



From arc-normal extension above the subduction zone to arc-normal contraction just beyond its lateral edge: the case of the Kamchatka-Aleutian junction

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Active structural pattern in the northernmost Kamchatka island arc and its junction with the Aleutians manifest along-arc variation in respect to the vertical projection of the northern lateral edge of the subducted Pacific plate slab. South of the slab lateral edge, the Kamchatka island arc is experiencing arc-normal extension. This extension is manifested by the asymmetrical Central Kamchatka depression bounded in the east by normal faults of the longitudinal East Kamchatka fault zone. Geomorphologic and trenching data show that the west-dipping planes of these faults likely flatten with depth, that is, have listric morphology. This suggests that the Central Kamchatka depression formed due to lateral east-directed stretching of the arc crust, caused in turn by ocean-directed movement of the subducted slab and the trench. Immediately north of the slab, the western Aleutians (its Komadorsky Islands block) driven northwest by the subducting Pacific plate approaches Kamchatka and collides with it in the area of the Kamchatsky Peninsula. Collisional contact of the two arcs shows up as a set of two major active faults, which cut the Peninsula off the Kamchatka mainland. These are the N-S thrust-reverse fault, its plane dipping west beneath the Kamchatka mainland structures, and the E-W fault with dominating right-lateral and subdued reverse component, with the plane dipping north. The latter extends underwater reaching there the base of the underwater slope of the Peninsula. Opposite movement of the westernmost Aleutians together with the Kamchatsky Peninsula, and Kamchatka results in left-lateral flexural bending in the transition zone between the two domains, just above the lateral edge of the subducted plate.