Introduction

The supporting information provides two chromatograms resulting from the GC analysis: A chromatogram resulting from the whole oil GC-analysis for our sample and a standard oil for comparison (S1), and the 2D-GCxGC analysis of the topped oil (S2)).
Figure S1. Chromatograms resulting from the whole oil GC-analysis: a) Chromatogram of the standard oil NSG-NSO-1. b) Chromatogram of our sample from core GMCS-09. The large peak at the beginning of the chromatogram corresponds to the dichloromethane which is the solvent used for the analyses. When comparing the two chromatograms, one can clearly see significant differences in their molecular composition. Hydrocarbons with less than 12 carbon atoms (C\textsubscript{12}) are not detected from our sample although those compounds are usually ubiquitous in oil.
Figure S2. 2D-GCxGC analysis of the topped oil: a) Chromatogram of the standard oil NSG-NSO-1 showing a clustering into the various groups of components. b) Chromatogram of untopped sample and c) Chromatogram of TS.