XIX SNET
SIMPÓSIO NACIONAL DE ESTUDOS TECTÔNICOS
XIII INTERNATIONAL SYMPOSIUM ON TECTONICS

ANAIS

XIX SIMPÓSIO NACIONAL DE ESTUDOS TECTÔNICOS
XIII INTERNATIONAL SYMPOSIUM ON TECTONICS

Campinas, São Paulo
2025

Editores:

Wagner da Silva Amaral
Adilson Viana Soares Júnior
Daniela Kuranaka
Marina Thimotheo
Iata Anderson de Souza
Francisco Manoel Wohnrath Tognoli
Danielle Simeão Silvério Rocha
Saul Hartmann Riffel

SOCIEDADE BRASILEIRA DE GEOLOGIA
DESDE 1946

GEOLOGY OF THE OGDEN ROCKS – SKELETON COAST: A BASEMENT INLIER IN THE KAOKO-DAMARA OROGENIC JUNCTION (NW – NAMIBIA)

Úrsula Lopes Riente[1], Renata da Silva Schmitt[1], Rudolph Allard Johannes Trouw[1], André Ribeiro[1], Leonardo Fadel Cury[2], Kei Sato[3], Carrel Kifumbi[2]

[1]Universidade Federal do Rio de Janeiro - UFRJ, schmitt@geologia.ufrj.br
[1]Universidade Federal do Rio de Janeiro - UFRJ, ursulariente11@gmail.com
[1]Universidade Federal do Rio de Janeiro - UFRJ, trouw@geologia.ufrj.br
[1]Universidade Federal do Rio de Janeiro - UFRJ, andre@geologia.ufrj.br
[2]Universidade Federal do Paraná - UFPR, cury@ufpr.br
[3]Universidade de São Paulo - USP, keisato@usp.br
[2]Universidade Federal do Paraná - UFPR, carrelkifumbi@ufpr.br

The Damara-Kaoko-Dom Feliciano orogenic system was active between ca. 650-520 Ma due to the convergence and collision of the Congo-Angola, Kalahari, and Rio de la Plata cratons. Ogden Rocks is located at the junction of the N-S Kaoko and ENE-WSW Damara belts and presents high-strained gneisses described as blastomylonites. Previous studies suggest this region is a mylonite zone (Ogden Rocks Mylonite Zone – OMZ) correlated with the Purros Shear Zone of the Kaoko Belt. Geochronological data indicate that these gneisses have Neoarchean and Paleoproterozoic protoliths, representing a basement inlier in tectonic contact with the Ediacaran Zerrissene Turbidite Complex at Namibia's Skeleton Coast. However, the basement-cover kinematics and the tectonic evolution of these gneisses remain unclear. To address these challenges, we conducted detailed geological mapping of Ogden Rocks (1:25,000), at the Atlantic Coast, focusing on structural analysis and protolith characterization, resulting in a geological map and cross-sections. Ninety-one thin sections were analyzed, and five samples were dated using SHRIMP U-Pb zircon geochronology. We identified five units: biotite-epidote-allanite granule metarkose, allanite-pyrite metarkose, garnet-biotite schist, calcitic and dolomitic marbles, and a metagranite. The dominant unit comprises the biotite-epidote-allanite granule metarkose with granule/pebble granitic lithoclasts. The youngest detrital zircon core yielded 1540 ± 23 Ma, with a major peak at ~1.8 Ga; zircon rims range from 1347 ± 17 Ma to 1181 ± 15 Ma. The allanite-pyrite metarkose occurs interbedded with epidote schists, muscovite phyllites, and marble layers. The youngest detrital zircon core is 1660 ± 25 Ma, with a major peak at ~1.7 Ga, and a younger rim at 1097 ± 12 Ma. The garnet-biotite schist is a gray schist with biotite porphyroblasts and minor garnet and carbonate matrix; its youngest detrital zircon grain is 1223 ± 19 Ma, with detrital age peaks at ~1.8-1.9 Ga (Orosirian), and subordinate peaks ~1.2-1.5 Ga (Ectasian), ~1.7 Ga (Statherian), and ~2.6-3.0 Ga (Archean). The calcitic and dolomitic marbles feature a 150-m-thick layer structurally above the garnet-biotite schist. The metagranite is a mesocratic metagranite with K-feldspar porphyroclasts and a quartz-feldspar-biotite matrix; its crystallization concordia age is 1270 ± 6 Ma. Deformational structures were attributed to three deformation phases. D_1 produced an S_1 N-S foliation, dipping at a high angle to ESE and WNW, parallel to the protolith compositional variations (S_0) with local mylonitic zones. A low-plunge quartz-feldspar NNE-SSW stretching lineation shows top-to-N kinematics. D_2 is represented by open to tight upright folds with NNE-SSW axial planes, NNE-SSW low-plunging axis, with local development of sinistral shear in the limbs. D_3 generated gentle to open folds with NNE-SSW sub-vertical axial planes and moderately SW-plunging fold axes. This study confirms that Ogden Rocks is a Paleo- and Mesoproterozoic basement inlier at the Kaoko-Damara orogenic junction. The structure's geometry and kinematics align predominantly with the Kaoko Belt, with a final phase of interference from the Damara Belt. This work is funded by the project "Geodynamics of SW Gondwana", UFRJ-PETROBRAS cooperation term (IGEO-22661).