

## WEST GONDWANA RECONSTRUCTION – A MODEL BASED ON INTRAPLATE DEFORMATION

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**ABSTRACT:** Since West Gondwana breakup started in the Lower Cretaceous, South American continental plate was affected by intraplate deformation. This fact, partly explain, why South American and African plates reconstruction models have fit problems since the first proposed models in the beginning of the 20th century. Subdivision models of the South American continent are proposed with the aim of solving pre-opening fit problems through intraplate deformation. These subdivisions do not always respect the geological evidence such as fault zones, sedimentary basins, terrane limits, and other factors that would confirm intraplate deformation. In this way, this work proposes a new subdivision model based on geology, with the definition of 8 rigid blocks, through tectonic and geologic evidence. The main geological features used to compartment the South American plate were: The Transbrasiliano shearzone, the Pernambuco shear zone, the Tucano basin, the Ponta Grossa dyke swarm, the Salado basin, the Tucavaca Aulacogen. The blocks were rotated to fit the African continent in a pre-opening reassemble at 140 Ma. Three different African subdivision models were tested. The reconstruction was achieved by the visual fit method constraining piercing points on both plates. The blocks were rotated, and the Euler poles interactively calculated in the reconstruction software. All three proposed reconstruction models had the block limits overlapped, except for the Transbrasiliano Lineament. This NNE-SSW crustal scale shear zone was used as boundary for seven blocks therefore is the main structure representing intraplate accommodation zone and important piercing point in relation to the Kandi Lineament, its African counterpart, within the Dahomey belt. The other block boundaries reconstruction resulted in overlaps, solved in narrow zones with sedimentary basins and dyke swarms developed since the South Atlantic opening. Its main NW-SE orientation is coherent with the South American plate rotation during and after the breakup. The subdivision and rotation of the African blocks influence the South American blocks rotation parameters. From these three reconstruction models it was possible to verify that intraplate deformation factor is not the only solution to misfitting problems. If calibrated also with continental margin deformation, it contributes to reassemble of Gondwana in the Cretaceous. This work is part of the Gondwana Map project, a cooperation between PETROBRAS and UFRJ. It is also a contribution to IGCP-628, “*The geological map and the tectonic evolution of Gondwana*”, UNESCO-IUGS.

**KEYWORDS:** WEST GONDWANA, PLATE RECONSTRUCTION, INTRAPLATE DEFORMATION, PIERCING POINTS.