

Specific features of the neotectonics activation of South-Anyuy suture (Chukotka)

Sim L.A. (1), Bryantseva G.V. (2), Selivanov D.A. (3)

(1) Schmidt Institute of Physics of the Earth of the Russian Academy of Sciences, Moscow, Russia

(2) Moscow State University, Faculty of Geology, Moscow, Russia

(3) SRK Consulting (Russia) Ltd., Moscow, Russia

e-mail: sim@ifz.ru

The complex South-Anyuy suture (SAS) delimitates the Verkhoyano-Kolymsky and Chukotsky orogenic belts. The two main stages of SAS geological development are the oceanic stage (up to the beginning of Late Jurassic), when the extensive Proto-Arctic Ocean existed, and the collision stage (Late Jurassic – Early Cretaceous). Historical studies [Sokolov, Tuchkova et al., 2015] have identified four deformation stages, of which this study is concerned with the post-collision stage D-3, which is characterized with right strike-slip faults with sub latitudinal strike.

A structural-geomorphological map of the SSE end of the South-Anyuy suture and its framing structure, was created with the scale of 1:1 000 000 in accordance with N.P. Kostenko's methodology [Kostenko, 1999]. In the recent structure, SAS clearly corresponds to the Anyuy uplift framed by recent faults of WNW strike, which match to the valleys of the Bolshoi and Maly Anyuy Rivers. Subparallel to these faults, within the Anyuy uplift, another two faults of WNW strike have been identified that restrict the Anyuy ridge. Ilirneysky and Aluchinsky uplifts of WNW strike were identified to the ENE and SSW from the South-Anyuy suture. All three positive structures are cut with a series of NE faults that divide these uplifts into a number of recent diamond-shaped blocks of various heights. In the south-east of the region, these uplifts are separated by a curved boundary of ENE strike, which is assumed to have a fault nature. This boundary clearly separates the uplifts from the recent structures of ENE strike: Anadyr uplift and Chuvansko-Schuchynsky basin. The maximum total conerosion uplifts on the structures of WNW strike are over 1500 m in some blocks, with prevailing block heights of 1000-1500 m over the area. Narrow elongated basins of ENE strike have the heights of 100-500 m.

A structural-geomorphological method of shear stress reconstruction [Sim, 1991] was used to reconstruct the compression and extension axes in horizontal plane along the recent faults. The faults of WNW strike restricting the recent Anyuy uplift and complicating its central part are leftward shears, which is contrary to the direction of shears of the D-3 post-collision stage identified in the historical SAS studies [Sokolov et al., 2015]. Compression axes have been reconstructed in the horizontal plane of NE strike for all faults. The fault that restricts the Anyuy ridge from the SSW was activated in the neotectonics stage in different geodynamic conditions: its WNW part was activated in the additional compression environment, and the ESE part was activated in the additional extension environment.

Therefore, the neotectonics inherits the large faults of the post-collision development stage identified by the historical geological studies of the SAS. However, the recent stage deformations are expressed mainly as roof block uplifts forming recent blocks of various heights and displacements along the right strike-slip faults with WNW strike.