Geophysical Research Abstracts
Vol. 14, EGU2012-12680, 2012
EGU General Assembly 2012

Records of glacial-interglacial variability during the Pliocene: IODP Expedition 318 - Site U1361

J.J. Gonzalez (1), C Escutia (1), F.J. Espejo (1), T Williams (2), R.M. McKay (3), S. Passhier (4), T. van de Flierdt (5), L. Tauxe (6), H. Brinkhuis (7), and the Carlota Escutia Team

(1) Instituto Andaluz de Ciencias de la Tierra, CSIC-Universidad de Granada, Av. Fuentenueva s/n, 18002-Granada, Spain (jhonjairo@ugr.es, cescutia@ugr.es, fjjspejo@ugr.es), , (2) Lamont-Doherty Earth Observatory of Columbia University, Palisades NY, USA (trevor@ldeo.columbia.edu), (3) Victoria University of Wellington, Wellington, 6140 New Zealand (robert.mckay@vuw.ac.nz), , (4) Montclair State University, 252 Mallory Hall, 1 Normal Avenue Montclair, NJ 07043, USA (passchiers@mail.montclair.edu), , (5) Imperial College London, SW7 2AZ London, United Kingdom (tina.vandeflierdt@imperial.ac.uk), , (6) Scripps Institution of Oceanogreaphy, La Jolla, CA, USA (ltauxe@ucsd.edu), (7) Royal Netherlands Institute > for Sea Research NIOZ| PO Box 59 | 1790 AB Den Burg, Texel, Netherlands (henk.brinkhuis@nioz.nl)

One of the aims of IODP Expedition 318 drilling on the East Antarctic Wilkes Land margin was to obtain the record of Antarctic climate and cryosphere variability during the past warm climates of the early-middle Pliocene.

A complete Pliocene section was recovered from Site U1361, located on the continental rise eastern levee of the Jussieu Channel. We present the results from a continous high-resolution geochemical study (X-Ray Fluorescence (XRF) scanner and discrete XRF analysis) conducted on sediments from Site U1361. These records are compared with shipboard physical properties data measured on the core, clay mineralogy analyses and with a post-cruise revised sedimentary facies model. Age constrains for the studied sediments are provided by the age-depth model constructed shipboard and refined post-cruise, which indicated the studies sediments to be comprised between 5.18 and 2.46 Ma.

The downcore variations of these multiple proxies is interpreted to result from changes in primary biogenic productivity, terrigenous supply, and sedimentary processes that allow us to reconstruct changes in paleoceanographic and paleoenvironmental conditions associated with glacial–interglacial cyclicity. In this sense it is remarkable the Ba/Al and Ca variations, associated to the diatomaceous-rich silty-clay facies, suggesting high-productivity during interglacial periods at our site. In addition to the glacial/interglacial cyclic variability, we also discuss a marked change in the compositional and physical properties variability patterns within the section that we interpret to correspond with the start of the Pliocene cooling trend in this margin.

This contribution results from work funded by: the Integrated Ocean Drilling Program, CTM2009-08467-E (Spanish Ministry of Science and Education and FEDER funds); and the Spanish Ministry of Science and Innovation project CAGES (CTM2011-24079).