

BEHAVIOR OF RIO DE JANEIRO FRACTURE ZONE SYSTEM, FROM MAR TO BRAZILIAN COAST

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The Rio de Janeiro Fracture Zone (RJFZ) located at the MAR, 21°10'-22°40'S, is a triple FZ, with total offset of 250km and 160km width, and a E-W direction. Inside the FZ the ridge is divided in a 90km long segment (N) and a 40km (S). For the northern ridge segment, on crust older than 2my, two additional fossil FZs were identified from the predicted bathymetry, one up to 10my and the other between 5 and 50my. Probably at this time interval the RJFZ was a quintuple (10my) and quartile (50my) FZ. Between 0 -75my three continuous FZs were identified on both predicted bathymetry and seismic data. For crust between 75my and 120my only the northern and the southern FZs remain visible on our data set. RJFZ was then a double FZ. At this time, the E-W direction changes to a NE-SW direction. For crust older than 120my, at the continental margin and into the continent, the RJFZ was mapped using earthquake centers and alkaline dikes of Ponta Grossa Arc, SE Brazil (24°40'-26°10'S). Tectonic and morphologically the double RJFZ is represent by a deep (1100m) and large trough (160km) filled by sediments. In summary, RJFZ can be defined at the ridge axis as a triple FZ. Westwards the FZ change its configuration to quintuple, quartile, triple and finally to a double fracture Zone. All through its history, the several FZs composing the RJFZ system show a strong variability, probably related to the shape and the length of the associated ridge segments.