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Einladung zu einem ausserordentlichen LES Palaver

Referent: **Thomas Chwalek**, EAWAG, Kastanienbaum, CH

Thema: **WHAT DETERMINES THE FLUX OF REDUCED SUBSTANCES FROM LAKE SEDIMENTS?**

Zeit: Freitag, 08. April 2015, 11.00

Ort: Sitzungszimmer OFLA/209

Abstract

The flux of reduced substances in lakes from the sediment to the bottom water (Fred) is one of the major factors for sediment oxygen consumption and thereby crucial for lake oxygen management. It is often estimated from porewater measurements from a single location, although the flux may in fact vary significantly as a function of depth. A combination of MircoRhizon samplers and two portable capillary electrophoreses (CE) instruments with capacitatively coupled contactless conductivity detectors (C4D) facilitated a high throughput of porewater samples with low detection limits (~500 nM) and enabled a broad investigation of different ions of interest. These systems are suitable for analyzing very small sample volumes (~10 µl) and are designed for on-site applications in the field. This study presents porewater data measured in sediment cores from multiple depths in four lakes with different trophic states. The observations show that Fred is directly linked to the net total organic carbon mass accumulation rate (TOC MAR) and not necessarily to the lake's primary production. Sediment focusing enhances TOC MAR of individual lakes with depth and significantly increases Fred. In eutrophic lakes, TOC MAR values can be surprisingly low despite high primary production if oxic bottom water conditions reinforce aerobic mineralization rates. In contrast, anoxic conditions can boost Fred even in oligotrophic lakes. These results have important implications for lake oxygen management as Fred can now be estimated from TOC MAR estimates and therefore more readily available data sets.

Freundliche Grüsse

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