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A reference section for the Santonian-Campanian boundary and sea-level fluctuations: The Postalm section, Austria, revisited

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The succession includes a facies change from neritic to bathyal sediments, with the Santonian-Campanian boundary interval comprising a deepening trend from upper Santonian-lowermost Campanian grey to yellowish shelf marls to red marly limestones. The base of the Campanian can be defined by magnetostratigraphy, i.e. the reversal to C33r. A detailed paleomagnetic survey could pin down the reversal within 15 cm of the section, between sample K36 (-2.62m, reverse) and sample K37 (-2.77m, normal) below. Thus, the interval of undetermined magnetostratigraphy could be reduced considerably. A 1 m thick interval of high magnetic susceptibility values is present below the end of chron C34n (latest Santonian).
Nannofossil biostratigraphy shows the first occurrence of Broinsonia cf. parca parca (base of CC18a/UC14a) at sample K33, ca. 44 cm above the base of C33r. Ceratolithoides cf. verbeekii starts 2 m above the boundary, in the lower part of Chron 33r. Planktic foraminiferal biostratigraphy indicates the elevata-asymetrica concurrent range zone due to the presence of Globotruncanita elevata elevata, Dicarinella asymetrica, and Marginotruncana spp. at the base of the section. Dicarinella asymetrica and Muricohedbergella flandrini have their last occurrences in the section ca. 40 cm below the magnetostratigraphic boundary. Large Globotruncana arca occur above this event. Thus two of the main suggested biomarkers, i.e. the FO of Broinsonia parca parca and the LO of Dicarinella asymetrica occur in close proximity to the reversal at the base of Chron 33r. Using sediment accumulation rate reconstructions we estimate the last occurrence of D. asymetrica at ca. 20 ka below the reversal, and the first occurrence of B. parca parca at ca. 22 ka above the boundary.
Strontium isotope stratigraphy indicates a value of 0.707532 for the base of the Campanian in the Postalm section. Carbon isotopes show a positive excursion near the boundary, i.e. the Santonian-Campanian carbon isotope event. Oxygen isotopes show a negative excursion slightly below the Santonian-Campanian boundary, followed by a trend to more positive values. Together with the magnetic susceptibility data, sequence stratigraphy interpretations and global correlations a sea-level lowstand can be inferred to occur just at the boundary.