Late Miocene through Pliocene diatoms from Integrated Ocean Drilling Program Site U1361 off Wilkes Land, East Antarctica

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During the Integrated Ocean Drilling Program (IODP) Expedition 318, a total three sites has been drilled at the continental rise along the Antarctic margin off Wilkes Land (Escutia et al., 2011). Sedimentary sections obtained at those three sites provide continuous sequence of Miocene through Pleistocene to access siliceous biochronology and paleoceanography in the Southern Ocean (Tauxes et al., 2012). We present herein the result of quantitative diatom analysis of upper Miocene through Pliocene section at IODP Site U1361, where sedimentation rate was highest within those three sites and have no hiatus (Tauxes et al., 2012).

Diatom flora observed at site U1361 was composed with typical assemblage of the Southern ocean during those time interval. All of zonal marker species of latest Miocene through Pliocene diatom biostratigraphy in the Southern ocean have been observed and those biostratigraphic events were well detected. We applied diatom zonation scheme of Harwood and Maruyama (1991) with published age model of Coddy et al.(2008) , however, systematic offset of diatom events and geomagnetic polarity in uppermost Miocene to lowermost Pliocent section have been observed at Site U1361 as well as Site U1359, and also Site 1095 from the pacific coast of Antarctic Peninsula (Iwai et al., 2002). We conclude that the most probable reason for the discrepancy between the biostratigraphic and magnetostratigraphic data from Sites 1095, U1359, and U1361 is previous miscalibration of Southern Ocean biostratigraphic events to the GPTS in the late Miocene to basal Pliocene time interval.

The offset reconfirmed herein is very critical and essential to access the timing of overdeepening of continental shelf topography in the Antarctic Peninsula (Bart and Iwai, 2012) and Pliocene Ice dynamics of the West Antarctic Ice Sheet (Naish et al., 2009).

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