Margin: A Case Study on the Western Escarpment, South Africa.

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The Great Escarpment, trending roughly parallel to the west coast in southern Africa, separates the elevated interior from the coastal margin. Uplift along the continental margin has long been recognised and numerous models proposed. This study deals with various aspects of landscape development from the break up of Gondwanaland, and the effects this had on escarpment development, and the marginal hinterland areas. Satellite images and airphotos show the presence of a network of lineaments in recent cover. Tectonic and sedimentological episodes have been identified. During the Cretaceous uplift along the escarpment resulted in alluvial fan deposition. In the Late-Cretaceous tropical conditions produced extensive weathering and silicification. This period was terminated with end-Cretaceous aridification. Reactivation of older, escarpment parallel, structures caused differences in the elevation of the palaeo-weathered and silicified surfaces and the initial deepening of a north-northwest oriented graben inland of the escarpment. Continued deepening of the graben during the Tertiary allowed for the deposition of fluvial and aeolian sediments. Two primary stress fields have been identified: At 60 Ma ago, the minimum principal stress was oriented to the northwest causing dip-slip faulting. The stress field, active during most of the Cenozoic was oriented east-northeast (minimum principal horizontal stress), and accompanied the development of a fault-bound sedimentary basin. This stress field is probably still active as evidenced by numerous recent structural features, and the current seismic activity over a broad region of the northern Cape.