Presented is the first absolute age for the basal Albian from the Schwicheldt Ton Member, Gault Formation, Vöhrum, Germany. A 206Pb/238U age of 113.1 ± 0.3 Ma is determined for chemically abraded zircon from a tuff horizon 65 cm above the Aptian/Albian boundary. The new U–Pb age, although within uncertainty of the GTS 2008 determination (112 ± 1 Ma), is nominally older. The younger GTS 2008 basal Albian age is obtained from cyclostratigraphy using an 40Ar–39Ar age from the base Cenomanian. The nominal difference between the GTS 2008 age and new basal Albian age is consistent with the documented ca. 0.65% bias between U–Pb and 40Ar/39Ar geochronology. The new 206Pb/238U age calls into question a recently published age for the basal Albian (106.9 ± 0.4 Ma) determined from K–Ar glauconite analysis, as well as the K–Ar age for the GL-O international standard.Rhenium–osmium isotope analysis of the basal Albian grey clay of the Schwicheldt Ton Member, Gault Formation and basal Turonian grey shale of the Schwarz–Weisse–Wechselfolge, Hesseltal Formation (recording Oceanic Anoxic Event 2) yields low and similar 187Re/188Os values (49–167) that are positively correlated with 187Os/188Os values. For both sections imprecise Re–Os ages (6–9%, 2σ) that overlap the stratigraphic boundary ages are determined (Aptian/Albian = 108.9 ± 6.2 Ma; Cenomanian/Turonian = 91.5 ± 8.6 Ma). Although the Re–Os data suggest that organic-rich sediments other than black shales are potentially amenable for Re–Os geochronology, the large uncertainties contrast with that from previous Re–Os organic-rich sediment studies. The latter show sample sets with a significant spread in 187Re/188Os ratios (several hundred units). The imprecise Re–Os geochronology presented here relates to the limited spread in the 187Re/188Os values. The redox conditions of deposition are suggested to control the 187Re/188Os ratio of an organic-rich sediment. However, trace element and Re–Os data for samples from NW Germany and previous Re–Os geochronology studies show no direct relationship between 187Re/188Os values and the redox condition of the water column. These results suggest that the fractionation of Re and Os in organic-rich sediments is not controlled by water column redox conditions. Instead, Re–Os fractionation in organic-rich sediments may be controlled by sedimentation rate, recharge of Re and Os to the water column and/or post-deposition mobility of Re and Os within the sediment. The initial Os isotope composition of an organic-rich sediment is inferred to reflect the seawater composition at the time of deposition. For the Cenomanian/Turonian boundary grey shale a seawater Os composition of 0.33 ± 0.02 is determined. This Os isotope composition contrasts with that of the stratotype section at Pueblo, Colorado (0.15) and for those obtained from Furlo, Italy and ODP Site 1260B (~ 0.5). This data may suggest that the Cenomanian/Turonian ocean was not homogeneous with respect to Os suggesting either alternate oceanic circulation or basin dynamics.