Introduction

We conducted a marine geophysical survey of the Central-Western Pacific seafloor in 2011 aboard the R/V Thomas G. Thompson (TN72). Our survey imaged some of the oldest seafloor on the planet in a region of sparse data coverage. We present new Chirp (3.5 kHz) and bathymetry data from the Mesozoic Hawaiian magnetic lineations (Jurassic Quiet Zone) and a transect from the south end of the Pigafetta Basin (PB), west across the Magellan Seamount Chain (MSC) and the East Mariana Basin (EMB) to the Mariana Trench. The Chirp system penetrates the overlying sediment cover to a depth of ~50 meters below seafloor (mbsf). The deepest part of the Chirp record is marked by a strongly reflecting horizon, which occasionally crops out at the seafloor near volcanic peaks or bathymetric highs. Correlation of these data to DSDP/ODP drill sites (801C, 802, 199, 272) enables us to compare seafloor structure and uppermost sedimentation in the Jurassic Quiet Zone (JQZ), Pigafetta Basin, Magellan Seamounts, and the East Mariana Basin.

Jurassic Quiet Zone Study Area and Southern Pigafetta Basin

Uppermost sedimentation:
30-50m thick acoustically-transparent sediment layer which uniformly grades the basal horizon in most regions. We interpret this layer to be composed of pelagic abyssal clay and radiolarian oozes (Abrams et al., 1993).

Basal horizon:
The strongly reflecting horizon is likely formed by a layer of chert-porcelanite (Abrams et al., 1993). In the southeastern Pigafetta Basin (161.3 E, 17 N) the basal horizon nears the seafloor at a depth of 5650 m and the transparent sediment package is truncated.

Conclusions

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References


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