Paleoproterozoic granitic magmatism in the northern São Francisco Craton, NE Brazil: new perspectives from geochemistry, U-Pb geochronology and Hf isotopes

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A set of fine-to-medium grained granitic plutons intrude the Contendas-Jacobina Lineament. Field and petrographic evidences indicate that these granites are moderately-to-strongly deformed.The major and trace element chemistry allowed the distinction of two groups: one with ASI < 1.1, Na2O > 3.0 wt% and K2O < 5.5 wt%; relative enrichment in LREE, slightly flat HREE patterns, weak negative Eu anomalies. The other group has ASI > 1.1 and K2O > 5.5 wt% and Na2O < 3.0 wt %; relative enrichment in LREE, flat HREE patterns, strong negative Eu anomalies. This information, associated with the accessory mineralogy, allowed the distinction between I-and-S-type granites. Zircon grains suffered Pb loss, which led into few concordant 207Pb/206Pb ages between 1971 and 2120 Ma, obtained via LA-ICP-MS, indicating that the granites are Paleoproterozoic. The I-type granites have negative ƐHf values between -19.2 and -6.3 and TDM ages between 2.7 and 3.7 Ga indicative of the contribution of old crust to their generation. Although rare, the occurrence of inherited zircons was identified, with 207Pb/206Pb ages of 2533 and 2703 Ma. The S-type granites have negative ƐHf values between -19.0 and -17.8 and TDM ages between 3.3 and 3.6 Ga, suggesting that older sediments reworking contributed to their origin. Based on that and on the field, petrographic and geochemical evidences, Algodão, Lagoa dos Pereiras, Vargem do Padre, Sete Vasos, Frio and Gameleira are I-type granites and Caetanos and Aliança are S-type granites. The granites are syn-to-late collisional; most of them were emplaced according to the regional N-S trend and crosscut rocks from the Gavião Block and the Contendas-Mirante metavolcano-sedimentary sequence.