

EVIDENCES OF THE SUPERPOSITION OF TWO BRITTLE DEFORMATIONAL EVENTS IN THE NORTHEASTERN PART OF THE DOM FELICIANO OROGENIC BELT, BETWEEN ARMAÇÃO DA PENHA E BALNEÁRIO DE CAMBORIÚ, SANTA CATARINA, BRAZIL

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ABSTRACT: The northeastern coast of the Santa Catarina state, between Armação da Penha and Balneário de Camboriú, is composed of Neoproterozoic granitic and metasediments rocks related to the Brusque meta-volcanic sequence inserted in the tectonic context of the Dom Feliciano orogenic belt (Brasiliano orogeny). In the context of the evolution of the Atlantic continental margin of the South American plate, the basement which crops out outcrops in the onshore southern edge of the Santos Basin represents a window for observation *in situ* of brittle deformation processes that occurred in the upper Cretaceous (~130 My), when the Gondwana supercontinent started to break, and later on. Throughout the study area, it was observed two generations of brittle structures, one associated with quartz and epidote veins and other with breccia and pseudotachylite, which led to the hypothesis of the existence of two distinct compressional events in the formation of this set of strike-slip faults. The main objective of this study is to evaluate these brittle structures through paleostress analysis using kinematic and geometric interpretations. The orientation of paleostress tensors, σ_1 and σ_3 , was developed taking into account the attitude of each fault plane measured and its respective striae lineation, according to the method of Turner (1954). The Tectonics FP software was used in the calculations as well as in stereographic representation. The older event had its maximum horizontal compression in the NNE (N20E) direction, it is commonly associated with the development of quartz, carbonate and epidote discontinuous veins with millimetric thickness and metric extension. The younger event, with WNW (N70W) maximum horizontal compression, it is notably "dry" without any association with fluid activity and it is characterized by sub-vertical fault zones with development micro-breccia, with or without the occurrence of pseudotachylite. The results obtained with the aforementioned calculations implicates that the two generations of brittle structures are not compatible to a single stress field, so they were fitted into two distinct events. The characteristics of these two events allows the interpretation that the first event, most likely, occurred at deeper crustal levels, associated with fluid activity and vein generation, while the younger one has typical deformation characteristic for shallow crustal levels (thin-skin tectonics), developed under lower temperature. In some outcrops, it is possible to notice the interference between the two events, with the superposition of at least two paleostress fields.

KEYWORDS: Paleostress Analysis, Brittle Tectonics, Compressional Event.