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Plate interaction between the Northandean basement and western oceanic plateau, as evidenced by fault rocks

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The Northandean super-terrain became consolidated by the end of a Cretaceous subduction cycle, as a major plateau province accreted to Southamerica along a west-facing subduction zone. The corresponding suture and its accompanying faults are collectively termed Romeral faults and have formed under a particular framework: 1) Subduction and build-up of the oceanic plateau were coeval, entailing a strong plate coupling between a buoyant oceanic and a continental crust; 2) the suture was inherited from a Late Paleozoic subduction cycle, a circumstance that might have prefigured the Cretaceous subduction polarity, contrasting this Andean setting with the obduction of the Caribbean crust further NW; 3) a trench, if present at all, evolved only incipiently, to conclude from the absence of sediments in the subduction channel.

In the hangingwall of the suture two subduction complexes indicate, each one, a particular structural evolution: an external one consists of mid-crustal slivers that were affected by subduction and extruded to the present structural level, entraining lithospheric or mantle peridotites. Another internal one includes imbricated upper crustal slices that are piled up in front of a major reverse fault. Their steep attitude points to incipient subduction.

Deformation modes of faults strongly depend on the availability of fluids and the mobility of SiO_2. Relatively silica-rich amphibolites and gneisses are transformed to phyllonite, manifesting a reaction-enhanced ductility. Silica-poor basalts and tuffs, on the other hand, are differentiated into chlorite schists and felsic layers in the course of a pervasive fluid flow. Siliciclastic sediments, however, are affected by intense veining, reflecting a focused fluid flow. A probable source of the fluids involved in the retrograde reactions must be looked for in the serpentinites, which intermingle with fault rocks or form dome-like massifs along normal faults. Their repeated mobility up to the Neogene deformation phases documents a long-lasting fluid-enhanced ductility.