

IODP Expedition 317: Canterbury Basin Sea Level

Week 1 Report (4-7 November 2009)

9 November 2009

Operations

Expedition 317 began at 0738 hr on 3 November 2009 with the first line ashore Berth 4, Townsville, Australia. The *JOIDES Resolution* arrived in Townsville a day ahead of schedule and port call activities began without delay to allow for an early departure. Crew change for all IODP and Transocean personnel and departure of Expedition 324 science party took place on 4 November. Vessel maintenance activities included inspection, repair and replacement of the vessel's sacrificial anodes by contract divers; repair of the X-Band radar; replacement and repair of the propulsion field coils that failed on the transit into Townsville; return of Lifeboat #2 after repair at an approved facility, and load testing witnessed by the ABS; inspection of all lifeboats by a third party inspection company; and inspection and testing of the freight elevator by third party elevator specialists in the presence of the ABS surveyor. Further activities included normal on and offloading of all IODP and Transocean freight; and PR activities including a press conference and ship tours with Australian government, university, and media representatives.

Science Results

The first calendar week of Expedition 317 consisted of four days in port (4-7 November). Scientists boarded the vessel on 5 November and on 6-7 November received numerous introductions, laboratory tours, and training sessions on topics including safety, life on board, computing environment, and scientific workflows, procedures, and policies.

Expedition 317 focuses on understanding the relative importance of global sea level (eustasy) versus local tectonic and sedimentary processes in controlling continental-margin depositional cyclicity. The emphasis is on the Oligocene to Recent period when global sea-level change was dominated by glacioeustasy. Drilling the Canterbury Basin, on the eastern margin of the South Island of New Zealand, takes advantage of high rates of Neogene sediment supply, which preserved a high-frequency (0.5-1 m.y. periods) record of depositional cyclicity. The Canterbury Basin offers the opportunity for expanded study of the complex interactions between processes responsible for the preserved stratigraphic record of sequences, as well as providing information on the early history of the Alpine Fault plate boundary. The deepest target of this expedition is the early Oligocene Marshall Paraconformity hypothesized to mark the initiation of thermohaline circulation and the proto-Antarctic Circumpolar Current.

Currents have strongly influenced deposition in parts of the basin, locally building large sediment drifts, which aggraded to shelf depths, within the prograding Neogene section. Understanding the depositional history, paleoceanographic record and sequence stratigraphic significance of these drifts are secondary drilling objectives.

The sequences to be drilled are correlative with those drilled on the New Jersey margin (Legs 150, 150X, 174A, and 174AX), Bahamas (Leg 166), and Marion Plateau (Leg 194) by ODP. Completion of at least one transect across a far-field siliciclastic margin, which has been subject to entirely different local forcing, is a necessary next step in deciphering continental margin stratigraphy. The Canterbury Basin, where both sequence stratigraphic geometries and seismic databases are of qualities comparable to those of New Jersey, is an ideal setting for such a drilling program.

Technical Support and HSE Activities

The Expedition 317 technical staff boarded the vessel on 4 November and conducted crossover and training with offgoing staff throughout the week. Surface freight and airfreight were loaded; offgoing freight was sent to College Station. On 6 November an introductory meeting was held with the Expedition 317 scientists. On 7 November the technical staff received marine mammal safety training from the Supervisor of Technical Support, and laboratory safety training from the Assistant Laboratory Officer.