

## High-resolution sedimentology in the Cerbatana Conglomerate Unit (La Victoria Formation – Honda Group, La Venta, Colombia) from Digital Outcrop Models (DOMs)

E. Romero<sup>1</sup>, C. Jaramillo<sup>2</sup>, G. Bayona<sup>3</sup>, M. Baquero<sup>3</sup>, A. Cárdenas<sup>1</sup>

<sup>1</sup>Universidad EAFIT

<sup>2</sup>Smithsonian Tropical Research Institute

<sup>3</sup>Corporación Geológica ARES

La Venta is in the Neiva sub-basin of the Upper Magdalena Valley and it is known as one of the major Cenozoic fossil vertebrate localities in South America (Carrillo et al., 2014). The Miocene sedimentary record is represented by the Honda Group that is divided in La Victoria and the Villavieja formations, they were deposited from 13.5 to 12.9 and 12.9 to 11.5 Ma respectively (Guerrero, 1993). The contact between these two formations is delimited by an informal unit called Cerbatana Conglomerate (Fields, 1959; Wellman, 1970; Guerrero, 1993).

Sedimentological analyses indicate that La Victoria and Villavieja formations were deposited by meandering fluvial systems due the gradual uplift of the Central Cordillera (CC) and the beginning of the uplift of the Eastern Cordillera, respectively (Wellman, 1970; Guerrero, 1993; Villarroel et al., 1996). Cerbatana Conglomerate Unit (CCU) is found between these two meandering fluvial facies assemblages and has been interpreted as a result of a braided river deposition because of a sudden uplift of the paleo-central range (Wellman, 1970; Guerrero, 1993; Villarroel et al., 1996) or a supply from distal segments to the CC (Anderson et al. 2016).

Several authors (e.g. Fields, 1959; Wellman, 1970; Guerrero, 1993) have done a facial analysis of the CCU but using only a few stratigraphic columns. However, this unit have along ~10 km in the lateral extent and is a heterogeneous body that includes sandstones grading to conglomerates at the top toward the west, conglomerates from base to top toward the east, and lateral facies changes from massive clast-supported conglomerates with occasional horizontal stratification to conglomeratic sandstones with inclined stratification. In such a high spatial and stratigraphic variability, the use of only stratigraphic columns limits the characterization of the depositional nature of the unit. We propose a fluvial architecture analysis using Digital Outcrop Models for understanding the depositional system of the CCU.

Anderson, V. J., Horton, B.K., Saylor, J.E., Mora, A., Tesón, E., Breecker, D., Ketcham, R. 2016. Andean topographic growth and basement uplift in southern Colombia. *Geosphere*. 12.

Carrillo, Juan D; Forasiepi, Analia; Jaramillo, Carlos; Sánchez-Villagra, Marcelo. 2014. Neotropical mammal diversity and the Great American Biotic Interchange: spatial and temporal variation in South America's fossil record. *Frontiers in genetics*. 5. 451.

Fields, R. 1959. Geology of the La Venta badlands, Colombia, South America. University of California, Berkeley. 32, 405-444.

Guerrero, J. 1993. Magnetostratigraphy of the upper part of the Honda Group and Neiva formation. Duke University.

Villarroel, C., Setoguchi, T., Bireva, J., Macia, C. 1996. Geology of the La Tatacoa "Desert" (Huila, Colombia). Kyoto University.

Wellman, S. 1970. Stratigraphy and petrology of the Nonmarine Honda Group, UMW. *GSA bulletin*, 81.