



Comparison of the Late Paleozoic structure of the Southern Urals segment of the Eastern margin of Europe and the present-day nappes/thrust-fold structure of the Alpine segment of the Southern margin of Europe

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The Southern Urals is a segment of the Late-Paleozoic collision zone of the Precambrian continent Baltica (East-European craton) and Caledonian composed Siberia-Kazakhstan-Kyrgyz continent. Three stages of the tectonic evolution of the Paleozooids of Southern Urals can be distinguished: 1. An accretionary stage - evolution of an active continental margin of Baltica or/and Siberia-Kazakhstan-Kyrgyz continent, including arc-related (continental-margin) volcanism, accretion of micro-continents, oceanic plateaus, etc. 2. A collision stage - closure of Paleo-Uralian ocean and collision of the continents resulting in thrust-folded deformations, nappes, a high standing orogene, etc. 3. A post-collision stage - erosion of the orogene, folding, strike-slip and extension dislocations. The present-day structure of the Southern Urals is subdivided into West-Uralian and East-Uralian zones by ophiolitic suture named Main Uralian Fault. It is common adopted that Main Uralian Fault, West-Uralian and East-Uralian zones are relicts of the Paleo-Uralian ocean and Early-Middle Paleozoic margins of Baltica and Siberia-Kazakhstan-Kyrgyz continent, respectively. The western flank of East-Uralian zone is characterized by alternation of terrains of continental, subducted-relative, and oceanic nature. It is impossible to explain a such tectonic pattern by a simple obduction of complexes of the East-Uralian zone on the eastern margin of Baltica. This is why all proposed tectonic reconstructions of the Southern Urals evolution consist of many episodes, which include opening and closure of micro oceanic basins, jumping of a subduction zone, accretion of micro-continents, etc.

Thus, the main tectonic activity is assigned to the pre-collision stage. The collision stage is believed not to play an essential role for forming of the architecture of the region. The last decade field works allowed: 1) to improve and to correlate the Paleozoic stratigraphic schemes for many large structure elements of the south part of East-Uralian zone: Prisakmaro-Voznesensk, West-, Central- and East-Magnitogorsk units; 2) to prove, that the western flank of East-Uralian zone is presented by Late Paleozoic nappes, dislocated into a simple conjugate fold system (synforms and antiforms). They are (going from west to east): (a) Uraltau antiform, the Early Late Paleozoic complexes of the Prisakmaro-Voznesensk units exposed in the east limb of the Uraltau antiform; (b) West-Magnitogorsk synform composed by allochthonous Devonian - Early-Carboniferous volcanic and volcanic-sedimentary suites. (c) Central-Magnitogorsk antiform, the Late Paleozoic suites (analogous to the uppermost part of the stratigraphic sequence of the Prisakmaro-Voznesensk units) are exposed in the core of this antiform. (d) Eastern-Magnitogorsk synform consisting of complexes of the Devonian - Early-Carboniferous volcanic island arc. The western limb of this synform is the eastern limb of the Central-Magnitogorsk synform. The limb is complicated by a minor antiform - Agapovka window composed by Devonian - Early Carboniferous complexes; Late Paleozoic terrigenous-carbonate rocks are exposed in the central part of the window. A similar structure style of the uppermost crust is revealed in the Alps, which has been forming by the colliding of margins of the Adriatic and European plates. The colliding zone is a wide area of deformation and "mixture" of Adriatic and European margins complexes, and oceanic basins and micro-continents existed between Adria and Europe. Austroalpine nappes are believed to be originated from Adriatic complexes, Helvetic nappes - from European margin complexes, and Penninic nappes - from Piemont-Liguria ocean complexes. Monte Rosa, Aar, Gotthard, and others analogous units are believed to be the strongly deformed Si-Al-blocks of European margin; they were pulled down collision zone, and then uplifted far behind the nappes front. Comparison of the long-range crustal-scale geological-seismic sections across the Southern Urals (URSEIS-95) and Alps (EGT, TRANSALPS, ECORS-CROP Alp, etc.) shows similarities of the major tectonic features of these thrust-fold belts. The main corresponding pairs are (Alps - Southern Urals): 1) The main detachment of the European margin (a boundary between upper and lower crust) - the main detachment of the Southern Uralian edge of the Baltia (the top of pre-Paleozoic basement). 2) Aar and Gotthard massifs - Uraltau uplift. 3) The most southern edge of the Aar/Gotthard massifs - Main Uralian Fault. 4) Insubric line - East-Uralian fault. 5) Helvetic nappes - Zilair synform. 6) Penninic nappes - Kraka allochthon, West- and East-Magnitogorsk units. Thus, during Late-Paleozoic collision of Baltia and Siberia-Kazakhstan-Kyrgyz continents their margins and relics of dividing them units were deformed and displaced in Alpine style. It means, that the major features of the tec-

tonic "pattern" of Paleozooids of the Southern Urals were generated not during the accretionary stage of its evolution, but during the continental collision and post-collision complication of the structure this collision orogene. This work is partially supported by RFBR (RFFI), grant 04-05-64093.