

Re-coring Lake Kråkenes: a high resolution lake archive of palaeohydrological variability

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The Lateglacial stable hydrogen isotope record of varved Lake Meerfelder Maar shows the potential of using biomarker isotope measurements in high resolution lake sediments¹. The excellent chronology of Lake Kråkenes allows for the direct comparison between its pollen and macrofossil proxy records² and the Greenland ice cores and other terrestrial – and marine records. The biomarker record of Lake Kråkenes remains currently uninvestigated, but analyses from other lake sediments supports the potential of its sedimentary record³. We will re-core Lake Kråkenes in the spring of 2016 and analyse the sediment on organic geochemical biomarkers using a combination of gas - and high performance liquid chromatography and (isotope ratio) mass spectrometry methods.

During the Younger Dryas, the catchment of Lake Kråkenes hosted a small cirque glacier⁴. Changing moisture sources are known to imprint their signal onto the stable hydrogen isotopic composition of n-alkanes¹. This means that the isotopic signal recorded in the n-alkanes can be the result of a shift in moisture source, driven by changes in the position of the westerlies⁵, or it can be the result of a change in the relative amount of glacier meltwater input to the lake, or a combination of the two.

This caveat can be tackled by employing the same analysis techniques on a lake nearby, which is not under the influence of a cirque glacier, and thus only records a change in precipitation moisture source. For Lake Kråkenes, two potential sites are available: Lake Movatna, just over the watershed boundary (A. Nesje and J. Mangerud, personal communication), and proximal palaeolake Dimnamyra⁶ on Dimnøya.

References:

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