Universität Basel

Research Project

Stable carbon isotopes in soils as indicators of environmental change

Third-party funded project

Project title Stable carbon isotopes in soils as indicators of environmental change
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Organisation / Research unit
Departement Umweltwissenschaften / Umweltgeowissenschaften (Alewell)
Department
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Soil degradation threatens human resources under current global change regime. As such, indicators for soil degradation are urgently needed to survey and monitor short term and long term impacts on soils. With this proposed study we aim to delineate indicators for soil erosion and carbon degradation during soil erosion in grassland and forest soils of the Alps qualitatively and quantitatively. The latter will be investigated at two test site in the Swiss Alps (Goms, Canton Valais and Val Piora, Canton Ticino) where data on 137Cs based erosion rates are already available. We further aim to develop a concept to use isotope depth profiles as well as ash contents as indicators for wetland disturbance (draining, nutrient input or climate change warming). In combining stable isotope profiles and ash content data we aim to quantify carbon degradation due to disturbance by draining or nutrient input. A gradient of wetlands ranging from the northern most Europe 200 km north of the polar cycle down to the Alps will be investigated to test our hypotheses.

Keywords soil degradation, wetland degradation, mires, fens, bogs, peats, soil erosion, land use, Alps, European transect, δ13C
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Add publication

Published results

86870, Schaub, Monika; Alewell, Christine, Stable carbon isotopes as an indicator for soil degradation in an alpine environment (Urseren Valley, Switzerland), 1097-0231, Rapid communications in mass spectrometry, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

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2622241, Krueger, J. P.; Leifeld, J.; Alewell, C., Degradation changes stable carbon isotope depth profiles in palsa peatlands, 1726-4170, Biogeosciences, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

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3344048, Krüger, Jan Paul; Leifeld, Jens; Glatzel, Stephan; Alewell, Christine, Soil carbon loss from managed peatlands along a land use gradient - a comparison of three different methods, 1420-6773, BGS Bulletin, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

3289582, Krüger, Jan Paul; Alewell, Christine, Stable isotopes as indicators of environmental change, 978-87-93129-11-5, INTERACT Stories of Arctic Science, Publication: Book Item (Buchkap., Lexikonartikel, jur. Kommentierung, Beiträge in Sammelbänden etc.)

Add documents

Specify cooperation partners

ID	Kreditinhaber	Kooperationspartner	Institution	Laufzeit - von	Laufzeit - bis
411056	Fritsche, Johannes	Kevin Bishop	Sveriges Lantbruksuniversitet	01.01.2010	31.12.2012
983580	Alewell, Christine	Leifeld, Jens, Dr.	ART Reckenholz	03.01.2012	03.01.2012
983584	Alewell, Christine	von Sengbusch, Pascal, Dr.	Consulting Office Wetlands Research	03.01.2012	03.01.2012
983611	Alewell, Christine	Alm, Jukka, Dr.	The Finnish Forest Research Institute, Joenssu	03.01.2012	31.12.2015
983616	Alewell, Christine	Hajdas, Irka, Dr.	ETH Zürich	03.01.2012	31.12.2015
983625	Alewell, Christine	Bishop, Kevin, Prof. Dr.	University of Uppsala	03.01.2012	31.12.2015