

THE ASSEMBLY OF THE GONDWANA SUPERCONTINENT AND EVOLUTION OF ITS PACIFIC MARGIN

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The Late Proterozoic Gondwana supercontinent cycle includes the break-up of an earlier Middle Proterozoic supercontinent, here termed Pangea II, followed by the fusion of several cratons and the large East Gondwana continent to form Gondwanaland. The Gondwana supercontinent assembly process is analyzed in terms of plate tectonics and presented in 100 Ma time intervals. Rifting of Pangea II was active in the 900-675 Ma period. The earliest collision event between East Gondwana and the Sao Francisco-Congo craton is dated at 820 Ma. At the evolving Pacific margin of Gondwanaland, rifting in the Saldania and Adelaide mobile belts in the 800-700 Ma interval can be extrapolated to the Transantarctic Mountains, where deformation and metamorphism of the Beardmore event followed in the 700-600 Ma interval. In South America deformation and metamorphism in the Sierras Pampeanas-Tucavaca mobile belt started in the 600-500 Ma interval, and resulted from convergence of the Arequipa terrane and the Amazonian and Rio de la Plata-Goias cratons. Deformation and intrusive plutonism continued in the Saldania belt, while the Ross tectono-thermal event affected East Antarctica. The evolution of the Pacific margin of Gondwana, initiated in the Late Proterozoic, lasted into the Famatinian-Ross-Delamerian events of Early Paleozoic age.

Volcano-sedimentary sequences at the Pacific margin of East Gondwana, suggesting rifting of the landmass of the Middle Proterozoic Pangea II supercontinent, prompt the question of the position of other ancient cratons in Pangea II. A recent hypothesis (Dalziel, 1991; Moores, 1991; Hoffman, 1991) proposes the western margin of Laurentia conjugate to East Antarctica-Australia, and the eastern margin of Laurentia conjugate to Amazonia and La Plata-Goias cratons. Events at the evolving Pacific margin of Gondwanaland provide tests for the hypothesis of Laurentia position in Pangea II. The proposed existence of conjugate margins of western Laurentia and

East Antarctica can be tested against evolution of sedimentary basins of the Transantarctic Mountains in both the Beardmore and Ross events. The postulated conjugate margins of Eastern Laurentia and western Amazonian and Rio de la Plata-Goias cratons needs to be tested with regard to the position of the Arequipa terrane.

REFERENCES

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