NEOPROTEROZOIC GLACIATIONS IN NORTHEASTERN BRAZIL AND CARBON ISOTOPE STRATIGRAPHY: CURRENT KNOWLEDGE

Alcides Nobrega Sial[1]

[1] NEG-LABISE DEPT. GEOL., FEDERAL UNIVERSITY OF PERNAMBUCO

RESUMO: Carbonate formations overlying diamictites or BIF in the Rio Pardo Basin, Rio Preto, Sergipano and Seridó belts and Jaibaras Basin have been, likely, deposited in the aftermath of Neoproterozoic glaciations. Basal dolomitic limestones of the Serra do Paraíso Formation, Rio Pardo Basin, rest on basement rocks or immature arkoses (outwash of diamictites) of the Panelinha Formation. They show planar stromatolites and are replaced upsection by limestones with tepee-like structures/ breccias. $\delta^{13}C$ values for basal carbonates are ~ -5‰, followed by dolostones with -2‰ to +3‰, rhythmites with +3.5 to +6‰ and limestones with values ~ +9‰ upsection. The Rio Preto Belt comprehends a cratonic domain (São Desidério Formation), an internal domain (Serra da Mamona and Riachão das Neves Formations) and a central domain (glacial marine Canabravinha diamictites). Basal São Desiderio Formation carbonates display $\delta^{13}C$ values from +1.2 to + 2.2‰, replaced upsection by values ~ +12‰ and sometimes ~ +16‰ in organic matter-rich limestones. Composite $\delta^{13}C$ pathways for both, Serra do Paraíso and São Desiderio formations, are typical of cap carbonates. There are two cap carbonates in the eastern Vaza Barris Domain, Sergipano Belt. Jacoca Formation carbonates rest on Ribeiropolis Formation diamictites, and younger Olhos D'Agua Formation carbonates overlie Palestina Formation diamictites, both couplets metamorphosed in sub-greenschist facies at 628 ± 12 Ma. In the western Vaza Barris Domain, Acauã Formation dolostones rest on Juetê Formation diamictites. $\delta^{13}C$ values for Jacoca and Acauã carbonates cluster around -5‰. In the Olhos D'Agua Formation, -5‰ values in basal carbonates are replaced upsection by values ~ 0 ‰ followed by values ~ +‰. The Acauã Formation displays $^{87}Sr/^{86}Sr$ ratios ~ 0.7073, and Jacoca and Olhos D'Agua Formations, values 0.7077 - 0.7081. Jacoca Formation is Cryogenian and Olhos D´ Água and Acauã Formations are Ediacaran. BIF at Jucurutu, Florânea and São Mamede, Seridó Belt, Rio Grande do Norte and Paraíba are overlain by amphibolite-facies Jucurutu marbles. Basal marbles of this formation exhibit $\delta^{13}C$ values from -7 to -5‰ with a shift to +4 to +10‰ upsection, typical of cap carbonate deposition. Low-grade carbonates of the Frecheirinha Formation, Jaibaras Basin, Ceará, rest on slates of the Caiçara Formation and locally rhythmites overlie itabirite although the weathering has precluded seeing a sharp contact between these two units. Marls in the base of the carbonate sequence show negative $\delta^{13}C$ values (-8 to -1.2‰) which are replaced upsection by positive values up to +4‰. BIF overlain by Jucurutu and Frecheirinha formations were likely deposited in glacial environment and overlying carbonates, in the aftermath of one Cryogenian glaciation. $^{87}Sr/^{86}Sr$ ratios for Jucurutu Formation (~ 0.7074) and Frecheirinha Formation (~ 0.7075) carbonates do not allow an unambiguous age assignment. These are the two northernmost Neoproterozoic cap carbonates in Northeastern Brazil where BIF, instead of diamictites, are overlain by cap carbonates, with likely similar history of deposition and age.