

## TERRANE HISTORY OF SOUTHERN SOUTH AMERICA

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Southern South America has three important episodes of accretion during the latest Precambrian and Paleozoic. Southern South America history is partially coeval with the evolution of Antarctic Peninsula, North Victoria Land and adjacent regions which have alternating periods of rapid plate movements associated with subduction and arc magmatism, and subsequent amalgamation of terranes, followed by stationary intervals characterized by rhyolitic magmatism.

The Late Proterozoic accretionary history of Southern South America began with extensive calcalkaline magmatic activity (700-500 Ma), along the Eastern Sierras Pampeanas terrane. This magmatism ceased when this Proterozoic microcontinent collided against the older (app. 2,000 Ma) Rio de La Plata craton, followed of rhyolitic volcanism. The same time interval in the central Transantarctic Mountains is associated with the collision of the Beardmore microcontinent against East Antarctica (Borg and De Paolo, 1989).

The Puncoviscana belt, northwest of the Sierras Pampeanas was a Late Proterozoic accretionary prism consisting of turbiditic sequences formed at the trailing edge of the Sierras Pampeanas block during the latest Proterozoic-earliest Cambrian (Ramos, 1988). Similarly, the age-equivalent Wilson (500-550 Ma) in Western Antarctica is also a sedimentary accretionary prism formed at the margin of the craton. Both the Puncoviscana and the Wilson terranes were subsequently metamorphosed and deformed at approximately the same time. The Puncoviscana belt was also the locus of S-type granitoids and trondjemites related to an east-dipping subduction.

After the welding of the Arequipa crustal block to the Sierras Pampeanas, which was already amalgamated with the Amazonian and Rio de la Plata cratons (Ramos, 1988) a stationary period begun, with minor rhyolitic plateaux developing along sutures in Southern Brazil (Ramos, 1976). This aggregation period was part of the worldwide event that formed the large



Pangea supercontinent at the end of the Proterozoic. Rifting and dispersal of different blocks came soon after this period.

The second amalgamation period occurred during the Late Ordovician-Early Silurian in Northern Argentina (the Oclroyic Orogeny) where the Arequipa and related crustal blocks were resutured to the Gondwana continent, while in central Argentina, the Precordillera allochthonous terrane acquired its present position (Ramos et al, 1986). The Ross Orogeny occurred in the central Transantarctic Mountains during the Late Ordovician, at the same time as the Bowers and Robertson Bay terranes were assemblaged together to form the Admiralty microcontinent (Borg et al., 1987; Vetter and Tessensohn, 1987). Western Sierras Pampeanas, as well as the Arequipa block registered an important magmatic activity circa 440 Ma, when tholeiitic gabbros, hornblende-bearing and other metaluminous granitoids were intruded (Rapela et al., 1989) associated with subduction toward the craton.

The end of the Early Paleozoic is marked by the accretion of Chilenia in the Late Devonian - Early Carboniferous (the Chanic Orogeny) to the South American part of Gondwana (Ramos et al., 1984). At the same time, the Admiralty microcontinent, after a period of ocean-ward subduction was amalgamated to East Antarctica (Borg and De Paolo, 1989).

The final assemblage of the second supercontinent of Pangea, was completed during the Late Paleozoic with the accretion of Patagonia (South America, Ramos, 1987) and Weddellia (Antarctic Peninsula, Marie Byrd and related terranes, Dalziel et al., 1987) to the rest of Gondwanaland.

A stationary period with low mobility and extensive rhyolite eruption (Kay et al., 1989), in Western Argentina and Chile as well as in Western Antarctica characterized the magmatic activity prior to the Mesozoic break-up of the continents. At this time minor accretion took place along the western border of Southwestern Gondwanaland as documented by Madre de Dios and other exotic blocks amalgamated during Late Paleozoic. During most of the Mesozoic the continent was subjected to continental erosion and some sliver displacements in the forearc region such as the Pichidanguí Terrane.