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An Introduction to the Major NSFC Program "Reconstruction of East Asian Blocks in Pangea"

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Pangea is the youngest supercontinent in Earth's history and its main body formed about 300-250 million years ago. As supported by voluminous evidence from reliable geological, paleomagnetic and paleontological data, configurations of major continental blocks (e.g. Gondwana and Laurasia) in Pangea have been widely accepted. However, controversy has long surrounded the reconstructions of East Asian blocks in Pangea. So far, most Pangea reconstructions assume that continental blocks in East Asia had never joined the main body of Pangea before its breakup with the opening of the Atlantic Ocean at ~180 Ma. In these reconstruction models, East Asian blocks were positioned as isolated blocks around the Paleo-Tethyan Ocean. Most of these reconstructions were based on geological and paleomagnetic data before the 1990's but did not fully consider recent data for major collisional mountain belts between continental blocks in East Asia. To precisely reconstruct the East Asian blocks in Pangea, the Natural Science Foundation of China (NSFC) has set up a Major NSFC Program entitled "Reconstruction of East Asian Blocks in Pangea" (Project code: 41190070; Duration: 2012-2016; Funds: 20,000,000 RMB), which consists of the following five sub-projects: (1) Paleomagnetic constraints on reconstruction of East Asian Blocks in Pangea; (2) Tectonic framework of the Proto-Tethyan Ocean and Early Paleozoic amalgamation of microcontinental blocks in East Asia; (3) Closure of Eastern Paleo-Tethyan Ocean and assembly of microcontinental blocks in South China and adjacent areas; (4) Collisional events in the western segment of the Central China Orogen and their bearing on the assembly of East Asia; and (5) Closure of the Paleo-Asian Ocean and reconstruction of East Asian blocks in Pangea. During the past five years, the researchers from these sub-projects have made the important advancements in the reconstruction of East Asian continental blocks in Pangea, including: (1) demonstrating that Tarim and North China amalgamated to Siberia at 300 Ma and 250 Ma, respectively, with the closure of the Paleo-Asian Ocean along the West and East Tianshan-Beishan-Solonker sutures, indicating that Tarim and North China were part of the main body of Pangea; (2) determining that the Lahsa-South Qiangtang and Sibumasu blocks collided with the North Qiangtang and South China (incluidng Yangtze, Cathaysia and Indochina) blocks about 230-250 Ma ago, with the closure of the East Paleo-Tethys Ocean along the Longmucuo – Shuanghu – Changning – Menglian - Inthanon suture belt, leading to the formation of the united South China continent; (3) confirming that the united single East Asian Continent formed by the final collision of South and North China at about 220-240 Ma, with the final closure of the Qin-Qi-Kun Ocean along the West and East Kunlung-Mianlue-Dabie-Sulu suture belt; and (4) confirming with paleomagnetic data that the East Asian continental blocks were fused together as a single continent that became part of Pangea by 220 Ma. This research was financially supported by Hong Kong RGC GRF projects (17301915 and 17302617) and a NSFC Key Project (41730213).