Geophysical Research Abstracts
Vol. 15, EGU2013-1815, 2013
EGU General Assembly 2013

Provenance through the limit: integrated provenance from the Devonian sedimentary and basement rocks from the northern segment of the Eastern Cordillera of the Colombian Andes

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The provenance record of sedimentary rocks is sometimes the only available archive of the geological evolution in continuously active continental margins where continuous exhumation, erosion and along strike fragmentation of continental margins destroy geological evidences. New integrated provenance constraints from segmented exposures of Devonian rocks of the northern segment of the Eastern Cordillera of Colombia are used to reconstruct overimposed Paleozoic, Mesozoic and Cenozoic paleogeographic scenarios of the northern Andes.
Sandstones from deltaic to platform environments are characterized by very high quartz contents, stable to ultrastable heavy minerals and mostly angular fragments. U-Pb detrital zircon geochronology reveals prominent Silurian to Ordovician and Mesoproterozoic (Grenvillian) age populations with minor Devonian zircons. Tourmaline geochemistry and detrital quarz characterization suggest prominent low grade metamorphic sources. These provenance fingerprints can be related to the erosion of the older metasedimentary basement exposed in the same region and record the transition from a terrane collisional event to the formation of a new subduction zone before the final Late Paleozoic events that end in the agglutination of Pangea. The U-Pb detrital record of the Devonian and basement rocks of the Eastern Cordillera are also comparable with Early to Middle Paleozic Paleozoic rocks form the Northern segment of the eastern Peruvian Andes re-inforcing the view of along strike terrane thousand of kilometer transport along the Mesozoic proto-Andean margin.
Petrographic and heavy mineral petrofacies and stratigraphic correlation between Devonian localities are also used as piercing points to document Cenozoic ten of kilometers strike slip displacements along the northern termination of the Eastern Cordillera.