



Oroclinal bending in Kazakhstan: paleomagnetism-derived kinematic frame and geologic events

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Recent paleomagnetic studies of Middle Paleozoic rocks convincingly demonstrated that the horseshoe-shaped Devonian Volcanic Belt of Kazakhstan in the west-central part of the Central Asian Orogenic Belt has resulted from oroclinal bending of an originally rectilinear NW-SE trending structure [Levashova et al., Tectonophysics, 2003, 377, 249-268; Abrajevitch et al., Tectonophysics, 2007, 441, 67-84]. This kinematic skeleton, however, remained almost devoid of geologic muscles and tendons. We analyzed the spatial distribution of subduction-related volcanic complexes, folding and rifting events, and other tectonic phenomena in an attempt to connect the paleomagnetically-derived motions with tectonic history of this territory. Our main conclusion is that, since the Early Devonian until the Late Permian, the evolution of this vast region was governed by slow oroclinal bending and consequential internal deformation of a coherent non-rigid landmass.