

## Cretaceous fringing arcs in the Northern Andes

J. Vanegas<sup>1, 2</sup>, A. Cardona<sup>1, 3</sup>, J. Jaramillo<sup>1, 2</sup>, S. Leon<sup>1</sup>, V. Valencia<sup>4</sup>

<sup>1</sup>Grupo de Investigación EGEO, Universidad Nacional de Colombia

<sup>2</sup>Departamento de Geología, Universidad EAFIT, Colombia

<sup>3</sup>Departamento de Procesos y Energía, Universidad Nacional de Colombia

<sup>4</sup>Department of the Environment, Washington State University

Magmatic rocks have shown to be a major cornerstone for the reconstruction of the switching tectonic configuration of the Andean Margin since the Cretaceous. During the Cretaceous the western margin of South America experience contrasting extensional and compressional behaviours as the Andean orogen began its construction in the Late Cretaceous.

In this contribution we review lithostratigraphic, geochemical and provenance characteristic of the Cretaceous volcano-sedimentary rocks in western Colombia and Ecuador (Quebradagrande and Alao complexes) in order to test the existence of the major tectonic switching of the margin during the Late Cretaceous.

Whole rock geochemistry of dacite to basaltic rocks with crystallization ages between 114 Ma and 80 Ma show the existence on crustal thickness trough time, from a relatively thin to moderately thick arc crust (10 Km to 30 Km), which is associated to an early formation of an extensional arc with associated back arc basin feed by sediments derived from the erosion of Pre-Cretaceous basement. Although modified by overimposed strike-slip tectonics, the latitudinal distribution of the Cretaceous rocks show significant along strike variations in its major tectonomagmatic fingerprint (MORB, Suprasubduction MORB or ARC) that together with the predominance of marginal sedimentary environments suggest that the magmatic arc and the topography during the Cretaceous was formed by a series of discontinuously emergent domains, that reflect an irregular extensión, probably associated to a more transtensional dominated margin .

These arcs began their coalascence to formed a more continuous topography in the Late Cretaceous as the former extensional arc become more compressional and an allochthonous oceanic arc finally collide with the margin. The presence of cannibalized volcanic and sedimentary rocks in the Cretaceous sedimentary rocks also suggest that the growing orogens do not include deep exhumation, probably reflecting the oblique nature of the convergence.