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An astrochronological framework for the Tethyan Campanian

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A section from the Austro-Alpine Northern Calcareous Alps recording Northwestern Tethyan deposits is investigated for cyclostratigraphy and palaeoenvironments. With a special focus on the impact and duration of palaeoenvironmental changes, this work aims at establishing an astrochronologically calibrated framework for the Tethyan upper Campanian.

The Postalm section (Gosau Group, Northern Calcareous Alps) displays rhythmic deposits recording an almost uninterrupted Santonian to Maastrichtian succession. Greyish marly limestones of the Santonian Bibereck Formation represent the oldest deposits recorded at the Postalm section and display rapidly increasing water depths. While the Bibereck formation is interpreted as a neritic to outer neritic palaeoenvironment, the overlying Nierental Formation displays a hemipelagic to pelagic facies. These younger deposits recorded at the Postalm section are recorded in reddish foraminifera packstones displaying distinct limestone/marl alternations. These rhythmic alternations presumably represent precession cycles. Over 300 samples were taken bed-by-bed to provide a per-cycle resolution.

Foraminiferal and nannoplankton biostratigraphy confirms an almost uninterrupted succession at the Postalm section and the presence of planktonic foraminiferal biozones from the *Dicarinella asymetrica* to the *Gansserina gansseri* Zone, nanofossil Zones CC17 to CC22. A small part of the section - the mid-Campanian *Radotruncana calcarata* interval - was already investigated for cyclostratigraphy as well as biostratigraphy and palaeoenvironments [1,2]. The investigation of the stable isotope signature curves recorded at the Postalm section provides further means to correlate local results to other Campanian reference sections.

Spectral analysis illustrates strong harmonic signals preserved in the depositional sequence of the limestone/marl couplets as well as in the stable isotope signature curves. Based on the 405kyr cycle, strong precession and obliquity signals were observed. Data collected at the Postalm section contribute to the understanding of the impact of palaeoenvironmental changes in the Tethyan Campanian. A well established biostratigraphic and cyclostratigraphic framework in a comparatively high resolution facilitates to record even small scale sea-level changes.

References:

[1] Wolfgring E et al. (2015). *Paleo3*, 441, 3, 467-492

[2] Wagreich M et al. (2012). *Cretaceous Research*, 38, 80-96

