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IODP Expeditions 320 and 321, Pacific Equatorial Age Transectの成果

The Preliminary results of Pacific Equatorial Age Transect, IODP Expeditions 320 and 321

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In March 2009, the R/V JOIDES Resolution return to drilling operation of integrated Ocean Drilling Program from improvement of ship reconstruction. The Pacific Equatorial Age Transect (PEAT), IODP Expedition 320 and 321 was the first mission and completed at the end of June 2009. This cruise successfully recovered high quality cores in eight sites (U1331 to U1338) from the seafloor to basaltic basement of between 53 to 16 Ma from west to east. The recovered sedimentary sequence consists of carbonate to siliceous oozes, including the Cenozoic event of paleoclimate and paleocenaography such as early Eocene warmth, Oligocene initial glaciations, Oligocene/Miocene boundary and middle Miocene ice-sheet expansion. The biostratigraphy and magnetostratigraphy provided a good correlation and calibration of previous equatorial results (Leg 199) in drilling cores, and revealed that sedimentation rates increase from western sites (5-10 m/m.y.) to eastern one (20-40 m/m.y.). The PEAT program allows the reconstruction of extreme changes of the calcium carbonate compensation depth (CCD) in the equatorial Pacific across major geological boundaries during the last 53 m. y.. A very shallow CCD were recorded during the most of middle Eocene, and changed to high fluctuation mode in late Eocene. The critical change of deepening CCD occurred at Eocene/Oligocene boundary. In particular, the cruise found some small drops of CCD in the Neogene sequences. Tuning of the age model based on orbital cyclicity and isotope study will significantly improve the Cenozoic age model and calibrate the CCD evolutionary history across the equatorial Pacific.

キーワード: IODP, Expedition 320/321, PEAT

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