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TÍTULO DE LA PONENCIA

Kinematic framework of the main fault systems in the central-west region of Colombia:
Exploratory data analysis

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Estilo preferido

ESTILO DE PRESENTACIÓN

- Poster

Categoría del resumen

ÁREA TEMÁTICA

Sistemas de información geográfica

LINEAS TEMÁTICAS SIG

Teledetección y SIG

Resumen

PALABRAS CLAVE

Descriptive statistics, geodynamics, fault system, Coffee Belt

CONTENIDO DEL RESUMEN

The strong interactions among the Nazca, Caribbean, and South American plates have resulted in a complex current stress state in Colombia with high crustal deformation and geological structure development in multiple directions. Through a review of the kinematic conditions and stress regimes that have previously been proposed by several authors and using a 12.5-m digital elevation model, a mapping of lineaments with their corresponding interpretations and an exploratory data analysis was performed to establish the relationships between the families of lineaments found in the Coffee Belt region. Nine groupings were identified according to their



strike orientation: Cauca-Almaguer (C-A, divided into NW, N–S, and NE), Ibagué, Ocaso, Otún, Palestina, Salento, and Santa Rosa. Subsequently, a deformation matrix was generated using the intersection points among the lineament families where the displacement was identified. Frequency distributions were constructed based on deformed and deforming structures, horizontal displacement component and quadrant in which the displacement occurred. A moderate to high correlation was determined between the deforming and deformed variables. A heat map among these variables and a dendrogram of the latter was also created. The C-A, Otún and Ocaso lineaments caused more deformation. The most deformed groups were C-A, Santa Rosa, and Salento. According to their structural trends and continuity, the dominant groups were Ibagué, Santa Rosa, Ocaso and C-A N–S. Most deformation events were found to the north and northwest of the study area. There is a strong influence of C-A and Otún fault systems on Santa Rosa and, to a lesser extent, of Ocaso on C-A and C-A on Salento. Grouping relationships were identified among the Ibagué-Santa Rosa, Palestina-Salento and Ocaso-Otún families as those of the latter two with C-A. Understanding the distribution of these fault systems provides an overview of the deformation pattern that is occurring in this region.