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THE CONTRIBUTION OF CLIMATE IN SHAPEING MICROEVOLUTIONARY PATTERNS OF DIATOMS IN LAKE OHRID DURING THE LATE CALABRIAN STAGE

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Fig. 1. Location of Lake Ohrid, Macedonia and the DEEP-5045-1 driling site.

Climate has strongly influenced species composition and evolution over geological and contemporary scales. While most attention has been paid to the relationship between macroevolutionary processes and climate along latitudinal gradients, very little is known about how climate changes affect the microevolutionary mechanisms of macroevolutionary processes through time due to the lack of fossils. Here, we use the morphologically variable endemic diatom species, *Cyclotella cavitata*, and paleoenvironmental data from a sedimentary succession of Lake Ohrid between 1050 ka and 815 ka to investigate the effects of climate on microevolutionary dynamics in diversification processes during the Late Calabrian period.

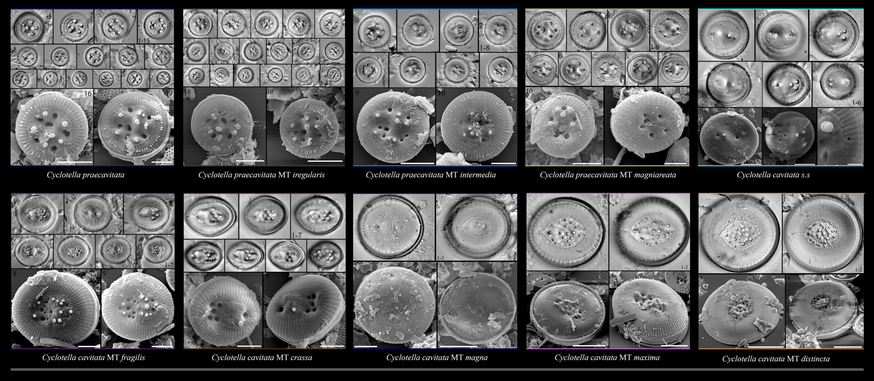

Fig 2. Intraspecific morphological variability in endemic diatom species *Cyclotella cavitata* sensu lato.

ICDP drilling campaing, 2013

569 m long and undisturbed sedimentary record covering history of more than 1.3 Ma.
In this study: between 366 and 296 mcd coresponding to1.050 Ma and 0.815 Ma.

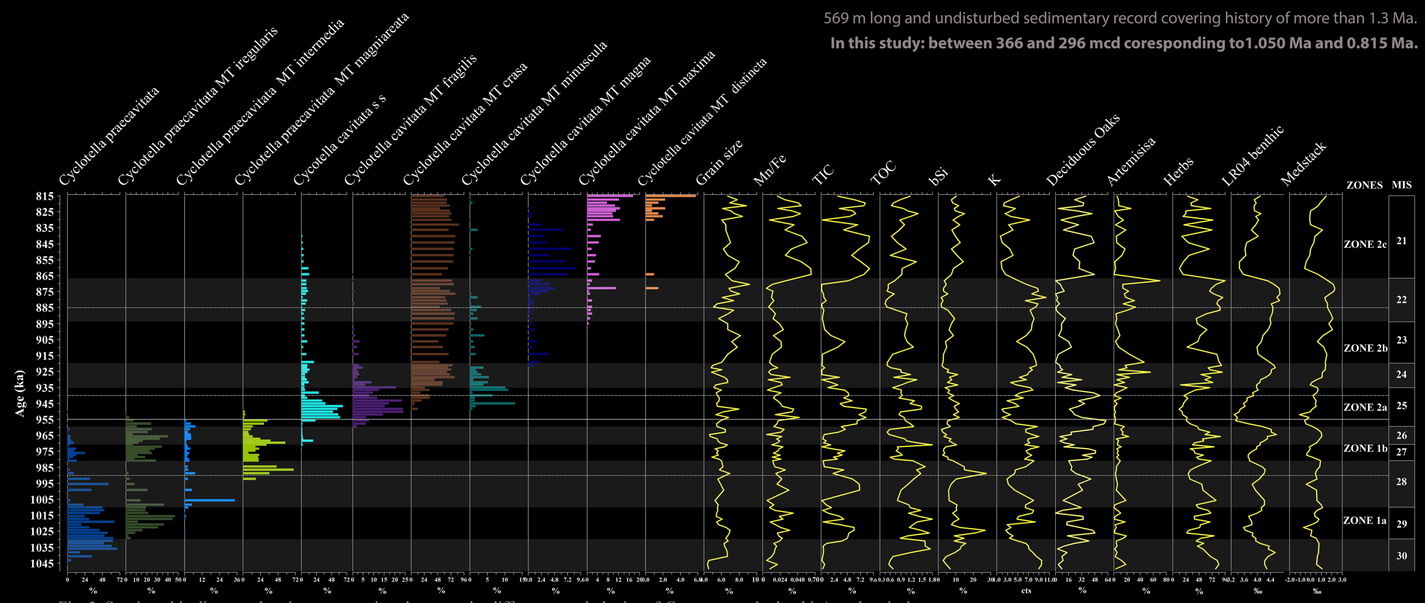

Fig. 3. Stratigraphic diagram showing a comparison between the different morphologies of *C. cavtata* and other bio/geochemical parameters.

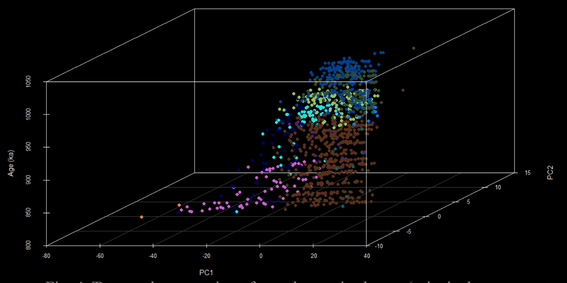

Fig. 4. Temporal progression of morphometric change (principal component analysis of morphometric characters along the x,y axes) with age (along z axis).

CONCLUSION

By analyzing morphotype-environment relationships, we found a progressive replacement of morphologies and their abundance in *C. cavitata* that was mainly related to local environmental changes associated with nutrient availability, lake depth, water column, mixis, and local temperatures. Surprisingly, climate change did not have as great an influence as anticipated, but this cannot be ruled out since this period overlaps with the beginning of the Mid Pleistocene Transition. This suggests that although the local environment had a greater influence on microevolutionary processes, climate remains an important driver and will also be critical for studies of evolutionary change under future climate change scenarios.

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