

CHANNELS, MACROFORMS, BOUNDING SURFACES AND HEAVY MINERAL CONCENTRATION: A CASE STUDY FROM THE UIRAMUTÁ FORMATION (MESOPROTEROZOIC RORAIMA SUPERGROUP)

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RESUMO: This paper discusses the usefulness of the Ground Penetrating Radar (GPR) as a tool to delineate and map heavy mineral paleoplacers through the study of a potentially diamond-bearing sedimentary succession. To achieve this purpose some key outcrops were described and interpreted in terms of bounding-surfaces hierarchy and sampled for heavy-minerals analysis. Above these exposures several GPR profiles (12,5 e 100 MHz antennas) were acquired and correlated to the surface data. Third, fourth and fifth order bounding surfaces, the main discontinuities within the amalgamated sandstone lenses, were identified. These lenses represent the superposition of several channel complexes bounded by 5th order surfaces. The co-existence of lateral- and down-stream accreted macroforms points to moderate sinuosity channels whereas channel and macroform size indicates large-scale channels. Macroform accretion has taken place during sedimentation pulses, delineated by 3rd order surfaces and characterized by the migration of 3D and 2D subaqueous dunes on the accreting depositional surfaces. As expected, the results indicated larger heavy mineral concentration at the channels basal scour (5th order surfaces) and, secondly, associated with lateral and frontal accretion discontinuities (3rd order surface). Thereupon, the ability to follow the spatial distribution of the target strata in subsurface substantiated the usefulness of GPR data in terms of heavy mineral placers exploitation.

PALAVRAS-CHAVE: HEAVY MINERALS; DIAMOND; GPR AND BOUNDING SURFACES.