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THE GEOLOGY OF SOUTH AMERICA AND THEIR RELEVANT FEATURES FOR THE RECONSTRUCTION OF RODINIA

AuthorsBRITO-NEVES BENJAMIM BLEY ¹, FUCK REINHARDT ², SCHOBENHAUS CARLOS ³

presenter's e-mail: bbleybn@usp.br

1 - Instituto de Geociências - Universidade de São Paulo-Brazil

2 - Instituto de Geociências - Universidade de Brasília-Brazil

3 - CPRM- Brazilian Geological Survey

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Abstract

Many reconstructions of Rodinia have been presented since the Hoffman (1991) seminal paper. In all these proposals insufficiency of data from South America is conspicuous.

The Brazilian IGCP 440 Committee started its work taking into consideration all probable descendants of Rodinia, either from shield areas (pre-Brasiliano and Brasiliano domains) or from the basement of Phanerozoic basins and fold belts. Many relevant features for the Rodinia concept have then appeared, most of which had been omitted in previous reconstructions.

The main areas with orogenic records of late Mesoproterozoic events comprise the basement of the Andean Chain and adjacent areas (Garzon-Santa Marta, Arequipa-Antofalla, Occidentália, Pampia Craton), the southwestern part of the Amazonic Craton (Rondonia domain), the central domain of the Borborema Province (Cariris Velhos Orogeny) and the southeastern part of the Dom Feliciano Belt (Punta del Leste terrane), Uruguay.

Only the main cratonic blocks (Amazonic, São Francisco, Rio de La Plata) have previously been reported as derived from Rodinia fission. There are two additional groups of potential candidates as descendants of Rodinia that have not been considered in all previous reconstructions before. One group is that of cratonic blocks hidden underneath the major Phanerozoic sedimentary basins of Parnaíba (Parnaíba block, NE Brazil) and Paraná (Paranapanema block, SE Brazil). The second group comprises a series of minor blocks that have worked out as microplates and microcontinents during the Brasiliano collage, in Neoproterozoic times. Such basement inliers of the Brasiliano orogenic systems have been deeply reworked (thermal and tectonic). The designation of "massifs" and "terranes" is rather common for the blocks of Central Goiás, Rio Grande do Norte, Moxotó, Rio Apa, Curitiba-Luis Alves, Pernambuco-Alagoas, and several others that have descended of the same ancestor of the major cratons. Brasiliano overprinting and granite plutonism have hampered recognizing their close geological relationship with the major cratons.

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