

A NEW PROPOSAL FOR SOUTH AMERICA SUBPLATES BASED ON GEOLOGY OF THE CONTINENT: ITS APPLICATION TO WEST GONDWANA RE-ASSEMBLY

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The paleogeographical reconstruction of West Gondwana may be a very obvious fit, but every time one tries to re-assemble South America and Africa some features don't fit well, leaving many gaps and/or overlaps. Since the first attempt to re-assemble South America and Africa, many different approaches have been used to better reconstruct these two continents. One approach is to consider the non-rigidity of the tectonic plates by breaking them into smaller and rigid sub-continental blocks, pieces from the present-day continent to be rotated back to their past position. When localizing intracontinental deformation along these block boundaries it is possible to model a fit predating South Atlantic opening. We present here a proposal for a subdivision of the continental South American plate in blocks, considering its main tectonic features: pre-Neoproterozoic cratons, Neoproterozoic-Cambrian mobile belts, Phanerozoic sedimentary basins and the pre-Andean terranes. We consider that some of these crustal scale structures in between these domains accommodated part of the tectonic forces responsible for the Gondwana break-up in the Lower Cretaceous and the subsequent Atlantic drift phase. One of these structures is the Transbrasiliano mega scale shear zone that initiated at ca. 630 Ma and was reactivated several times through geological time. In order to subdivide the continental segment of the South American plate into blocks a map with the main tectonic features and structures was generated in ArcGIS® based on several previous sources. Relying on this map, all the South American blocks were delimited and exported to a plate tectonic reconstruction and interaction software, GPlates. The African blocks used in this work were already established. Our result is a South American map divided into continental blocks, based upon a combination of the inherited continental main tectonic features and the record of intraplate deformation from the Cretaceous to present day. South American blocks were used to recreate a tighter fit for West Gondwana, connecting with the African blocks. We conclude that this method keeps intracontinental deformation more tied to the real possibilities of pre-South Atlantic fit correlating geological terranes of both Atlantic sides, especially in sectors of the margin where the continental platform is wider.

Keywords: SOUTH AMERICA, WEST GONDWANA, PLATE RECONSTRUCTION.