

Publication**Sulfate reduction in a forested catchment as indicated by delta S-34 values of sulfate in soil solutions end runoff****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 86918**Author(s)** Alewell, C.; Giesemann, A.**Author(s) at UniBasel** [Alewell, Christine](#) ;**Year** 1996**Title** Sulfate reduction in a forested catchment as indicated by delta S-34 values of sulfate in soil solutions end runoff**Journal** Isotopes in Environmental and Health Studies**Volume** 32**Number** 2-3**Pages / Article-Number** 203-210**Keywords** ecosystem studies, forested catchments, stable isotopes, sulfate reduction, sulfur 34

In a forested catchment in the Fichtelgebirge mountains (NE-Bavaria, Germany) the long term SO₄²⁻-budget (average 1988-1994) indicated that about 40% of the input with throughfall (16.8 kg SO₄²⁻-S . ha⁻¹. yr⁻¹) was retained in the catchment. In order to identify processes acting as potential SO₄²⁻-sinks, delta(34)S values of SO₄²⁻ in soil solutions and runoff were measured between May and November 1994. delta(34)S values of the runoff and the fen were higher (5.8 parts per thousand) than the delta(34)S values of the soil solution of the oxic soils in the terrestrial area (3.9 parts per thousand). Because there is no lithogenic S source within the catchment, it can be assumed that SO₄²⁻-deposition is the only S source in the catchment. Thus the results were interpreted as a result of SO₄²⁻-reduction within the catchment, because the uptake of S-32 is favoured during the dissimilatory SO₄²⁻-reduction and S-34 is consequently enriched in the soil solution. To estimate the amount of SO₄²⁻-reduced isotopic fractionation Factors between -9 parts per thousand and -46 parts per thousand, were considered, resulting in SO₄²⁻-reduction rates of 1.8-9.3 kg SO₄²⁻-S . ha⁻¹. yr⁻¹. It was concluded that besides dissimilatory SO₄²⁻-reduction another sink exists in the catchment (e.g. SO₄²⁻-sorption in deep soil layers).

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