

U-Pb and Sm-Nd geochronological constraints of the crustal framework of Ceara State, NW Borborema Province, NE Brazil

^{1,2}Fetter, A.H., and ²Van Schmus, W.R., ¹IGCE-UNESP, Rio Claro, SP, Brazil; ²University of Kansas, Lawrence, KS, USA

Extensive Sm-Nd whole-rock and U-Pb zircon studies of the rocks of Ceara State (NW Borborema Province, NE Brazil) have been used to define the state's crustal framework and unravel its geologic history. Three distinct crustal domains have been indentified within Ceara; the Northwest Ceara (NCD) (AKA Medio Coreau), Central Ceara (CCD) and Rio Grande Norte (RND) domains. These three domains are separated by the Sobral (or Transbrasiliano), and Senador Pompeu lineaments, respectively. The NCD is composed of tonalitic orthogneisses, migmatites, and granulites that range between 2.35 and 2.30 Ga. Nd data from these basement rocks indicate that they represent solely juvenile crust. The basement orthogneiss complex of the CCD is composed primarily of younger units (2.14 to 2.10 Ga) that consist of both juvenile and reworked crust. Also present in the CCD is a large block of Archean (2.86 to 2.68 Ga) crust known as the Troia massif. This Archean block has a complex evolution suggesting that it is a fragment of a larger craton. The basement complex of the RND is markedly different from the other two Paleoproterozoic crustal domains although it is similar in age to the CCD (2.19 to 2.05 Ga). Paragneisses are predominant in the RND and the entire basement gneiss complex displays a pervasive, higher enrichment of older crustal material, and no juvenile crust is present. The Archean Sao Jose do Campestre massif in the eastern part of the RND may have been a possible source of older crustal material during the Paleoproterozoic growth of this domain.