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Calcareous nannoplankton distribution around the Campanian–Maastrichtian boundary on the Aktulagaj Plato (Kazakhstan)

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The recognition of the Maastrichtian lower boundary is impeded on the East European Platform (EEP) and in Russia as a whole due to the absence of *Pachydiscus neubergicus*, which first appearance demarcates the boundary in the stratotypic section Tersis [1]. This boundary is traditionally drawn on the EEP at the base of the Belemnella lanceolata Zone. Campanian/Maastrichtian deposits of the Aktulagaj Plato are unique in being both comprehensive and well exposed. They are situated on the Tethys periphery in the transitional zone between the Tethic and Boreal belts [2].

The calcareous nannoplankton assemblage comprises over 80 species from two Aktulagaj outcrops 3018 and 3019 that continue each other. In outcrop 3018, the Upper Campanian subzones CC22a (samples 18/25–18/50) and CC22b (18/55–18/90) [3, 4] or Upper Campanian subzones UC15d (18/25) and UC15e (18/30–18/90) [5] are recognised. In outcrop 3019, the following units are established: the Upper Campanian Subzone CC22b (UC15e) (samples 5–30), transitional Upper Campanian/Lower Maastrichtian Subzone CC23a (UC16) (35–95), Lower Maastrichtian Subzone CC23b (UC17) (100–105) and the Upper Maastrichtian Subzone CC25c (UC20a) (110–135). The Lower Maastrichtian Zone CC24 and Upper Maastrichtian subzones CC25a–b (or Lower and Upper Maastrichtian zones UC18 and UC19) cannot be observed due to a discontinuity above sample 105. The following bioevents have been proposed to define the Campanian/Maastrichtian boundary in Tersis [6] and are most important for recognition of this boundary on the Aktulagaj Plato: disappearance of *E. eximius* (sample 35), *U. trifidus* (85) and *B. parca constricta* (100). Since *U. trifidus* is found in the lowermost sample of 3018 section, the Campanian/Maastrichtian boundary is conditionally drawn between disappearances of *E. eximius* and *U. trifidus*, i.e. in the interval of samples 35–80.

Dynocysts suggest the Campanian/Maastrichtian boundary within the interval of samples 49–69 that corresponds to *Alterbidinium minus* beds and correlates with the GSSP of the Maastrichtian lower boundary in Tersis [7].

Magnetochrons C33r, C33n, C32, C30n and C29r are recognised in the Aktulagaj succession. Subchrons within C32 are not detected, but a rhythmicity in the magnetic susceptibility correlates well with transgression/regression megacycles [8]. Given that, the Maastrichtian lower boundary coincides with the level of sample 60 (lowermost LC19 Zone and uppermost Belemnella lanceolata Zone). A good portion of deposits corresponding to Chron C31 appears to be reduced, which is well supported by the

absence of the nannoplankton zones CC24/UC18 (Lower Maastrichtian) and subzones CC25a–b or zone UC19 (Upper Maastrichtian).

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