Daily Drilling and Scientific Report for IODP Expedition 325, Great Barrier Reef Environmental Change

15th February 2010 0000 - 2400 local time

1. Location

Site HYD_01C Site 6 (Site M0031).

Time zone: Brisbane Australia Time, UTC +10

Position at midnight:
Latitude: 19° 40.737' E
Longitude: 150° 14.3772' S

2. Activity summary

Coring activities continued at M0031A throughout the day, retrieving 12 cores with limited recovery. Core retrieval was hampered by hole caving ins, necessitating repeated reaming.

3. Science report

Following major problems with hole stability, Core 5R did not advance past 12 mbsf – only fine-medium carbonate sand (Halimeda, benthic forams and carbonaceous grains) within a muddy matrix were recovered. The bottom part of the hole caved in and Core 6R only advanced (mainly through infill) to 11.8 mbsf before becoming jammed. A dark grey mudstone/wackstone with visible gastropods, benthic forams was recovered from this core catcher and sandy sized bioclastic sediments (corals, bivalves, algae, benthic forams) plus limestone fragments. Cores 7R and 8R advanced to 18 mbsf and recovered (8-18%) several large coral framestones in the core catcher and lower sections of the cores. The corals were composed of massive *Acropora* (sp. *palifera/cuneata*) and robust branching *Acropora* sp. that were likely insitu and consistent with shallow water, high energy (<5m?) reef environments. Several large fragments of framestone were observed composed of branching corals encrusted by coralline algae and then grey microbialite crusts, along with many broken corals fragments (*Acropora* sp., Faviidae, *Pocillopora*?).

Core 9R reached to 20 mbsf containing clasts rubbles and coral pieces. Small *Porites* fragments were identified. Fragments of reef framework were also seen. Core 10R extended only 0.8m and sandy materials plus bioclasts with basal layer were captured. Well preserved pieces of *Acropora* corals were found in the cores 11R and 12R. Some other pieces had coralline algal coatings. Halimeda and robust coral branching were also included.

Recoveries of cores were still not large and typical appearance in the liner was that larger materials near or in the core catcher and fragments of framework or rubbles situated on top. Metal splits started being used from core 13R, that reached to 29.5 mbsf with 1.5m of greyey sandy materials were recovered. Most of the cores were filled with large Halimeda sand with fossil coral branches, forams and echinoids. Cores 14R and 15R again had poor recovery and Halimeda and coral pieces were observed. 37 mbsf was reached by 15R and the bottom of the core included well cemented packstone. This may indicate Pleistocene sediments. Core 16R advanced to 40 mbsf and recovered fragments of corals and bivalves (Tridacna) and bioclastic carbonate sediments.

4. Core recovery details

Hole	M0031A
Cores recovered	12
Drilled length	31.4m
Recovered length	4.15m
Recovery	13.22%
Depth at midnight	40m

5. Weather

Sea state: moderate (4) with swell of 1 - 2m decreasing to slight (3); wind direction swinging between NNW and NNE force 4 becoming 3 (7-10 kts); Overcast and cloudy in the morning becoming sunny; intermittent showers; 28°C.

Next 24 hrs: Sea state moderate with swell of ~1.2m; wind direction N/NW becoming N/NE 10-15kt; showers and isolated thunderstorms.