

The Generation of “New” Andean Crust In Peru From The Permo-Triassic to Present

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Growth of continental crust in the central sector of the Andes in Peru from the Permo-Triassic onwards was the result of the break-up of old sialic crust by major continental rifting and basin formation. Thus Permian Triassic alkaline volcanism and plutonism relates to extensional tectonics indirectly related to subduction in an environment similar to the Permian Oslo Palaeorift.

Later, more extensive magmatism occurred to the west along the Andean plate margin in the West Peruvian Trough, a major crustal rift basin, one of a series of large related depositional basins which formed simultaneously behind the continental margin along the entire length of the Andean Cordillera from Columbia to Antarctica. This followed initiation of a continent ocean convergence regime for which the Andes is the type example. In the Huarmey basin near Lima up to 9000m of mantle derived basaltic andesitic material was deposited in the Albian. Shallow melting of this material immediately after major crustal rifting produced the Coastal Batholith magmas with a dominant mantle component. Above the batholith lies a thick sequence (>3000m) of Cenozoic basaltic/andesitic cover rocks, formed from extensional Andean trending dyke systems. The culmination of Andean magmatism in central Peru is the Cordillera Blanca batholith and associated very numerous stocks associated with a strike slip rift graben. The batholith magmas formed on melting of new, hydrous basaltic underplate in thick crust (>60km). Thus the Andean period in Peru is a history of rifting, subsidence and magmatism of dominantly mantle origin producing a huge segment of “new” continental crust.