

## A quick review of the Rio de La Plata Craton

Miguel Angelo Stipp Basei<sup>1</sup>, Umberto Giuseppe Cordani<sup>1</sup>

(1) Institute of Geosciences - University of São Paulo, Rua do Lago, 562, São Paulo, Brazil

The Rio de la Plata Craton (RPC) within the South American Platform, is located in the western portion of Uruguay, as well in some regions of Argentina and southern Brazil. It was proposed in 1973 by Fernando de Almeida and others, based on some ages of Proterozoic rocks collected near Montevideo. The craton is mostly covered by Phanerozoic sediments and is formed by two large tectonic units, the Piedras Altas Terrane (PAT) and the Nico Perez Terrane (NPT), separated by the large scale NNW-SSE Sarandí del Yí shear zone.

The PAT is the major component and “core” of the RPC. It is a large granite-migmatite domain, dated close to 2.0 - 2.2 Ga, which includes a few concordant volcano-sedimentary belts with similar age. Ages older or younger than the Paleoproterozoic were not found in this domain and there is no record of Neoproterozoic tectono-thermal activity. The NPT is made up by a mosaic of small tectonic blocks with different ages, including Archean and Paleoproterozoic, with varied lithologies, such as granitoids, gneisses, amphibolites, BIFs, schists, among others.

The NPT is bounded to the North with the Neoproterozoic São Gabriel Block. To the East it has a tectonic contact made through the large Sierra Ballena Shear Zone and related thrust faults, with the Dom Feliciano Belt of the Brasiliano orogenic cycle. There, it was affected by an important tectono-thermal activity and strong reworking of its rocks.

To the west, in Argentina, below the sedimentary cover, the PAT is limited by the southern extension of the Transbrasiliano-Kandi (TBK) tectonic corridor, bounded partly with the Mid-Proterozoic Pampia Terrane and partly with the Neoproterozoic Eastern Pampean Belt. To the south, the limit of the PAT is located at the Sierra de La Ventana, with Phanerozoic rocks of the North Patagonian Massif.

West Gondwana was formed by means of the convergence between the Amazonia-West Africa- Pampia and the São Francisco-Sahara- Kalahari continental plates. The collision, in the Ediacaran, occurred along the TBK tectonic corridor and closed the huge Goiás-Pharusian Ocean (GPO). The coherent cratonic block that was at the Eastern part of this collision included the São Francisco-Congo, Saharan, Kalahari, Paranapanema and Rio de La Plata cratons. Since they have a close affinity in terms of tectonic evolution, they were possibly forming a united continental plate, that was called Central African Block (CAB) by D’Agrella Filho and Cordani. In it, the RPC and the Kalahari cratons were united.

In the early Neoproterozoic, while the GPO was declining in its course of action to form West Gondwana, the CAB was affected by some extensional tectonic corridors which led to the formation of the Adamastor Ocean. From a bridge linking Bahia in Brazil and Gabon, within the São Francisco-Congo Craton, these portions of the continental lithosphere started opening toward the South, allowing the emergence of an oceanic lithosphere, and separating the RPC from the Kalahari in both sides of that ocean. However, the life of the Adamastor Ocean was short. In many places, like the Araçuaí, West Congo, Ribeira, Gariep, Saldania and Dom Feliciano folded belts, rapid processes of basin filling of volcano-sedimentary formations occurred, followed by metamorphism, granite formation and folding. In this way, the ocean concluded a completed Wilson Cycle and went back roughly to its original position within the plate. Such tectonic evolution occurred more or less concomitantly with the formation of West Gondwana, between 700 and 500 Ma, during the Brasiliano-Pan African Orogenic Cycle. Moreover, belonging to this same orogenic cycle, within the CAB, similar processes also affected the Sergipano-Oubanguides and the Damara tectonic corridors, that builded concomitant Wilson Cycles.

Later, when Pangea was disrupted, the Atlantic Ocean was formed and the Rio de La Plata Craton was definitively separated from its counterpart in Africa, the Kalahari Craton.

**Financing:** The authors thanks to FAPESP 2015/03737-0 for the financial support.