

Integrated stratigraphy of the Eocene Wilkes Land Margin, Antarctica; preliminary results from IODP Expedition 318: dinoflagellate cyst and TEX₈₆ results

Peter K. Bijl¹, James Bendle², Jörg Pross³, Stefan Schouten⁴, Ursula Röhl⁵, Catherine E. Stickley⁶, Matthew Olney⁷, Lisa Tauxe⁸, Steven M. Bohaty⁹, Henk Brinkhuis¹, Carlota Escutia¹⁰ and Expedition 318 Scientists

¹ Biomarine Sciences, Laboratory of Palaeobotany and Palynology, Institute of Environmental Biology, Utrecht University, Budapestlaan 4, 3584 CD Utrecht, The Netherlands

² Department of Geographical and Earth Sciences, Gregory Building, Lilybank Gardens, University of Glasgow, Glasgow, G12 8QQ UK

³ Institute of Geosciences, University of Frankfurt, Altenhoferallee 1, 60438 Frankfurt, Germany

⁴ Department of Marine Organic Biogeochemistry, NIOZ Royal Netherlands Institute of Sea Research, P.O. Box 59, 1790 AB Den Burg, Texel, the Netherlands

⁵ MARUM-Center for Marine Environmental Sciences, University of Bremen, Leobener Strasse, 28359 Bremen, Germany

⁶ Department of Geology, University of Tromsø, N-9037 Tromsø, Norway

⁷ Department of Geology, University of South Florida, Tampa, 4202 East Fowler Avenue, SCA 528, Tampa FL 33620, USA

⁸ Scripps Institution of Oceanography, Geosciences Research Division, La Jolla CA 92093-0220, USA

⁹ School of Ocean and Earth Science, University of Southampton, European Way, SO14 3ZH Southampton, United Kingdom

¹⁰ Instituto Andaluz de Ciencias de la Tierra, CSIC-Universite de Granada, Campus de Fuentenueva s/n, 18002 Granada, Spain

IODP Leg 318 recovered sediment cores from the Antarctic Wilkes Land Margin dating back into the early Eocene, the warmest time interval of the Cenozoic era. These cores provide an insight into environmental dynamics of an ice-free Antarctica. The onboard and postcruise studies have resulted in a well-constrained age model, and the multidisciplinary biogeochemical and micropaleontological data allows detailed paleoecological interpretations.

Here we present the results of a high resolution TEX₈₆ and dinocyst study on the Eocene recovered at IODP Site U1356. We evaluate sea level, sea surface temperature and productivity fluctuations and put the record of dinocyst endemism in the context of the regional tectonic evolution of the Australo-Antarctic continental breakup.