

**DISTRIBUTION AND RADIOCARBON CONTENTS OF ALKENONES AND
MICROBIAL ETHER-LIPIDS AND ALKENONES FROM THE VANCOUVER
ISLAND REGION**

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Glycerol dialkyl glycerol tetraether (GDGTs) membrane lipids of archaea and bacteria are used as proxies for both sea surface temperature (TEX₈₆) and the amount of terrestrial carbon entering the ocean (BIT Index). However, many unanswered questions remain about the mechanisms by which these proxies work. In this study, the distribution and radiocarbon content of archaeal and bacterial GDGTs were examined in a large spatial data set that encompasses marine and terrestrial samples from Vancouver Island to Puget Sound. TEX₈₆ sea surface temperature (SST) values and GDGT radiocarbon ages are compared to alkenone UK₃₇' SST values and radiocarbon ages. While radiocarbon contents of marine-derived crenarchaeol are consistent with the reservoir age of the water, terrestrially-derived crenarchaeol and bacterial lipids are substantially depleted in ¹⁴C, suggesting that soil derived lipids are held in terrestrial reservoirs for long time periods. A comparison of the BIT Index with lignin phenols, and δ¹³C of organic carbon suggests that the majority of terrestrially-derived organic carbon delivered to the sediment has a lignin-rich, non-soil source.