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Cyclostratigraphy and an astronomically calibrated duration of the Late Campanian Globotruncanita calcarata Zone

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Two sections spanning the planktonic foraminifer Globotruncanita (Radotruncana) calcarata Zone of Late Campanian (Upper Cretaceous) age are investigated along the northern (Ultrahelvetic) and southern (Austro-Alpine Northern Calcareous Alps) margin of the Penninic Ocean in the NW Tethys realm. Plankton foraminifer and nannofossil biostratigraphy indicate the presence of the Globotruncana ventricosa Zone and the calcarata Zone, and standard nannofossil zones CC21 - UC15cTP and CC22ab - UC15deTP. The combination of cyclostratigraphy carbon isotope stratigraphy and strontium isotopes allows a detailed chronostratigraphic correlation. Periodicity was obtained by sinusoidal regressions based on the 405 kyr cycle cross-correlating over the interval from 700 to 890 kyr, blind power spectral analysis, Lomb periodograms, and Morlet wavelets. The duration of the calcarata Total Range Zone is calculated by orbital cyclicity expressed in thickness data of limestone-marl rhytmites and stable carbon isotope data (southern section) representing a precession cycle of 19.7 kyr. Obliquity and short eccentricity cycles are identified by blind spectral analysis and result in a duration of 806.3 kyr for the zone. Mean sediment accumulation rates are low with 2.04 cm/kyr for the southern section and 0.30 cm/kyr for the northern section.