New data from Neoproterozoic Dom Feliciano Belt and its Archean and Paleoproterozoic inheritance

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We present new LA-ICPMS U-Pb ages of detrital zircons from metavolcanosedimentary rocks of the Lavalleja Group (Minas, Fuente del Puma and Zanja del Tigre formations), a member of the Dom Feliciano Belt (DFB) in Uruguay linked to the Brazilian/ Pan-African orogenic cycle occurring in southeastern Uruguay and southern Brazil.

The Lavalleja Group is composed of volcano-sedimentary sequences that range from lower greenschist facies in the Minas Formation to upper greenschist-lower amphibolite facies in the Fuente del Puma and Zanja del Tigre Formations. Formerly, Zanja del Tigre Formation was considered as basement inliers of the DFB based on scarce isotopic data. Three representative samples of Minas, Fuente del Puma and Zanja del Tigre Formations have been dated by U-Pb.

Based on the results obtained, the following findings were made: the three formations that make up the Lavalleja Group have different U-Pb detrital zircon age patterns. For the Zanja del Tigre Formations two peaks are observed with ages of 2.0 - 2.3 Ga and 2.6 - 3.2 Ga. A single crystal was aged around 500 Ma. Fuente del Puma was the only one that showed a strong presence of Mesoproterozoic crystals between 1.3 and 1.5 Ga, with the other populations occurring in the intervals 2.0 - 2.3 Ga and 2.8 - 3.1 Ga. The Minas Formation metamorphites, unlike the previous ones, presented a distribution in a single peak between 2.3 and 2.5 Ga.

With the exception of the Mesoproterozoic peak, the other ages observed would have Archean and Paleoproterozoic rocks from the basement of the Lavalleja Group as possible sources.

The new results show an abundance of Paleoproterozoic detrital zircons (2500-2330 Ma) in the Minas Formation while Fuente del Puma and Zanja del Tigre Formations shows mainly Paleoproterozoic and Archean inheritance zircon ages, 3257-1337 Ma and 3216-652 Ma respectively, suggesting that the basement of the Dom Feliciano Belt would be correlated with Piedra Alta and Nico Pérez Terranes basements, both members of the Río de la Plata Craton.