



Changing climatic seasonality in central Turkey through the last 1700 years from delta-18O analysis of lake sedimentary carbonate and biogenic silica

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We have analysed delta-18O from carbonates and diatom silica from the same varved lake sequence from Nar Gölü, central Turkey. Carbonate isotope values from the site have previously been interpreted as representing changing water balance (Jones et al., 2006, *Geology*, 34, 361) and show a strong relationship with the annual Evaporation: Precipitation ratio.

Through study of the varve composition and sediment traps collected in the lake over the last decade, we estimate that carbonates are deposited in the late spring or early summer, following a spring bloom of diatoms or other algae. Diatoms may also sometimes bloom in Autumn or in the early Spring (Woodbridge and Roberts, JoPL, submitted). Given that lake waters in Nar vary seasonally in their isotopic composition we hypothesis that delta-18O measured from diatom silica will record spring/autumn lake waters compared to more summer influenced carbonate values. Here we present initial results comparing the diatom delta-18O with the carbonate delta-18O record.

Sediment samples for diatom delta-18O analysis were carefully cleaned to remove any non-diatom silica from the sample. In addition, samples were analysed using an EDX and SEM to calculate the amount of detrital silica contamination left in the sample so this value can be mass balanced out to derive a pure diatom silica delta-18O value.

The delta-18O silica record for the last 1700 years show distinct differences to the carbonate delta-18O signal. Major shifts in the carbonate record occur at 600 varve years BP, from inferred wet to dry conditions and at 1500 BP in the opposite direction. This contrasts with a distinct period of isotopically-depleted waters recorded between 1200 and 1600 BP in the diatom silica record, with a similar short event between 940 and 980 BP. The coupling of the two records allows a more complex climate reconstruction to be developed as we compare delta-18O with regional climate records.