IRIDIUM AND OTHER ELEMENTAL VARIATIONS ACROSS THE TRIASSIC–JURASSIC BOUNDARY IN SECTIONS AT KUHJOCH AND KENDLBACH, NORTHERN CALCAREOUS ALPS, AUSTRIA

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Samples from strata spanning the Triassic-Jurassic boundary in the classic sections at Kuhjoch and Kendlbachgraben were studied by NAA, XRF and combustion analysis to determine Ir levels and associated geochemistry. The results are compared to previously determined carbon isotope stratigraphy at these sections. Ir concentrations in the Kössen Formation at Kuhjoch are very low (< 10 pg/g) until the top of the formation, reaching levels of 26 pg/g, in the T-bed at the top of the Eiberg Member. The Tiefengraben Member of the Kendlbach Formation is enriched in Ir in general relative to the strata below. The shift to higher levels is abrupt at the base of the member, coinciding with a decrease in carbonate content. Concentrations of 60 to 80 pg/g are typical through the entire thickness of the Schattwald Beds and into the gray Tiefengraben strata, peaking at 145 pg/g. Above 560 cm from the Tiefengraben base, concentrations decline from 50 pg/g to ~30 pg/g. The analyses from the Kendlbachgraben section compare well with those from Kuhjoch, with similar difference in Ir concentration between the Kössen and Kendlbach formations. In both sections, the initial increase in Ir corresponds to the initial carbon isotope excursion. Concentrations of redox-sensitive elements indicate transient reducing conditions during deposition of the uppermost Kössen Formation, but oxidizing conditions during Tiefengraben Member deposition. Enrichment of Ir at the top of the T-bed is associated with a redox boundary, but the cause of other variations is undetermined. The Al/Ti ratio indicates more intense weathering during deposition of the lowermost 20 cm of the Tiefengraben Member, but otherwise consistently humid to sub-humid climate prevailed during deposition. The primary control on Ir concentration in the sampled section is formation lithology, although there are variations within the Tiefengraben Member that are independent of carbonate content and likely related to continuing CAMP eruptions, potentially through outgassing.