Kolloquium:

Reconstructing Gondwana continent – challenges and advances

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Gondwana lasted as a merged landmass ca. 320 m.y, from the Cambrian (ca. 500 Ma) until the Jurassic (ca. 180 Ma), comprising more than 60% of today’s continental crust, including five major continents (South America, India, Africa, Antarctica, Australia) and smaller fragments widespread in Asia, Europe and North America. Its tectonic evolution comprises three main evolutionary stages: amalgamation (670-480 Ma), development (480-180 Ma) and fragmentation (180-85 Ma). On the 30th year anniversary of the geological map of Gondwana, scale 1:10M, by De Wit et al. (1988), an updated map will be launched as a major product from the IGCP-628 “The Gondwana Map Project – the geological map and the tectonic evolution of Gondwana”. This map emerges from an 8-year working group at the Gondwana Digital Center of Geoprocessing (GDCG), in UFRJ, Rio de Janeiro (Brazil), with the collaboration of more than two hundred scientists from all over the world.

I will present the new reconstruction model for Gondwana in the Jurassic, enlightening key issues: (1) the link between ancient orogenic sutures and rifted continental margins; (2) alternative tectonic fit solutions for the critical regions; (3) contrasting non-volcanic and volcanic margins with continental lithosphere inheritance. Scientific data from all Gondwana-derived fragments provided a better fit in a new reconstruction model for 180 Ma time frame. Crustal scale shear zones, juvenile terranes, rift basins and dyke swarms were used as major onshore piercing points. Offshore data available was added to undo the actual continental margins and critical regions were partially sorted out with compilation and focused new research. Even though, some regions are still a matter of debate, such as the Malvinas/Falklands plateau, Sri Lanka-Antarctica-India continental margins, India-Madagascar-Mauritius continental margins, West Antarctica-Patagonia terranes and the Southeastern Brazilian hyperextended margin.