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

**17th February 2010 (0000-2400, local time)**

## 1. Location

Site HYD_01C Site 6 (Holes M0032A & M0033A).

Time zone: Brisbane Australia Time, UTC +10

Position at midnight:
Latitude: 19° 40.733 S
Longitude: 150° 14.391 E

## 2. Activity summary

Coring activities continued at M0032A until the target depth (as advised by the Co-chiefs) was reached. After a shutdown period for hydraulic power pack maintenance, the vessel transited to site M0033A and coring operations began.

## 3. Science report

Core 11R cored to 19.8mbsf and was composed of large pieces of broken coral framestone (massive corals) sometimes coated by grey (microbialite?) crusts. The surface of the massive coral at 25 cm in section 1 was coated by a prominent orange stain. Core 12R advanced to 21.8mbsf recovering 16cm of core. Coral framestone (*Acropora*, Pocilloporidae) was observed with cm scale crusts of microbialite containing visible bioclastic grains. Cores 13R and 14R recovered large pieces of framestones charaterised by corals (Faviid) with coralline algal and microbialite crusts and reached 25.8mbsf with recoveries to 23%. A 1m core run was employed for Core 15R and recovered a medium carbonate bioclastic sand composed of echinoid, spines, gastropods and corals grains. A switch to metal splits for Core 16R in an attempt to increase recovery was not successful but we did recover 30cm of the same sand deposits. It is clear from the recovered core material and drop in drilling resistance that there is a major change in lithology from Core 14R (coral framestones) and Core 15R (unlithified medium carbonate sands) at about 25mbsf or ~ 115m below present sea level, continuing through Core 16R. Core 17R was empty but Core 18R advanced to 32.80mbsf and recovered fragments of float/rudstones composed of Halimeda bryozoans, bivalves, benthic forams and coral fragments that show evidence of dissolution. The core catcher material was composed of broken and altered corals (Faviid, Goniopora, massive *Acropora*). This may indicate Pleistocene deposits. Core 19R was composed of similar material to Core 18R but also

included 1-2cm re-crystallized grains. Core 20R was advanced to 36.70 mbsf but had no recovery.

Core 1R at site M0033A was on deck at 15:30 and it consisted of biocrastic boundstone. Recovery of the core was 16%. Core 2R reached to 3mbsf and metal splits were used. Framestone with algae crusts were recovered and this lithology was identical in 3R. Core 4R (plastic liner) contained massive coral with calcarious algae including some *Halimeda* plates. Core 5R (metal splits) had great recovery. Almost 1.4m sediments were collected and the barrel was filled with massive coralline algae with coral fragments. Binding structures of algae seen in this core is indicative of fore-reef slope environment. Core 6R was on deck at 20:50 with great expectations following the previous core recovery. Yet approximately 30cm in total length of coral with calcareous crust were obtained. Massive corals, such as *Favid* and *Acropora* sp. were retrieved and the first microbiological sample was taken from 40-45cm of core 7R. Cores 8R and 9R were dominated by massive *Acropora* sp. (*palifera*/*cuneata*).

**4. Core recovery details**

| | | |
|---|---|---|
| **Hole** | M0032A | M0033A |
| **Cores recovered** | 10 | 9 |
| **Drilled length** | 18.9m | 12.8m |
| **Recovered length** | 2.29m | 4.74m |
| **Recovery** | 12.12% | 37.03% |
| **Depth at midnight** | | 12.8mbsf |

**5. Weather**

Sea state: slight (3) to moderate (4) with swell of 0.5 – 1.5m; wind direction changeable ENE to NE force 3 becoming 4 (7-16kts); partly cloudy becoming overcast in the afternoon; intermittent heavy showers; 28°C.

Next 24 hrs: Sea state moderate with swell of ~1.2m becoming 1.7m; wind direction NE 10-15kt swinging SE/E 15-20kts in the evening; rain in areas, heavy at times and isolated thunderstorms.