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Abstract title

U-PB SHRIMP AGES OF DETRITAL ZIRCONS FROM THE BEBEDOURO FORMATION, NORTHEAST BRAZIL: CONSTRAINTS ON SEDIMENT PROVENANCE AND DEPOSITIONAL AGE OF NEOPROTEROZOIC GLACIAL ROCKS OF THE SÃO FRANCISCO CRATON

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Abstract

Glacial deposits covered by carbonates at the Irecê Basin (Northeast Brazil) were reported early in the 20th century. However, despite several attempts to date these rocks their age is still disputable. The available geochronological data on the glacial rocks, and regional correlations point to either an age older than 930 Ma (Rb-Sr ages on clay minerals; Macedo and Bonhomme, 1984) or an age around 1000 Ma (correlations and Ar-Ar ages on mafic dikes; D'Agrella et al., 1990). A maximum age of ca. 520 Ma is given by a regional-scale remagnetization event that reset both the U-Pb isotopic and the paleomagnetic systems (Trindade et al., 2004). In order to better constrain the age of such successions and place these deposits in the context of the Neoproterozoic glacial events, detrital zircons were separated from the glacial strata and analyzed by the U-Pb SHRIMP technique at the Beijing SHRIMP Laboratory. The studied succession comprises a basal laminate with dropstones, interbedded with discontinuous layers of sandstone, and overlaid by a diamictite. This succession is capped by carbonates. Detrital zircons come from the laminate and the diamictite. Their ages (n=19) vary within a wide range, from 875 Ma up to 3049 Ma, indicating that many different sources have contributed to these deposits. The older ages are from the Archean to Paleoproterozoic basement; Mesoproterozoic zircons may come from both the Espinhaço Supergroup volcano-sedimentary sequence and from the ca. 1000 Ma dikes that cut both the basement and the Espinhaço rocks. The sources of the younger zircons are less obvious, but may be related to mafic rocks found at the Araçuaí fold belt, southeastward from the study area. These results indicate that the glacial rocks are younger than 875 Ma. However, they are not conclusive in terms of the exact glacial period (Varanger or Sturtian).

References

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