

# Preliminary results of calcareous nannofossil analyses of Neogene and Quaternary units in northwestern Pangasinan, Philippines

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This study presents the preliminary results of a calcareous nannofossil analysis of samples collected from exposed Neogene and possible Quaternary marine sequences in northwestern Pangasinan, Philippines. The study was conducted to refine the ages and distribution of previously mapped lithostratigraphic units, as well as refine understanding of the geology and stratigraphy of the region.

Samples that were collected from a mass transport deposit were assigned to nannofossil Zone NN10 (early Late Miocene) or older based on the occurrence of *Cyclicargolithus floridanus*, *Reticulofenestra pseudoumbilicus*, *Catinaster calyculus*, and *C. coalitus*. An intercalated calcareous siltstone and limestone unit, assigned to Zones NN8–10 (early Late Miocene), overlies these deposits, and this unit was tentatively assigned to the Cabaluan Formation, which was previously dated Middle–Late Miocene on the basis of planktonic foraminiferal assemblages. Limestones, fine- to very fine-grained sandstones, and finer grained clastic rocks, which are widely distributed in the study area, were dated early Late Miocene to late Early Pliocene (nannofossil Zones NN10–16) based on the occurrences of *Amaurolithus delicatus*, *Ceratolithus cristatus*, *Discoaster pentaradiatus*, *D. quinqueramus*, *D. surculus*, *D. triradiatus*, *Helicosphaera orientalis*, *H. pacifica*, *H. stalis*, *Reticulofenestra pseudoumbilicus*, *R. haqii*, *R. minuta*, *R. rotaria*, *Pseudoemiliana lacunosa*, and small geophycocapsids. These units are tentatively assigned to the Santa Cruz Formation, which was previously dated late Late Miocene.

Ongoing geological fieldwork and mapping, including petrographic, structural, and microfacies analyses, will determine whether these Pliocene units belong to the Santa Cruz Formation, Bolinao Limestone (Pliocene–Pleistocene), or a previously unmapped lithostratigraphic unit.