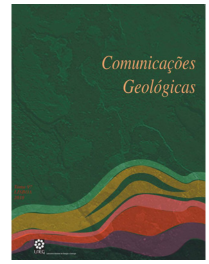
Comunicações Geológicas

Versão online: http://www.lneg.pt/iedt/unidades/16/paginas/26/30/185
IX CNG/2º CoGePLiP, Porto 2014

Comunicações Geológicas (2014) 101, Especial I, 293-296
ISSN: 0873-948X; **e-ISSN:** 1647-581X

Geodynamics of Iberia, supercontinent cycles and metallogenic implications



Geodinâmica da Ibéria, ciclos de supercontinentes e implicações metalogenéticas

A. Ribeiro[1], R. Dias[2*], A. Mateus[1], J. M. R. S. Relvas[3], A. Pinto[3], J. Romão[4,5]

Artigo Curto
Short Article

Abstract: The geodynamic evolution of Iberia since Neoproterozoic times illustrates the progression of the two last supercontinent cycles and the probable path to the next one. The Pangaea supercontinent cycle shows features of Hercynian- and Alpine-type orogens both in terms of tectonothermal regime and geometry/kinematics. The combination of inherited and neo-formed components, namely those able to sustain long-lasting and/or recurrent rejuvenation of heat and mass advection in the lithosphere, explain the complexity and singularity of metallogenic processes and products observed in Iberia.

Keywords: Geodynamics, Iberia, Metallogeny, Variscides, Supercontinents.

Resumo: A evolução geodinâmica da Ibéria desde o Neoproterozóico ilustra a acção dos dois últimos ciclos de supercontinentes e o trajecto provável para o próximo. O ciclo de supercontinentes que gerou a Pangeia mostra características de orógenos do tipo Hercínico e Alpino em termos do regime tectonotérmico e da geometria/cinemática. A combinação de componentes herdadas e neoformadas, nomeadamente as que se revelam aptas para sustentar de forma persistente e/ou revigorar recorrentemente advecção de calor e massa na litosfera, permite explicar a complexidade e singularidade dos processos e produtos metalogenéticos observados na Ibéria.

Palavras-chave: Geodinâmica, Ibéria, Metalogenia, Variscidas, Supercontinentes.

[1]Centro de Geologia da UL – CeGUL, University of Lisbon, Faculty of Sciences, Geology Department, Edifício C6, Piso 4, Campo Grande, 1749-016 Lisboa, Portugal.

[2]CGE, University of Évora, Sciences and Technology School, Geosciences Department, Largo dos Colegiais, 2-Apartado 94, 7002-554 Évora, Portugal.

[3]CREMINER/LARSyS, University of Lisbon, Faculty of Sciences, Geology Department, Edifício C6, Piso 4, Campo Grande, 1749-016 Lisboa, Portugal.

[4]Unidade de Geologia, Hidrogeologia e Geologia Costeira, Laboratório Nacional de Energia e Geologia, Estrada da Portela, Bairro do Zambujal, Apartado 7586-Alfragide, 2610-999 Amadora.

[5]Universidade Europeia, Estrada da Correia, 53, 1500-210 Lisboa.

*Corresponding author / Autor correspondente: rdias@uevora.pt

1. Introduction: geodynamic evolution of Pre-Mesozoic Iberia

In the context of Global Tectonics, the geodynamic evolution of Iberia (Vera, 2004; Dias *et al*., 2013 and references therein) illustrates a possible model of supercontinent style (Ribeiro *et al*., 2012) persisting up to ca. 700 Ma. This model is usually composed by two Wilson cycles (lasting from ca. 200 to ca. 400 Ma each), the former progressing under conditions similar to Alpine-type orogens (e.g. Caledonides, Alpides) and the second one evolving comparably to Hercynian-type belts (e.g. Pan-African / Cadomian and Variscan). In Iberia, the Pannotia (1000 – 550 Ma; Fig. 1) and the Pangaea (550 – 250 Ma) cycles illustrate this trend of geodynamic evolution during Pre-Mesozoic times. Indeed, the first (Alpine-type) Wilson cycle resulted from the opening and closure of an older ocean [Iapetus (750 ?– 400 Ma)] as a consequence of drifting followed by collision of some fragments of Rodinia (Fig. 1), the previous supercontinent (1100 – 750 Ma). However, remnants of Rodinia were fragmented later, requiring a significant long-lasting heating due to continental insulation. The subsequent reassembling of these fragments in the course of a succeeding Wilson cycle produced a Hercynian-type orogeny and generated the Pangaea Supercontinent by joining again the older continent assemblage (Laurussia) to the younger one (Gondwana) via closure of the Rheic and subordinate oceans (500 – 250 Ma).

2. Global Geodynamic of Post-Palaeozoic Iberia and the next Supercontinent

The ongoing supercontinent cycle is critically illustrated by the evolution recorded in the course of Meso-Cenozoic times, which provide the basis to predict geodynamic developments in the following tens to hundred Ma. In fact: (1) the Alpide Wilson cycle started at ca. 250 Ma is almost completed, producing an Alpine-type orogen; and (2) the Atlantic Ocean, beginning its opening at ca. 160 Ma, appeared to have already initiated the closure path along