

Geochronology and metamorphism of the Ediacaran Rio Una Sequence, Borborema Province, based on SHRIMP U-Pb zircon data

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ABSTRACT: The amalgamation of Gondwana resulted from the fragmentation of Rodinia and the reassembly of the cratonic blocks during the Neoproterozoic. The Borborema Province is the western part of a major Brasiliano belt that extends from Brazil through NW Africa in pre-drift reconstructions. This province results from the convergence and collision among the West African, Congo-São Francisco, and Amazonia land masses about 600 Ma. The Rio Una Sequence is located within the PEAL Domain of the Borborema Province. It is comprised by 3 units. We are presenting U-Pb dating of the unit 3. This unit comprises banded garnet-biotite-gneisses with intercalations of calc-silicates and piroxenites. The studied sample was collected close to one of these intercalations. Almost all zircons from the analysed sample show oscillatory zoning. The majority of the grains show length ranging from 50 µm to 100 µm, with only few of them ca. 200 µm long. They show aspect ratio ranging, from 1:1 to 4:1. Some zircons show core-rim reflectancy under the CL very contrasting, suggesting different ages for them. The $^{232}\text{Th}/^{238}\text{U}$ ratio of the majority of the analysed grains are high (> 0.2), suggesting they come from an igneous protolith of long crustal residence, or from a recycled igneous rock. U-Pb data with less than 5% discordance cluster mainly within the interval 648-760 Ma. The data available constrain the maximum depositional age of this supracrustal sequence to be 648 ± 7 Ma, which was the youngest zircon grain identified. Few discordant grains show ages ranging from 1,599 Ma to 1,309 Ma. Zircon grains with Paleoproterozoic and/or Tonian ages were not recorded into this unit. Recrystallized rims points to an age of 554 ± 8 Ma which can be interpreted either as late stage magmatism or shearing related to the continental scale Pernambuco Shear Zone. At the same time, this age is similar to the youngest age, from the literature, recorded along the Pernambuco shear zone by ^{40}Ar - ^{39}Ar systematic. Possible source for this sequence are igneous rocks from the Floresta region which show ca. 750 Ma, or the PEAL and Sergipano Domains igneous rocks. This unit, possibly records a small fore-arc syn-collisional basin related to the Gondwana amalgamation.

PALAVRAS CHAVE: SEQUÊNCIAS NEOPROTEROZÓICAS, GONDWANA