Upper Cretaceous high latitude Paleosols near the Kikak-Tegoseak dinosaur site (Prince Creek Formation), North Slope, Alaska

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The Upper Cretaceous Prince Creek Formation is the most dinosaur-rich high latitude formation in the world but there remains relatively little detailed work that integrates the well-known paleontological sites with the local paleopedology or sedimentology. Facies associations of the Prince Creek Formation near the Kikak-Tegoseak dinosaur site indicate that, overall, the depositional environment was a swampy wetland alluvial/coastal plain. Typical facies associations include fine-grained lakes, lake margins, levees, crevasse splays and paleosols on floodplains, and coarser grained, ripple cross-laminated, non-migrating channel deposits. A preliminary paleopedological analysis of drab-colored paleosols from the Prince Creek Formation near the Kikak-Tegoseak dinosaur site indicates predominantly, weak, hydromorphic and cumulative soil development. Root traces and organic debris are common, although true coals are rare, and bentonites are locally present. Redoximorphic features such as ferruginous void and grain coatings, mottled soil aggregates (peds), depletion features and iron oxide nodules suggest cycles of soil wetting and drying. Weakly developed clay coatings are present on voids suggesting periodic clay illuviation. Bioturbation is abundant in thin section. Small, red, orange, yellow and tan clay papules are common. The Kikak-Tegoseak bonebed is dominated by the associated skeletal remains of the horned dinosaur, *Pachyrhinosaurus*. The quarry also contains the cranial and post-cranial remains of several taxa of both large and small theropods, and hadrosaurs. No other bone material has been collected from fine-grained sediments present in the area, and preserved evidence of dinoturbation is extremely rare. Taken together, the paleopedological and sedimentological evidence near the Kikak-Tegoseak dinosaur sitesuggests that these dinosaurs thrived in a rapidly aggrading, wet, temperate floodplain environment high above the Cretaceous Arctic Circle.