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THE NEW TECTONIC MAP OF SOUTH AMERICA (2016) AT 1:5 000 000 SCALE

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The decision to prepare a second edition of the Tectonic Map of South America at 1:5 000 000 scale, in digital format, using GIS technology, was approved by the General Assembly of the CGMW held in Paris, in 2002. The presentation of the new version of the map was possible by the technical and financial support of the Geological Survey of Brazil (CPRM) and the Geological and Mining Survey of Argentina (SEGEMAR). The work started in 2004 under the coordination of Prof. Umberto Cordani (University of São Paulo) and of Prof. Victor Ramos (University of Buenos Aires). Inacio Delgado and Lêda Fraga (CPRM), as well as Marcelo Cegarra (SEGEMAR), were responsible for the scientific/technical work at both supporting institutions. The offshore area of the map was prepared under the coordination of Kaiser de Souza and Francisco Gomes, and Carlos Schobbenhaus was the main contact to coordinate with CGMW. The final integration of the GIS database was made at the CPRM, and the final version of the map was evaluated and subjected to a peer review process following recommendation of the CGMW. Many meetings were held between the coordinators and experts from the different South American countries in regional meetings, in order to receive critical comments and suggestions. Concerning the South American Platform, the work began with the use of the digital archives (shapefiles) of the Geobank of CPRM, at the 1:1.000.000 scale, containing the attributes of the Brazilian lithostratigraphic units. The updated tectonic information available for the main geological units was also used. For the Guianas, Venezuela, Colombia, Bolivia, Paraguay and Uruguay, the available geological and/or GIS information was integrated in the new GIS database. The information of the Andean sector was compiled by SEGEMAR based on the CGMW Metallogenic Map of South America, 2005, 1:5,000,000 scale. The compilation involved contacts with people of all Andean countries, Chile, Peru, Ecuador, Bolivia, Colombia and Venezuela, and all information was modified and adjusted on Landsat TM images and SRTM of South America, with subsequent updates and suggestions received from regional specialists.

After successive discussions, a unified legend for the Brazilian Shield and for the Andean region was adopted. To allow the application of the proposed legend, three essential attributes were developed and added to the new integrated GIS databases: (1), age of last tectonic event that affected the area; (2), tectonic settings; and (3), age of formation of the rocks. The colour of each polygon in the map indicates the last tectonic event that affected the tectonic unit. The overall idea leads to an immediate visual understanding of the major tectonic divisions: Andean belt, foreland basins, cratonic basins, as

well as the shield areas differentiated into the Neoproterozoic orogenic terrains and ancient cratonic areas. The graphic conventions represent tectonic settings. They include units such as intracratonic basins, , arc-related magmatic rocks, island arcs and oceanic plateaus, low-to-high grade metamorphics, and many other. Moreover, the color of the graphic conventions indicate, for each tectonic unit, the age of the original rock formation.. A unified database for the entire South America was then prepared, and the map was simplified and harmonized to the scale of 1:5.000.000. Finally, the data on offshore areas, encompassing crustal ages, plate boundaries, axis of ancient accretionary ridges, etc. were also integrated.

