

600 Ma of Peri-Gondwana Plate Tectonics and Geodynamic Evolution

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A new global plate tectonic scheme has been developed for the last 600 Ma, based on a large database including major geodynamic events affecting key-areas and related to plate boundary conditions in space and time. This new scheme is made in a GIS based software, allowing plate velocities and other plate characteristics to be measured along the geological time. This scheme is totally different from continental drift models proposed so far, as continents are now imbedded in plates, and thus, plate boundary conditions became a severe constraining factor in reconstructing the palaeodynamics of the moving continents. Analysis of continental margins stratigraphy, sedimentology, magmatism and tectonics, is the key factor in this effort to integrate palaeogeography and geodynamics. Gondwana and its periphery have been analysed in detail, in order to propose a new fit where continental fragments, now dispersed in many continental areas, can find their original place. These fragments are part of major terranes that left Gondwana mainly in the Palaeozoic, such as Avalonia, the Hun super-terrane, the Galatian superterrane, the Cimmerian super-terrane. Some were amalgamated to Laurasia first, to be reunited with Gondwana later on. This is the case of the Moroccan Meseta, first part of an active peri-Gondwanan margin in the early Palaeozoic, then drifting away from it, together with the Galatian super-terrane and opening of Palaeotethys, to be accreted to Laurussia in the Devonian-Carboniferous and soon after to Gondwana (Pangea) again. During the Jurassic it drifted away from Laurasia together with Gondwana.

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