



A ground penetrating radar survey to assist the sedimentologic and geomorphologic interpretation of washover fans in NW Australia.

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The NW Australian coast is prone to both tropical cyclones and tsunamis which can generate extreme wave events in this region. Along the W coast of the Exmouth Gulf, distinct lobate washover fans consist of shell debris and sand layers and exhibit delta-type sedimentation patterns. Using ground penetrating radar (GPR) and unmanned aerial vehicle survey (UAV) techniques helps in a first step to locate important geomorphic points of interest for later sedimentologic, pedologic and chronologic studies.

UAV surveys developed a detailed 3D surface model (cm resolution) which helps to better understand the extent and the general pattern of the geomorphic forms. A subsequent GPR survey using a bi-static 250 MHz antenna with a Mala CU-II in a continuous mode generated multiple transects which could be further interpreted. Coarse sandy-gravelly washover fan-matrix sits on top of clayey pan sediments which provide an excellent sedimentologic contrast for GPR surveys. Multiple delta like structures representing single wave activities, erosion channels and their backfill structures as well as several palaeosols could be identified in the GPR images. This information is now used in a subsequent chrono-stratigraphic approach for a final geomorphic interpretation.