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Divergent double subduction setting effects on the evolution of arc magmatism: insights from the Late Cretaceous record of the Colombian Andes

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Arc-continent collision can play a major role on the formation and modification of continental crust. Whereas the magmatic evolution on collisional setting between an arc and a passive margin have shown to incorporate old crust by subducted sediment or continental crust, more complicated has been the understanding of arc-arc collisional scenarios in divergent double subduction setting where geodynamic models predict different modifications on the magmatic evolution by mantle input that need to be test with natural examples. The Late Cretaceous tectonic evolution of the Northern Andes has been related to a double divergent subduction setting that include well recognized and continuous pre- and syn collisional calc-alkaline magmatic record within the two colliding arcs. Whereas the continental arc shows a trench-ward advance of magmatism and a stronger mantle input as the two arcs approach, the oceanic arc is also characterized by a similar mantle input, with incorporation of older crust and a switch from tholeiitic to calc-alkaline character, the seen in the presence of old inherited zircons and evidence of thinning of the upper crust before the collision. We relate such a trend to the subduction steepening of both subduction as the two margins approach until their final juxtaposition, and the divergent configuration stops and the fore-arc associated to the oceanic also seems to be partially disappear.