

## **1235480: Morphology and Sedimentary Processes along the Carbonate Slope of Great Bahama Bank, Bahamas**

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Multi-beam echosounder, sub-bottom profiler and high-resolution multi-channel seismic data collected over 5500 square km along the western margin of GBB during the Carambar cruise show two distinctive morphological domains along the GBB slope. The southern part shows a 1.3° mean slope, incised by regularly spaced gullies. These gullies are about 10-20 m deep, less than 5 km long and about 400-700 m wide. They appear at 400 m water depth and extend down to about 600 m. Downslope, they widen up and transition into depositional lobes, less than 10 m thick, extending down to about 700 m of water depth. Their distal fringes reach the eastern side of Florida Straits where they are deflected northward by the Florida current. The northern part of this margin (north of Bimini Islands) shows a complex network of downslope canyons that could be erosive furrows separated by meter-high ridges. Evidence of slope instability is widespread along the slope, starting at the location of maximum slope angle (3-4°). Failure scars develop at about 450-550 m of water depth and are connected to downslope lineaments. Failure scars are typically kilometer-wide and involve a relatively small volume of sediment. One exceptional large slope failure, however, produces a most impressive morphological feature, consisting of a rugged scar and an associated Mass Transport Complex (MTC). It consists of three scarp failures extending N-S over 9 km. The scar height ranges from 80 to 110 m. The northern scar shows small (50 m in diameter) pockmarks on its top. Downslope of the scars, the seafloor is a hummocky surface extending westward over 20 km. The width of this area is about 13 km. The surface of the whole deformed area is about 300 square km. This hummocky seafloor could correspond to an area of buried blocks. It ends with large rectangular-shaped blocks that are between 0.8 and 2 km long and about 50 m in thickness. The largest of these blocks has a surface of 2 square km corresponding to a volume of about 0.1 cubic km. Southward of this MTC, the slope shows a 50 m high scarp extending over 35 km located at a water depth of about 450 m. No significant sedimentary accumulation occurs at a distance exceeding 20 km from the platform margin. Cold water corals are widespread in the area. They form carbonate mounds that can reach up to 70 m of elevation above the sea floor and locally control sedimentation processes.