



Dissolution along fracture systems in Turonian-Campanian carbonates in Brazil

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Dissolution occurs by the action of diagenetic fluids of diverse nature along faults. When this process affects carbonate rocks, karst systems develop. Many karst systems evolve from dissolution of selected zones to pervasive karstification and to later burial and diagenesis. These systems resulted from coalesced, collapsed caves that may reach several thousand meters long and more than 100 m thick. We studied the dissolution along faults and fractures in the Turonian-Campanian carbonates in the Potiguar Basin, Brazil. We used an integrated multidisciplinary approach in outcrops and core samples, which combined Quickbird satellite imagery analysis, structural and sedimentary-facies mapping, and petrographic. The units investigated here presents a variety of carbonate facies, which include mudstones to bioclastic, peloidal, intraclastic, and oolitic grainstones. Our results indicate that dissolution occurred along N-S, NE-, and E-W-trending faults, which provided vertical leaching pathways of increased secondary porosity and permeability. Dissolution led to mechanical breakdown and collapse of carbonate blocks, which resulted in the infilling of clastic sediments and formation of collapse breccia in caves. The dissolution led to widespread karstification of the carbonate unit. We conclude that karstified faults and preferential sedimentary facies form the karst system, which makes the karst geometry predictable. We suggest that similar patterns may occur in other paleokarst systems.