

## Late Holocene ecological variance from two lakes in Skarvsnes, East Antarctica

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Antarctic climate has been the subject of extensive research through the study of ice cores, and understanding the climatic history of the continent is fundamental to further elucidating Southern Hemisphere climate processes. Paleoclimate research in Antarctica is largely limited to ice core research due to the limited presence of other record types, such as tree ring records or speleothems. Lake sediments from coastal ice-free regions offer a new perspective on climate from Antarctica, giving insights from the margins of the continent, to complement those which already exist for the interior. Lake sediment cores from two lakes, Lake Abi and Lake Naga, from the Skarvsnes foreland in East Antarctica have been used to generate high resolution paleoenvironmental reconstructions which span the past 3000 years, constrained using radiocarbon dating. These reconstructions are based on sedimentary diatom species composition and isotope geochemistry of organic material. Both sites show variability in the relative abundance of several key taxa, which can be attributed to nutrient availability and depth based on a regional diatom species training set (Tavernier et al., 2014) as well as statistical techniques including detrended correspondence analysis (Figure 1). By examining sediment records from two neighbouring lake sites, we are able to unravel the relative effects of shared climate forcing versus site specific changes which may have arisen from differences in lake location or morphology. The frequency of climate variability within these lakes contrasts with the observed climate stability elsewhere in eastern Antarctica, highlighting the importance of research in this region.

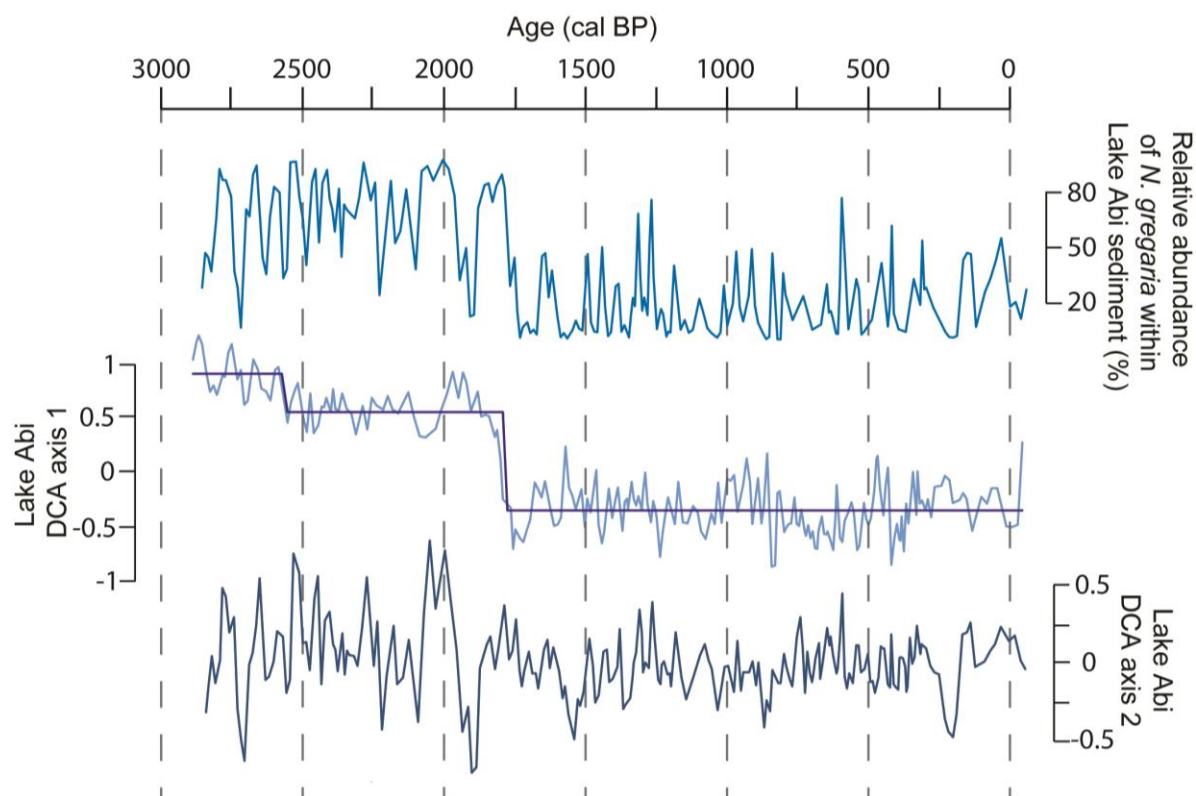


Figure 1. The abundance of diatom species *Navicula gregaria*, a key taxa in the Lake Abi record, is illustrated alongside detrended correspondence analysis axes 1 and 2, which indicate the major gradients within the diatom species dataset. Major shifts in DCA axis 1 are highlighted by a regime shift analysis.

**References**

Tavernier, I., Verleyen, E., Hodgson, D.A., Heirman, K., Roberts, S.J., Imura, S., Kudoh, S., Sabbe, K., De Batist, M., Vyverman, W., 2014. Absence of a Medieval Climate Anomaly, Little Ice Age and twentieth century warming in Skarvsnes, Lützow Holm Bay, East Antarctica. *Antarctic Science* 26, 585-598.