

Paper Number: 2338

## **Transformation hybrid oceanic lithosphere into continent and enigma of Paleozoic Asian continental growth**

Schulmann, K.<sup>1</sup>

<sup>1</sup>Centre for Lithospheric Research, Czech Geological Survey, Prague, Czech Republic

---

Continental crust is formed above subduction zones by well-known process of “juvenile crust growth”. This new crust is in modern Earth assembled into continents by two ways: (i) short-lived collisions of continental blocks with the Eurasian continent along the “Alpine-Himalayan collisional/interior orogens” in the heart of the Pangean continental plates realm; and (ii) long lived lateral accretion of ocean-floor fragments along “circum-Pacific accretionary/peripheral orogens” at the border of the Pacific oceanic plate. This configuration has existed since the late Proterozoic, when the giant accretionary Terra Australis Orogen developed at periphery of an old Palaeo-Pacific ocean together with collisional Caledonian and Variscan orogens. At the same time, the large (ca. 9 millions km<sup>2</sup>) Central Asian Orogenic Belt (CAOB) developed in the NE part of the Pangea. This orogen reveals features of both peripheral and interior orogens, which implies that the generally accepted “peripheral–accretionary” and “interior–collisional” paradigm is not applicable here. To solve this conundrum we propose a new model of unprecedented Phanerozoic continental growth. In this model, the CAOB precursor evolved at the interface of old exterior and young interior oceans. Subsequently, the new lithospheric domain was transferred by advancing subduction into the interior of the Pangean mostly continental realm. During this process the oceanic crust was transformed into continental crust and it was only later when this specific lithosphere was incorporated into the Asian continent. If true, this concept represents revolutionary insight into processes of crustal growth. We bring geological, geochemistry and geophysical arguments to solve the enigma of anchoring hybrid lithosphere inside a continent without its subduction or Tibetan-type thickening.

