

Basement geologic structures around the Japan Sea

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We present a synthetic restoration model for the Japan-Sea opening based mainly on (1) estimation of the amounts of intra-arc deformations, (2) review of paleomagnetic data, and (3) present submarine topography. Our model successfully restored the Northeast and Southwest Japan arcs in the area of the Sea of Japan. The model revealed that there was an NNE-trending huge sinistral fault system along the eastern margin of Asia in Cretaceous time. The fault system comprises the Median Tectonic Line, Hatakawa Tectonic Line, and Central Sikhote-Alin Fault with a by-pass of the Tanakura Tectonic Line and Partizansk Fault in Northeast Japan and the southern part of Primorye. Most of the pre-Late Cretaceous geologic units of Japan extend to Primorye. In particular, two rows of Jurassic accretionary complexes in Japan and Primorye, i.e. the Tamba-Mino-Ashio-Samarka belt and the Southern Chichibu-North Kitakami-Taukha belt, also connect smoothly in our restoration model. On the other hand, the geologic structures of Southwest Japan were subparallel to those of the Korean Peninsula before the opening of the Japan Sea. The southeastern margin of the Japan Sea thus obliquely cuts the basement geologic structures of Northeast Japan, but is subparallel to those of Southwest Japan.