

MAKING THE SOUTH AMERICAN GEOLOGICAL MAP IN THE GONDWANA PROJECT (IGCP-628) – PROCESSES AND CHALLENGES

Benedek, M.R.¹, Fragoso, R.¹; Schmitt, R.S.¹

¹Universidade Federal do Rio de Janeiro

ABSTRACT: South America is the second biggest land piece that once formed Gondwana, which makes it a key element for understanding the geology and evolution of this paleocontinent. The following work describes the processes, difficulties and shows the overall progress in making the Geological Map of South America in the Gondwana Map (IGCP-628) reconstructed to 183 Ma. All compiled data had to be harmonized and integrated with the Gondwana map legend. This step was followed by a simplification to a 1:5M scale, for which geological units were merged, redrawn, deleted or/and extrapolated depending on their size and considering their tectonic/structural/stratigraphic relevance. This process was developed alongside a geological update, which required detailed research. For this matter, smaller scale maps, regional maps and several scientific papers were consulted. As to simplify and better profit from this review, the continent was approached from a tectonic perspective and divided into different tectonic domains, which were reviewed one by one. New information was added, such as the age of metamorphism labelled Tectonic Event and attributed only to metamorphic rocks. This new aspect allows an easier visualization of the continent's evolution. As expected, however precise and well thought was the method used for the development of this map, several challenges were found along the way. For instance, in cratonic areas, as the São Francisco Craton, it was difficult to decide where to show the Ediacaran-Cambrian metamorphic reworking, since most of it shows interference from this event, even if little. In this case, the horizontal Bambuí sedimentary layers were the best criteria. Another example are undivided complexes, as is the one that crops out in southern Venezuela, in the Amazon Craton, that had to be represented as either metamorphic or igneous plutonic rocks, even though both lithologies are present. Also in the Amazon Craton, intrusive rocks from different moments in the late Orosirian had to be merged into the same polygon for being all igneous plutonic Orosirian rocks. These problems remain hard to solve, as they may cause an estrangement for those familiar with its geology at the first moment. Therefore, discussion is very important and still on course in these areas for the Gondwana Map to be as profitable as possible for the global and, in special, South American scientific community.

KEYWORDS: SOUTH AMERICA, GONDWANA, GEOPROCESSING