, four major east-trending sutures (Red River, Qin Ling, Yan Shan, and Mongol-Okhotsk) bound three major blocks (respectively, South China, North China-Korea, and Manchuria-Bureya).

The Yanshanian geology in eastern Asia, particularly the widespread belts of calc-alkaline igneous rocks, can be interpreted as resulting from magmatism superposed above

major peripheral subduction zones that dipped northwestern under South China and westward under North China-Korea and Central Mongolia from 200 to 100 million years ago, and westward under North China-Korea (fronted by Southwest Honshu) and Manchuria-Bureya from 100 to 50 million years ago. Some subduction also took place from 200 to 100 million years ago, parallel to the Qin Ling, Yan Shan, and Mongol-Okhotsk sutures, as all finally closed.

Hydrocarbon-rich basins formed as the result of major epeirogenic subsidence on western margins of the oldest continental nuclei, farthest from the eastern subduction zones. Rates of subsidence and subduction appear correlative; areas of magmatic arcs and volumes of sedimentary basins reflect subduction rates; both reach a maximum in the Late Jurassic and Early Cretaceous.

The post-Yanshanian (since 50 million years ago) geology in eastern Asia can be interpreted as resulting from northeast-southwest crustal extension in the region between the Siberian craton and the continental margin from Primorye to Taiwan, contemporaneously with collisions between Asia and the Okhotsk block in the northeast, the India block in the southwest, and the Philippine arc in the southeast. The extension is evidenced by hydrocarbon-rich Tertiary grabens, by voluminous Late Tertiary alkalic basalt volcanism localized along former plate sutures, and by historically recorded, scattered, intraplate, shallow seismicity.
