

A new understanding of the Amazon Craton Provinces

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Conventional and SHRIMP zircon U-Pb dating has led to a new model for the subdivision and evolution of the Amazon Craton. The interpretation of isotopic data identifies eight Precambrian tectonic provinces in the Craton, with ages from 3.1 to 0.99 Ga. Some of the provinces were generated by accretional, arc-related processes (Carajás, Transamazonian, Tapajós-Parima and Rondônia-Juruena) and others by recycling of continental crust (Central Amazon, Rio Negro, K'Mudku and Sunsas). The Archaean crust is restricted to the Carajás (Brazil) and Imataca (Venezuela) blocks, indicating that the Amazon Craton is largely Proterozoic. The Carajás-Imataca (3.10-2.53Ga) and Transamazonian (2.25-2.00Ga) Provinces are composed predominantly of granite-greenstone terranes. The Tapajós-Parima (2.10-1.87Ga) and Rondônia-Juruena (1.75-1.47Ga) Provinces are new crust added as orogenic belts, while the Rio Negro (1.86-1.52Ga) and Sunsas (1.25-0.99Ga) Provinces originated mainly by magmatic recycling. The poorly known K'Mudku Province is characterised by a northeast ~1.20Ga shear zone which deforms the rocks of three different provinces (Rio Negro, Tapajós-Parima and Transamazonian). The Central Amazon Province comprises mostly Orosirian volcano-plutonic rocks and is a terrane in which the exposed crustal structure and deformation are pluton-related. The Sm-Nd T_{DM} model ages and ϵ_{Nd} suggest that the Central Amazon Province was generated by the partial melting of Archean continental crust (Carajás Province?), perhaps related to underplating that began at the end of the Tapajós-Parima Orogeny (1.88-1.86Ga).