

## **Comprehensive Tectonic Model for the Neoproterozoic Ribeira Orogenic Belt, southeastern Brazil**

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The Ribeira orogenic belt developed via a complex Wilson Cycle between the São Francisco – Rio de la Plata (SFP) and Congo (CP) cratons. Evolution of this belt involved sea-floor spreading and passive-margin sedimentation, subduction with arc and back-arc formation, and continent-arc (stage I) and back-arc (stage II) collisions.

Ocean basin closure (stage I) resulted from E-directed subduction under the CP to generate a W-migrating magmatic arc on the upper plate and back-arc basin to the E. Oblique collision between the arc and the SFP between c. 600 and c. 550 Ma induced a dextral-oblique, W-vergent thrust system, associated with intermediate-*P* metamorphism and emplacement of crustally-derived granites. The suture between passive-margin rocks/crustal units of the SFP side and passive-margin/arc rocks of the CP side of the former ocean basin is represented by the Central Tectonic boundary. Continued convergence until c. 490 Ma produced subvertical folding and steep dextral-oblique shear zones, which controlled emplacement of late-collisional granites and associated tholeiites, and overprinting low-*P* metamorphism. We relate these effects to slab detachment and consequent enhanced mantle heat flux, leading to uplift/exhumation while compressional deformation continued.

Concurrent closure of the back-arc basin to the E (stage II, c. 530–480 Ma) drove NNW-thrusting of the Cabo Frio terrane over the arc, causing high-*P* metamorphism of the marginal basin rocks.