

Record of Late Eocene to Early Oligocene calcareous nannofossils from the lower part of the Pisco Basin, west-central Peru

Emilia R. Belia, Kevin E. Nick

Loma Linda University, Department of Earth and Biological Sciences, Loma Linda, CA 92350 USA; emyrut@gmail.com, knick@llu.edu

Erika Bedoya Agudelo

Southern Center for Scientific Research (CADIC), CP9410, Ushuaia, Tierra del Fuego, Argentina; erikal.bedoya@gmail.com

David K. Watkins

University of Nebraska-Lincoln, Department of Earth and Atmospheric Sciences, Lincoln, NE 68588, USA; dwatkins1@unl.edu

The East Pisco Basin contains a Cenozoic sedimentary record of the Andean Foreland and is one of the few known onshore outcrops that records nannoplankton in the eastern equatorial Pacific region. Previously published studies on Eocene–Oligocene calcareous nannofossils in the basin (Marty et al., 1988; Dunbar et al., 1990; DeVries et al., 2006) contain no detailed biostratigraphic analyses. Models for the basin would be enhanced by increasing the resolution and extent of the biostratigraphic work.

This study presents a calcareous nannofossil biostratigraphic interpretation from one unit with no previously established age or formation assignment in the Pisco Basin. We collected samples of fine-grained calcareous sediments that onlap the east end of an extension of the Cerros Media Luna. The section is laterally within 180 m of the contact of sedimentary rocks with the basement. Semiquantitative data and relative abundance counts of the 30 nannofossil taxa identified indicated rare to common occurrences with poor to moderate preservation. The assemblages comprised primarily *Coccolithus pelagicus*, *Cyclicargolithus floridanus*, *Ericsonia formosa*, *Helicosphaera compacta*, *Isthmolithus recurvus*, *Micrantholithus* sp., *Reticulofenestra bisecta* (<10 μm), *R. dictyoda* (4–10 μm), *R. lockeri*, *R. minuta* (<3 μm), *Reticulofenestra* sp. (5–10 μm), *R. stavensis* (>10 μm) and *R. umbilicus*. Because most of the discoasters showed strong recrystallisation, a confirmed identification of *Discoaster saipanensis* was not possible. The occurrence of *E. formosa* and *I. recurvus* in the assemblage suggests an age of Late Eocene to Early Oligocene, Zones NP19–NP20 to Zone NP21 (Martini, 1971). This study documents the first biostratigraphic work on Eocene–Oligocene calcareous nannofossils in the Pisco Basin, thus contributing to the baseline data on nannoplankton assemblages for low latitudes in the eastern equatorial Pacific region.

References

- Devries, T.J., Navarez, Y., Sanfilippo, A., Malumian, N. & Tapia, P. 2006. New microfossil evidence for a late Eocene age of the Otuma Formation (Southern Peru). XIII Congreso Peruano de Geología, Lima, Peru, October 2006: 615–618.
- Dunbar, R.B., Marty, R.C. & Baker, P.A. 1990. Cenozoic marine sedimentation in the Sechura and Pisco basins, Peru. *Palaeogeography, Palaeoclimatology, Palaeoecology*, **77**: 235–261.
- Martini, E. 1971. Standard Tertiary calcareous nannoplankton zonation. In: A. Farinacci (Ed.). *Proceedings of the II Planktonic Conference, Roma*, **2** (Tecnoscienza).
- Marty, R., Dunbar, R., Martin, J.B. & Baker, P. 1988. Late Eocene diatomite from the Peruvian coastal desert, coastal upwelling in the eastern Pacific, and Pacific circulation before the terminal Eocene event. *Geology*, **16**: 818–822.