**Supplementary Material**

**Table Captions**

Supplementary Table 1. Trace element analysis.

Supplementary Table 2. Full spectral analysis results on both stable isotopes and growth rate

time series of Ach-3 stalagmite. The dominant spectral for the respective proxy is marked in Bold.

**Figure Captions**

Supplementary Figure 1. Principal Component Analysis (PCA) scatter plot. Inset table shows the values of the first three Principal Components (PC1 to PC3).

Supplementary Figure 2. Spectral analysis results on both stable isotopes and growth rate time

series of Ach-3 stalagmite. Four spectral windows were applied (Rectangular, Welsh,

Hanning and Blackman-Harris) using the SPECTRUM software (Schulz and Stattegger, 1997). The horizontal line indicates the lower bound for statistically significant power e.g. distinguished from white noise.

Supplementary Figure 3. Spectral analysis results on oxygen isotopes for stalagmites Ach-3,

Ach-1 and Bero-1. Four spectral windows were applied (Rectangular, Welsh, Hanning

and Blackman-Harris) using the SPECTRUM software (Schulz and Stattegger, 1997). The horizontal line indicates the lower bound for statistically significant power e.g. distinguished from white noise. Results are tabulated in Table 2.