

KARST FEATURES IN PLEISTOCENE DUNE LIMESTONES, SAN SALVADOR & NEW PROVIDENCE, THE BAHAMAS

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ABSTRACT*

The Bahamas is an archipelago of carbonate islands and shallow banks in the Western Atlantic Ocean. It is characterised by oolitic carbonate banks, oolitic and aeolianite carbonate islands and cays. The islands are predominantly low lying, up to 30m ASL and the topography dominated by aeolianite dune ridges.

The area experiences a subtropical temperate to semi arid climate which is more arid in the southern islands with hurricanes in the summer months. Previously the islands were heavily vegetated with mixed tropical broadleaf coppice but are now largely covered by pine barrens with palmetto as well as thick scrub on the dune ridges.

There are interesting similarities with the Pleistocene dune karst of Australia. There is similar physiography including collapse features, cave types, solution pipes, and soil pipes. However, there are also important differences due to the Bahamian limestone being generally younger and containing a lower non-carbonate fraction and in an island rather than a continental margin setting. Landforms are more dependent on sea level position than their Australian equivalents. The aeolianite ridges, up to 30m ASL, formed during all phases of the sea level highstands and show distinctive crossbedding, calcrete horizons and terra rossa palaeosols.

The karst is concentrated on the dune ridges and karst features include caves, Blue Holes, solution pipes (pits), Banana Holes, lake drains, notches and other minor solutional features. Extensive work has been done on the karst in the area with the development of the model of island karst and flank margin caves. The flank margin caves, such as Lighthouse Cave, formed in the freshwater lens under the aeolianite ridge and dissolution occurs where fresh and salt water mixes. This probably occurred during the Late Pleistocene. Blue Holes are pits extending below sea level for most of their depth and are flooded karst features of polygenetic origin. Solutional features such as karren can be seen on the dune ridges.

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