

Publication**Changes in the delta S-34 ratio of pore-water sulfate in incubated Sphagnum peat****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 86907**Author(s)** Groscheova, H; Novak, M; Alewell, C**Author(s) at UniBasel** [Alewell, Christine](#) ;**Year** 2000**Title** Changes in the delta S-34 ratio of pore-water sulfate in incubated Sphagnum peat**Journal** Wetlands**Volume** 20**Number** 1**Pages / Article-Number** 62-69**Keywords** delta S-34 ratios, peat, Sphagnum, sulfur transformations

Sulfur transformations in freshwater peat were studied using contrasting stable isotope signatures of atmospheric input (high delta(34)S) and Sphagnum peat substrate (low delta(34)S). Wet subsurface peat samples from the Lehstenbach watershed, Fichtelgebirge, Germany were incubated anaerobically at 5 and 15 degrees C. Pore-water sulfate was augmented with natural precipitation at the onset of the experiments. Sulfate concentrations and delta(34)S ratios of residual pore water were measured in 1-day intervals (9 days) and 1-week intervals (7 weeks) at 15 degrees C, and in 1-week intervals (7 weeks) at 5 degrees C. Initially, SO₄²⁻ concentrations decreased (by 50 to 85%) and delta(34)S ratios increased (by as much as 16 parts per thousand) at both temperatures due to bacterially-mediated dissimilatory sulfate reduction. At the higher temperature (15 degrees C), the S isotope effect (Delta delta(34)S) was higher than at the lower temperature (5 degrees C). On day 4 (at 15 degrees C) and day 29 (at 5 degrees C), the delta(34)S ratio of pore-water sulfate started to decrease by as much as 20 parts per thousand. The changing S isotope composition provided evidence for a dynamic turnover of the pore-water sulfate pool in anaerobic peat. The observed delta(34)S pattern could not be explained solely by isotope selectivity of the sulfate-reducing bacteria. Sulfur isotope data indicated a replenishment of the sulfate pool by hydrolysis of ester-sulfate.

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