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The Upper Cretaceous foraminiferal record of IODP Site U1512 (Great Australian Bight, Indian Ocean)

Erik Wolfgring^{1,2}, Michael A. Kaminski³, Anna Waśkowska⁴, Maria Rose Petrizzo¹, Eun Young Lee⁵, Carmine Wainman⁶, and Trine Edvardsen⁷

¹Dipartimento di Scienze della Terra "Ardito Desio", Università degli Studi di Milano, via Mangiagalli 34, I-20133 Milano, Italy (erik.wolfgring@univie.ac.at)

²Universität Wien, Institute of Geology, Althanstraße 14, 1090 Vienna, Austria

³College of Petroleum Engineering and Geosciences, King Fahd University of Petroleum & Minerals, Dhahran, 31261 Saudi Arabia (kaminski@kfupm.edu.sa)

⁴AGH University of Science and Technology, Faculty of Geology, Geophysics and Environmental Protection; al. A. Mickiewicza 30, 30-059 Krakow, Poland (waskowsk@agh.edu.pl)

⁵Faculty of Earth Systems and Environmental Sciences, Chonnam National University, Gwangju 61186, Republic of Korea (eun.y.lee@chonnam.ac.kr)

⁶Australian School of Petroleum, University of Adelaide, Adelaide, SA 5005, Australia (carmine.wainman@adelaide.edu.au)

⁷Camborne School of Mines (CSM), University of Exeter, Tremough Campus, Penryn TR10 9EZ, United Kingdom (edvardsentrine@gmail.com)

Site U1512 was drilled during Expedition 369 of the International Ocean Discovery Program (IODP), which is located in the Great Australian Bight, southern Indian Ocean. It provides exceptional insights into the benthic foraminiferal biostratigraphy and paleoecology of a high southern latitude restricted marginal marine basin during the Late Cretaceous hot greenhouse climate and the rifting between Australia and Antarctica. The sedimentary sequence recovered at Site U1512 presents a rare record of a deep water agglutinated foraminifera (DWAF) community from the Southern High Latitudes. The Cretaceous record at Site U1512 covers the lower Turonian through Santonian (nannofossil zones UC8b to UC12/CC10b to CC16, *H. helvetica* to *Marginotruncana* spp. - *Planoheterohelix papula* - *Globotruncana linneana* planktonic foraminifera zones). Diverse benthic foraminiferal assemblages yield many new taxa that are yet to be described.

Agglutinated forms dominate the assemblage in most intervals. In lower to mid Turonian and Santonian strata, calcareous benthic as well as planktonic foraminifera are frequent. Abundant radiolaria are recovered from the mid Turonian, and they increase up-section and exceed 50% of the microfossil assemblage. We documented a diverse benthic foraminiferal assemblage consisting of 162 taxa (110 agglutinated and 52 calcareous). The most common taxa of the DWAF assemblage are tubular (i.e., *Kalamopsis grzybowskii*, *Bathysiphon* spp.) and planispiral forms (i.e., *Ammodiscus* spp., *Haplophragmoides* spp., *Buzasina* sp., *Labrospira* spp.).

The Turonian strata yield highly abundant *Bulbobaculites problematicus* and *Spiroplectamina navarroana*. The presence of the agglutinated foraminiferal marker taxa *Uvigerinamina jankoi* and *Bulbobaculites problematicus* provides a tie-point to the Tethyan

DWAF biozonation of Geroch and Nowak (1984). The composition of foraminiferal assemblages and the increase in radiolaria abundance suggest unstable environmental conditions at Site U1512 during the early Turonian through Santonian. These characteristics refer to changes in bathymetry associated with changing ocean chemistry. Results of quantitative analyses of the benthic foraminiferal assemblages indicate a restricted paleoenvironmental regime, dictated by changes in paleobathymetry, unstable patterns in ocean circulation, and the discharge of a nearby river delta system.

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