

Publication **$\delta^{15}\text{N}$ natural abundance in permafrost soil indicates impact of fire on nitrogen cycle****JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 694003**Author(s)** Conen, F.; Yakutin, M.V.; Puchnin, A.N.; Leifeld, J.; Alewell, C.;**Author(s) at UniBasel** [Alewell, Christine](#) ; [Conen, Franz](#) ; [Leifeld, Jens](#) ;**Year** 2011**Title** $\delta^{15}\text{N}$ natural abundance in permafrost soil indicates impact of fire on nitrogen cycle**Journal** Rapid communications in mass spectrometry**Volume** 25**Pages / Article-Number** 661-664

The impact of fire on the nitrogen (N) cycle of natural ecosystems is arguable. Here we report and interpret an observation from boreal ecosystems in the Lena River basin, Sakha Republic (Yakutia), Russian Federation. Different types of permafrost soil (0-30cm depth) were sampled along transects (60-150 m length) from the forest edge towards the centre of four separate thermokarst depressions under grassland. The average values of delta N-15 were remarkably similar within three transects, but differed systematically between them. Three findings point towards fire being the cause of the observed pattern. First, the spatial extent of systematic differences in soil delta N-15 coincides with the extent of typical fire scars in the region. Second, soil enrichment in N-15 is larger in the proximity of settlements, where fire is generally more frequent than in more remote places. Third, there is a significant positive correlation between delta N-15 values and the ratio of black C to total N. These findings point towards fire having a marked impact on soil delta N-15 and, accordingly, on the N cycle of this cold and dry ecosystem.

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