

The dinocyst record across the Cretaceous/Paleogene boundary of a bathyal mid-latitude Tethyan setting (Gosau Group; Gams Basin, Austria)

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For the first time, a high-resolution palynological study was carried out across the Cretaceous/Paleogene (K/Pg) boundary in two sections (Knappengraben and Gamsbach sections) of the Gosau Group near Gams (Gams Basin, Northern Calcareous Alps, Austria).

More than 178 dinoflagellate species and subspecies were identified from 89 rock samples concentrated around the K/Pg boundary. In most samples the dinocysts are moderate to well preserved but associated with reworked material. The dinoflagellate cyst assemblages from most samples are dominated (more than 90%) by gonyaulacoid cysts (e.g., *Spiniferites*, *Areoligera*, *Achomosphaera*, *Hystrichosphaeridium*, *Adnatosphaeridium*, *Pterodinium*). Peridinioid cysts occur in low and variable concentrations.

Some well known dinocyst marker species around the K/Pg boundary such as *Carpatella cornuta*, *Spongodinium delitiense*, *Trithyrodinium evittii*, *Palynodinium grillator*, *Manumiella druggii*, *Cordosphaeridium fibrospinosum*, *Membranilarnacia? tenella*, *Senoniasphaera inornata*, *Damassadinium californicum*, and *Dinogymnium acuminatum* are recorded in the studied samples. These marker species can be correlated with other dinocyst bioevents around the K/Pg boundary in the northern and southern hemisphere. In addition to these, *Trabeculidinium quinquetrum*, *Lejeunecysta izerzenensis*, *Batiacasphaera rifensis*, *Impagidinium maghribensis*, and *Cyclonophelium compactum* represent local markers. A *Spongodinium delitiense* acme is recorded in both studied sections (from 80 cm to 180 cm in Gamsbach section and from 100 cm to 220 cm in Knappengraben section above the K/Pg boundary) and is interpreted as a transient cooling event of oceanic surface waters. The stratigraphic distribution of the dinocyst species indicates that dinocysts have not been seriously affected by the mass extinction event at the K/Pg boundary.

Six dinocyst assemblages were identified by means of cluster analyses and four palynofacies assemblages have been distinguished based on the composition and abundance of kerogen groups (AOM, phytoclasts, palynomorphs). Their distribution does not reflect any regular pattern. The increase of phytoclasts in the Danian clearly indicates enhanced terrestrially derived input into the basin. Between the two studied sections major differences do exist palynologically and sedimentologically, which can be explained by small scale local lateral variations.