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

1st March 2010 (0000 - 2400 local time)

1. Location

HYD_01C Site 11 (M0035A & M0036A)

Time zone: Brisbane Australia Time, UTC +10

Position at midnight (drill string):
Latitude: 19° 40.34388 S
Longitude: 150° 14.63781 E

2. Activity summary

Coring operations continued at HYD_01C Site 11 M0035A until the target depth was achieved. The beacon frame was recovered and the HiPap beacon exchanged for a fresh one before being re-deployed. The vessel then moved to site M0036A and the down hole camera checked for live corals before coring operations commenced at M0036A.

3. Science report

Cores 19 and 20R of M0035A advanced to 27.66mbsf, and were composed of similar coral framestone, associated massive microbialite and some internal lithified sediments. Problems with hole stability caused no advancement with Core 21W. However, about 90 cm of unlithified carbonate sediments (probably infill and curated as wash) were recovered. Core 22R advanced to 28 mbsf before getting blocked off. Taken together, this indicates a major change in lithology between 20R and 22R (~ 26- 28mbsf). Core 23R continued to a depth of 29.9 mbsf and recovered a 9 cm section of well lithified dark grey grainstone/packstone unit with abundant Halimeda, benthic forams and bivalves. This lithology likely represents the older Pleistocene deposits and according to drilling information this hard horizon was encountered about 0.5 m before the end of the run – placing the boundary at ~ 29.4mbsf.

Core1R at site M0036A recovered no sediments. Core 2R recovered mixtures of modern marine seafloor (bryozoan, algae etc.) and fossil materials (corals [*Acropora* sp.]); hence the bottom of the core is believed to have reached to the fossil (possibly deglacial) surfaces. Core 3W was a wash core and did not advance any further. Core 4R achieved 100% recovery, reaching 5.0mbsf. Recovery was sand without any massive corals. At the bottom of Core 5R,

branching corals were observed (*Acropora* sp.). Core 6R contained sandy sediments again, but had poor recovery, although Halimeda, bryozoan and some small bivalves were seen in the sediments. Core 7R contained framestone consisting of pieces of branching coral. Core 8R drilled to 11 mbsf and core catcher material captured massive *Acropora.* However, section 1 consisted of lime pebbles with fragments of coral and Halimeda. The core catcher of Core 9R again contained massive *Acropora* sp. and a few *Halimeda* sand. Cores 10R and 11R were framestone, with core 11R recovering a nice set of massive corals. Cores 12R and 13R only recovered ca. 20-40 cm each, but still contained corals including Faviid. Core 14R reached a depth of 20.50 mbsf and the core catcher contained massive *Acropora*. Core 15R was again coral framestone, but with abundant microbialites.

4. Core recovery details

Hole	M0035A	M0036A
Cores recovered	5	16
Drilled length	4.52m	23.5m
Recovered length	2.42m	7.02m
Recovery	53.54%	29.87%
Depth at midnight	29.9mbsf (final depth)	23.5mbsf

5. Weather

Sea state: slight to moderate (3-4) with swell of 0.5 – 2 m; wind direction NE swinging NNE force 4 dropping to 3 midday and increasing to 4 late afternoon (11 - 16 knots); predominantly overcast with periods of heavy rain; 29°C.

Next 24 hrs: Sea state moderate with swell of 1.6m; wind direction N/NW 15/20 knots; isolated showers and rain areas.