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The principal feature in the Cenozoic evolution of the Northwest Pacific is based on the fact that two intraoceanic arc terranes of the Upper Cretaceous - Paleogene age were incorporated in the Kamchatka - Olutorka orogen during the early Tertiary and at the end of the Miocene respectively. The major event in the reconstructed evolution is the early Tertiary collision of the extended Achaivayam-Valaginskaya arc terrane with the continental margin of Asia. The margin is interpreted as the southeastern (facing the Pacific) Cretaceous accretionary boundary of the Okhotsk microplate, that was docked against the Asian continent at the end of Cretaceous. The arc-continent collision developed progressively from southwest to northeast from the Early Eocene in southern Kamchatka to the early Middle Eocene in the Olutorka zone. The different stages of the collision occurred simultaneously along strike of the Achaivayam-Valaginskaya arc and included: 1) the entrance of the continental margin in the subduction zone, deformation of the overriding plate and subduction of fore-arc block; 2) arc obduction on the continental margin, blocking of continental margin subduction; and 3) subduction reversal with the onset of oceanic subduction at the back side of the deformed arc. The subduction polarity reversal, the most characteristic feature of the collision model for Kamchatka, is strongly supported by geological and physical modeling data and may be compared with the recent examples of the same process at western Pacific margins.