LEAD ISOTOPE EVOLUTION CURVE FOR THE SÃO FRANCISCO CRATON, BRAZIL

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The galenas from sediment hosted Pb-Zn deposits of the São Francisco Craton are highly radiogenic, with 206Pb/204Pb as high as 25.4?1.5. The enriched radiogenic Pb isotopic composition probably resulted from the highly radioactive crust of the São Francisco Craton. In a Pb-Pb plot the data points for the galenas plot well above the Plumbotectonic model lead isotope growth curve for an upper crustal source. For some deposits the data show linear arrays (or secondary isochrons representing the Pb isotope evolution between the time of formation of the source rocks and the time of mineralization. Assuming an age of mineralization, the ages of the probable source rocks are calculated from the secondary isochrons and they agree with the geologically inferred ages. The Pb isotope growth models discussed in the literature assumes the derivation of the lead from a uniform Earth and this constitutes a major weakness. In the present paper we are presenting a lead isotope evolution model for the São Francisco Craton. Whole rock (spanning a period from Archaean to Neoproterozoic) lead isotope data from a variety of rock formations are employed in modeling this curve. The growth curve plots well above the curves of upper continental crust discussed in the literature. We consider these curves to be more realistic and should be employed in constraining the timing of the mineralization in the São Francisco Craton

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