

STOP 2 Cretaceous/Paleogene boundary at Krautgraben/Gams

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Topic: Cretaceous/Paleogene boundary section

Lithostratigraphic unit: Nierental Formation (Upper Gosau Subgroup)

Age: Late Maastrichtian (CC26) – early Paleocene (NP1)

Tectonic unit: Untersberg nappe / Gölle nappe (Tirolicum), NCA

Location: Outcrops along a bend of Krautgraben (=upper Gamsbach) main creek

Coordinates: E 14°51'50" N 47°39'51"

Specialities: new K/Pg boundary section investigated by Grachev et al. (2008) and Egger et al. (submitted); stratigraphy, sedimentology, geochemistry and mineralogy data.

References: Grachev et al. (2008); Egger et al. (submitted)

A second K/Pg boundary site in the Gams area is found in the Krautgraben, the valley of the Gamsbach River about 1.25 km west of the Knappengraben site (Fig. 1C). The base of the 6.5 m long section lies 2.5 m below the K/Pg boundary. Egger et al. (submitted) report first results from a combined palaeontological and geochemical analysis of that section.

The section is part of the Nierental Formation of the Gosau Group. The log of the section is given in Fig. 3. The most conspicuous feature is the ca. 2cm thick boundary clay. The base of this clay has been taken as 0 meter level in the columnar log. The sample numbers represent the centimeter distance of the sample above (+) or below (-).

The Gamsbach section consists mainly of fine-grained pelitic rocks. Below the K/Pg boundary light to medium gray marlstones and marly limestones occur (mean carbonate content of 11 samples is 54.9wt.%; mean content of total organic carbon is 0.18wt.%), which are interbedded with thin (< 15cm) sandstone turbidites (fig. 3). Dark gray mottles due bioturbation are present especially in more indurated marly limestone beds. Chondrites- and well indurated, bioturbated marly limestone with an irregular, wavy upper surface. Above this surface, 0.2 to 0.4cm of yellowish clay marks the base of the Paleocene. The yellowish clay is overlain by gray clay with a maximum carbonate content of about 13wt.% in the upper part of the layer. The overlying 200cm thick middle to dark gray marl to marlstone contains ca. 20 – 50wt.% carbonate (mean content of total organic carbon 0.23wt.%). Twelve thin (0.5 to 5cm) sandy to silty turbidite layers are intercalated in the first 9cm of this marlstone. The color of the marls and marlstones changes up-section from light to medium gray, and they are interbedded with brown to reddish layers. Turbiditic beds become thicker there (up to 14cm). A variegated marl/marlstone bed (40cm thick) occurs at 323cm. It contains clasts of red and brown marly limestone up to 15cm in diameter and some slump folds. Above this mass-flow bed, the grayish-red marl-marlstone succession extends to the top of the section, 400cm above the K/Pg boundary

The section comprises the upper part of the Cretaceous *Nephrolithus frequens* Zone (CC26) and the lower part of the Paleocene *Markalius inversus* Zone (NP1). The boundary is characterized by

- (1) an enrichment of the contents of the siderophile elements Ir, Co, Ni, and Cr compared to the background and continental crustal values,
- (2) a sudden decrease of carbon and oxygen isotope values,
- (3) a sudden decrease of carbonate content, and
- (4) an acme of the calcareous dinoflagellate cyst *Operculodinella operculata*, which is succeeded by an acme of the small coccolith species *Neobiscutum parvulum*. The *Neobiscutum* acme is associated with a positive excursion of $\delta^{18}\text{O}$ indicating a transient cooling of ocean surface waters due to short-lived changes in the configuration of ocean circulation after the impact.

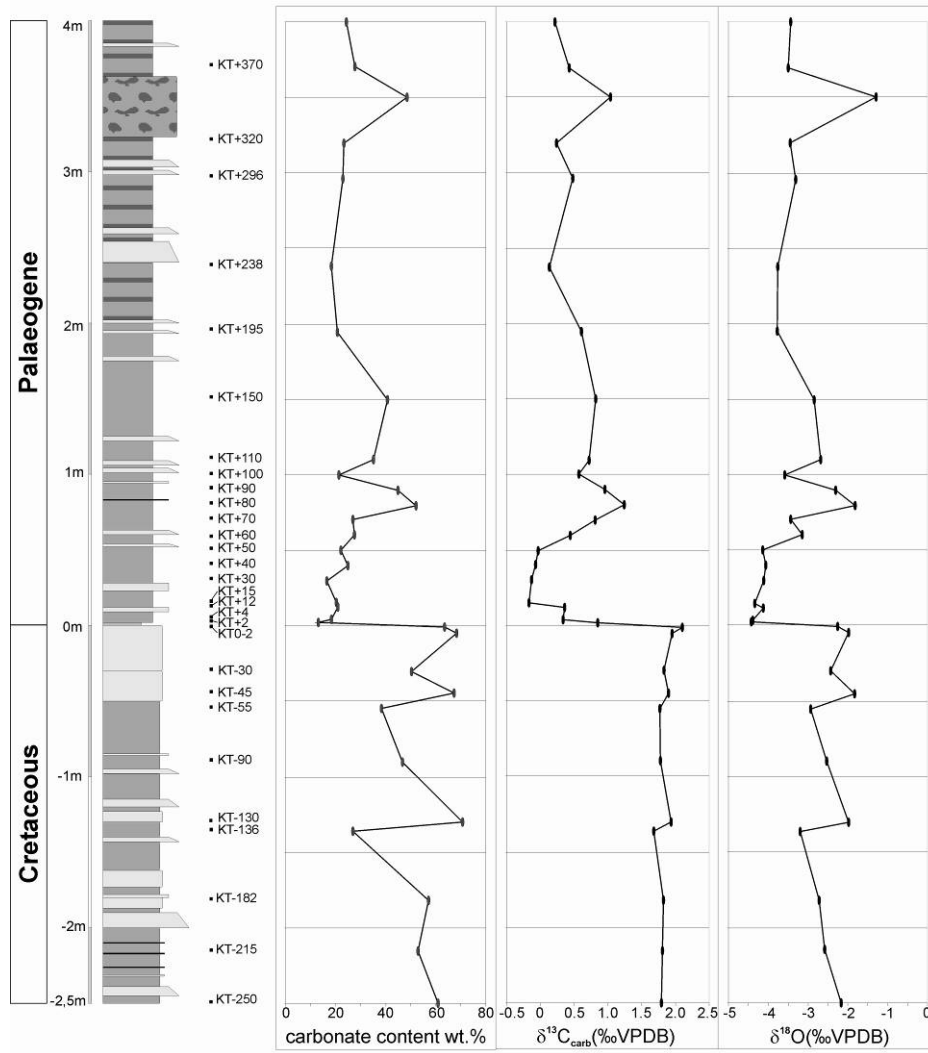


Fig. 7. Stratigraphic log of the Gamsbach section, with carbonate content and variation in the stable isotope abundances (Egger et al., submitted).