

PB ISOTOPES AND THE SOURCE OF THE ARCHEAN AND PALEOPROTEROZOIC GRANITOIDS OF THE RIO MARIA GRANITE-GREENSTONE TERRANE, CARAJAS PROVINCE, BRAZIL

1MACAMBIRA, M.J.B., 2DALL'AGNOL, R., 3RAMO, O.T., 1FERREIRA, I.O.
1Para-Iso/Universidade Federal do Para, Belem, Brazil; 2GPPG/Universidade Federal do Para, Belem, Brazil; 3Department of Geology/University of Helsinki, Helsinki, Finland

The Rio Maria granite-greenstone terrane, Carajas Metallogenic Province, is intruded by Paleoproterozoic granites. U-Pb zircon ages establish a short episode of the continental crust formation, beginning with the 2.96 Ga Arco Verde Tonalite and closing with 2.87-2.85 Ga granodiorites, trondhjemites and granites. Previous Nd isotope data suggest that these granitoids ($\epsilon_{\text{Nd}}: +0.4$ to $+2.0$) were differentiated from the mantle at ca. 3.0 Ga ago. The Paleoproterozoic granites ($\epsilon_{\text{Nd}}: -9.3$ to -10.0) have a 2.87 Ga quartz-diorite as their probable precursor. Pb isotope data from feldspar gave new informations about the source of the granitoids. According to the two-stage model, the Pb isotope composition of the Arco Verde Tonalite is compatible with that of the mantle-lower crust ($m_2=8$); those of the 2.87 Ga granodiorite and quartz-diorite are similar to the upper crust ($m_2=12$), while those of the Paleoproterozoic granites and dacite porphyry correspond to the average crust ($m_2=9.8$). These data suggest that the Arco Verde Tonalite is the more primitive granitoid of the region. The high m values of the granodiorite and quartz-diorite suggest that they derived from the upper crust, in disagreement with current petrological models. An alternative hypothesis is that these rocks were strongly contaminated by alteration process. The Paleoproterozoic granites represent the melting of a continental crust.