



Accretionary-collision orogens and crustal growth of Eurasia in Vendian-Paleozoic time

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Sinters of geology, tectonics, paleomagnetism, paleontology, geochemistry and geodynamics of Central Asian accretionary-collision orogens have showed that large-scale (up to several thousand kilometers) horizontal strike-slip displacements, which were a function of collision and subduction processes, had a very important impact on the formation of the Euroasian continent in Vendian-Paleozoic time. The available paleoreconstructions show that in Vendian time the Paleo-Asian ocean situated in between the Siberian and Eastern Gondwana continents was as great as 3000-4000 kilometers across. In Vendian time the Eastern Gondwana broke into several continents and microcontinents/terrane migrating westward, e.g. the Altai-Mongolian, Tuva-Mongolian and Kokchetav microcontinents. At that time, the Kuzntesk-Altai and Khantai-shirin island-arcs of Pacific type formed along the western and northern margins of the Siberian continent. The Chingiz-Boshchekul island arc formed in the eastern part of the Paleo-Asian ocean. Within-plate hot spots resulted in the formation of oceanic islands and plateaus in the Paleo-Asian Ocean. In Cambrian the oceanic islands and microcontinents were incorporated in the accretionary wedges of the island arcs. This induced reverse currents in the accretionary wedges and their related exhumation of high-pressure rocks, the jumping of the subduction zone and formation of a normal island arc. In the Late Cambrian-Early Ordovician the normal island arcs were attached to the Siberian continent resulting in the closing of marginal seas and formation of an Early Caledonian accretionary orogen. An extended carbonate-terrigenous shelf formed along the passive margin of the Siberian continent in Ordovician-Silurian time. The subduction of the Paleo-Asian Ocean under the Siberian continent developed in the Devonian. The eastern part of the Paleo-Asian ocean continued subduction, which resulted in the formation of the Chingiz-Boshchekul island arc along the margin of the Kazakhstan continent. By the Early Devonian the Paleo-Asian ocean had

been broken into several basins. The Ob-Zaysan ocean was located between the Kazakhstan and Siberian continents and linked with the South-Mongolian Ocean. From the northeast the East European continent was bounded by the Uralian Ocean. In the Early-Middle Devonian, the oceanic lithosphere of the Zaysan Ocean subducted beneath the Siberian and Kazakhstan continents. The Salair-Altai volcano-plutonic belt was formed at the southeastern margin of the Siberian continent, whereas the Zharmasaur island arc – at the northwestern margin of the Kazakhstan continent. The collision of Goldwana-derived microcontinents with the continental margin was responsible for dextral strike-slip faulting in Altai-Sayan region, which is documented by Late Devonian-Early Carboniferous shear zones. The dextral strike-slip faults broke the marginal part of the Siberian continent. In Late Devonian-Middle Carboniferous time the Kazakhstan continent migrated eastwards and met the Siberian continent, which kept on rotating clockwise. In the Late Carboniferous-Permian the Ural-Mongolian and Ob-Zaisan basins of the Paleo-Asian Ocean closed and the East European, Kazakhstan, and Siberian continents amalgamated to form the Eurasian continent. That time, the East European continent rotated counter clockwise and the Siberian continent – clockwise. The rotation of huge continental masses was determinative for large-scale strike-slip structural patterns of the Central Asian accretionary-collision orogens. This work is financially supported by a grant of the RFBR, no. 05-05-64508.