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The role of the Interplay between deep and shallow crustal structures in the metallogenic architecture of Central Andes: renewing the paradigm.

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After almost half a century of exploration and findings, by different mining companies, the continuity of the trench-parallel metallogenic belts along the Central Andes It could not be demonstrated. This fact exposes the necessity to revisit the paradigm of the metallogenic architecture in the Central Andes, from a critical and innovative view, which allows a better understanding of the processes involved in the genesis of mineral concentration in the earth's crust and develop new successful exploration concepts. Here we present a study about the metallogenic role of the interplay between the deep and shallow structures in the crust. The lower-crustal structures are related to Paleozoic and Triassic deformational processes developed in the paleo-margin. The upper crustal structural systems are associated with the deformational processes developed in the margin during the Mesozoic and Cenozoic in concomitance with the magmatic arcs. We found positive correlations between the position and clustering of the metallogenic occurrences and the regions of the geographical interplay between the deep and shallow crustal structures, explaining the latitudinal segmentation of the metallogenic occurrences. Also, we found positive correlations between the deformation regimes, the volume of the deposits, and the crustal thickness. Finally, we propose a critical structural control in the metallogenic processes, that generate diachronic metallogenic corridors of main orientation NW-SE, and subordinated NE-SW. These results open a new vision about of metallogenic architecture of the Central Andes, renewing the Andean Metallogenic paradigm, and open new exploration concepts.