IN BETWEEN YEAR AND OVER YEARS VARIATIONS IN ORGANIC MATTER COMPOSITION OF LAKE BAIKAL

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Lake Baikal is one of the largest lakes and with a maximum water depth of ~1640 m also the deepest in the world. It is comparable to an ocean also since, due to efficient vertical mixing, oxygen concentrations are high throughout the water column.
During several research projects we installed sediment traps since 1999 which were recovered and renewed every year. Up to 18 traps were deployed over the whole water column. Organic carbon and nitrogen concentrations and isotopes as well as chlorin concentrations and chlorin indices were measured to estimate productivity and the composition of the organic material (Schubert et al. 2013). C/N ratios between 10 and 13 hint to a strong autochthonous beside some allochthonous contribution to the organic material. δ^{13}Corg values around -31‰ were related to diatom blooms (Qiu et al. 1993). Chlorin measurements showed very strong, i.e., up to 5-fold variations in productivity (Schubert et al. 2013). Chlorin indices varied from 0.5 to 1.5 indicating differences in organic material freshness over the years.
Additionally, n-alkane concentrations and hydrogen stable isotopes on single biomarkers were measured on a sequential trap which collected settling material during one year. The sequential sediment trap was employed between March 2000 and March 2001 with collection times between 21 and 58 days depending on the amount of settling material. The sediment flux varied between 3.6 mg/m2/d (March to April) and 4820 mg/m2/d (June). Highest flux values occurred between May and July and in November. Highest n-alkane concentrations were measured for C_{23}, C_{25}, and C_{27} (between 0.6 and 5.8 ug/g trap material). Long-chain n-alkanes C_{29} and C_{31} concentrations were 3-6 times lower and comparable to short-chain C_{17} and C_{19} n-alkanes. Highest long-chain n-alkane concentrations were measured in May to June and September to December.

Schubert, C.J., Niggemann, J., and Sturm, M., 2013. Sediment traps in Lake Baikal reveal strong changes in productivity over the last decade. Mineralogical Magazine, 77(5) 2166.
Qiu, L., Williams, D.F., Gvorzdkov, A., Karabanov, E., and Shimaraeva, M., 1993. Biogenic silica accumulation and paleoproductivity in the northern basin of Lake Baikal during the Holocene. Geology 21, 25-28.