

Publication

Describing soil SO₄²⁻ dynamics in the Solling roof project with 4 two different modelling approaches

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The release of previously stored soil SO₄²⁻ is tightly connected with the reversibility of soil and water acidification. Thus soil SO₄²⁻ dynamics have to be included when predicting the reversibility acidification. Our aim was to compare two modelling approaches: The model MAGIC (Cosby et al., 1985) describes SO₄²⁻ dynamics with the Langmuir sorption isotherm. In the SO-MODEL (Prenzel, 1991) a precipitation/dissolution of jarosite is defined. Even though it was possible to calibrate both models to lysimeter data of the Solling D1 site in 1 m depth, the prognosis for SO₄²⁻ concentrations in the soil solution differed significantly. While MAGIC predicted the observed gradual decrease of SO₄²⁻ concentration with decreasing deposition, the SO-MODEL calculated stable concentrations up to the year 2026 followed by a sudden drop. Because the prognosis established with the SO-MODEL is incompatible with observed field data, we concluded that the predicted SO₄²⁻ dynamic of the SO-MODEL was unrealistic.

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