



## **Integration of drilling parameters, wireline logging and core data to estimate core recovery and location: an example from IODP Expedition 310**

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The location and amounts of core recovered during a drilling program can often place severe constraints on the subsequent applications of core measurements. In palaeoclimate and sea-level studies accurate depth positioning of core pieces is critical in assessing the usefulness of a specific drill site. The principle objectives of Expedition 310 are to establish the course of postglacial sea level rise at Tahiti in the South Pacific, to define sea-surface temperature (SST) variations for the region over the period 20–10 ka, and to analyse the impact of sea level changes on reef growth and geometry. Average conventionally-calculated core recovery for the 37 boreholes drilled during this expedition is 57.47%, although for an individual borehole core recovery is highly variable. By convention, core is placed at the top of the core barrel run from which it was recovered, resulting in significant depth inaccuracies when recovery is < 100%. The Expedition 310 logging programme included the collection of high-resolution optical and acoustic images. Visual correlation of the recovered core with these image logs provides an extremely effective method of integrating these datasets. Comparison of drilling parameters (rate of drilling, pullback pressure and torque on bit) with the downhole logs indicates a clear correlation between these datasets and allows the logging data to be accurately matched to the drilling data. The final integrated depths comprise the underlying framework for all subsequent scientific analyses of recovered core employing interpretations based on depth.