



## **Relation between denudation history and sediment supply from apatite fission track thermochronology in the northeast Brazilian Margin**

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The aim of this study is to provide a quantitative overview of Mesozoic-Cenozoic morphotectonic evolution and sediment supply to the northeast Brazilian margin. Landscape evolution and denudation histories for the northeastern Brazilian continental margin (Sergipe, Alagoas, Bahia, and Espírito Santo states) were detailed by apatite fission track thermochronology and thermal-history modeling and related with the sedimentological record of the offshore basins of the passive margin for a comparison with their denudational history. Approximately one hundred basement samples were analyzed from the coast to the inland of the Brazilian margin. The apparent fission track ages vary from 360 to 61 Ma and confined fission track lengths vary between 10 and 14.6  $\mu\text{m}$ , indicating that not all of the samples recorded the same cooling events. The results of apatite fission track ages indicate that the area has been eroded regionally since the Mesozoic ( $< 250$  Ma) and suggest that at less 4 km of overburden has been eroded regionally since the late Cretaceous ( $< 120$  Ma) at a rate of 120 to 15 m/Ma. Two-stage of erosion process is deduced from simulated cooling histories for each sector. The Permian-Early Jurassic exhumation is restricted to the area of the Sertaneja Depression, besides the Diamantina Plateau. During this time, denudation rates are generally  $< 20$  m My<sup>-1</sup> and record up to 1.5 km of denudation. Pre-rift sedimentation is recorded in the Camamu-Almada, Recôncavo, and Sergipe-Alagoas basins. Samples from the Conquista and Borborema Plateaus, and Mantiqueira Range record a Cretaceous-Paleogene onset of exhumation. This timing is consistent with the offshore sedimentary record, wherein a large clastic wedge started forming in the northeastern Sergipe-Alagoas basin, which suggests Sergipe-Alagoas basin records drainage reorganization and extension of the São Francisco River catchment. Interestingly, the Camamu basin, adjacent to the section of the margin does not record syn/post-rift exhumation, does contain a 6-km thick sedimentary succession, which should thus have been derived from more distal sources. The Neogene final denudation is observed throughout the study area and show conspicuous recent exhumation. The post-rift ( $< 40$  Ma) offshore sedimentation rates are generally lower than during preceding phases. This final sedimentary succession is thinner in all basins, consistent with limited onshore erosion during this time.