Climatic and anthropogenic drivers of productivity in aquatic environments

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Aims and Objectives:

- Identify major tipping points in productivity and its drivers
- To test if variation in total solar irradiance and sun spot cycles affected productivity changes lacustrine environments

Case Study: Greifensee

A high resolution elemental geochemistry and hyperspectral imaging of a continuous sediment succession from late Glacial trough the Holocene

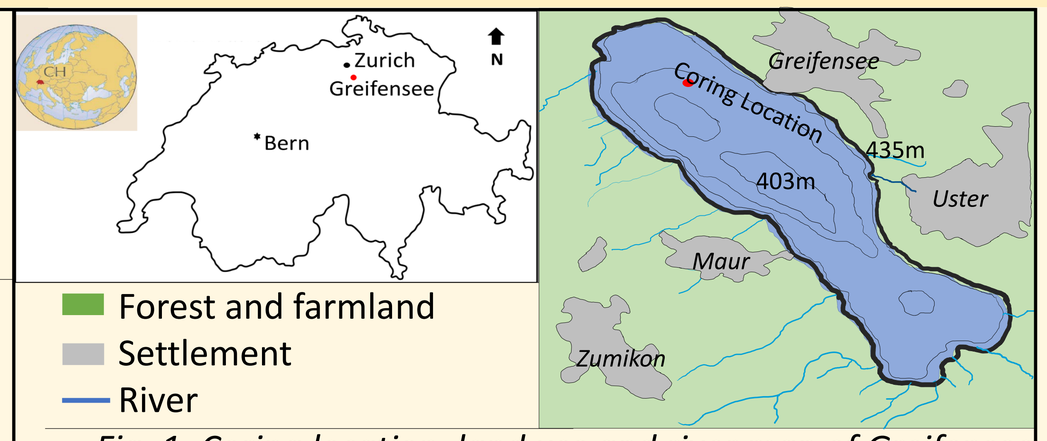

Fig. 1: Coring location, land use and river map of Greifensee

Fig. 2: Downcore variation of selected datasets plotted against calibrated age (years_BP) obtained from C-14 dating of plant materials.

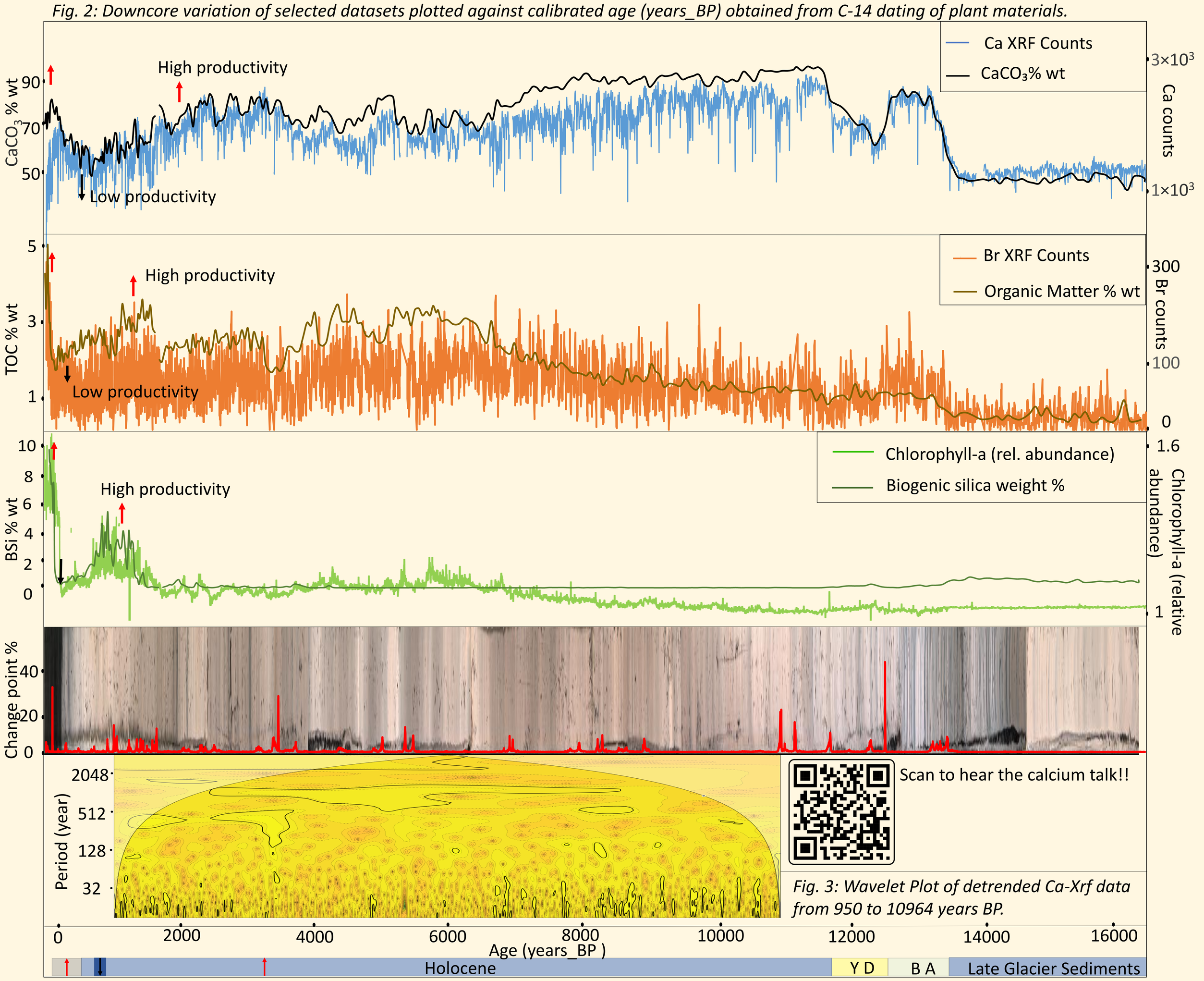

Fig. 3: Wavelet Plot of detrended Ca-Xrf data from 950 to 10964 years BP.

Conclusions

- Prominent oscillations corresponding to 1000, 750, 350, 155, 120, 60 year cycles are observed in the Ca XRF data between 950 and 10960 years BP.
- 120, 750, 1000 year oscillations are absent from 950 to 3370 years BP.
- Early anthropogenic influence from neolithic and middle ages might have had an influence on the trophic state of the lake and affecting the primary productivity and overprinting the oscillation signal, indicated by increased chlorophyll content.
- Change points indicate the major and minor fluctuations in primary productivity in Greifensee.