



Acidification risk assessment after peat bog drainage in the Catalan Pyrenees (NE Spain)

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The Pyrenean range (NE Iberian Peninsula) has some favourable lithological (iron-rich parent materials) and climatic (udic moisture regimes) conditions for the formation of acid sulfate soils. In spite of that, they have never been reported until now, probably due to the lack of adequate geomorphic locations with strong reducing conditions. In this context, the construction of the C-28 road near València d'Àneu and the realization of land movements totally modified the morphology of a 2.8 ha peat bog, partly drained at present, on the right bank of the Bonaigua River, at an altitude of 1.500 meters. In this spot a soil monolith was extracted as part of the Pyrenean soil museum project of the ICGC. Analyses revealed a high electrical conductivity in the first organic horizons reaching levels of 9.23 dS/m at 25 °C, an actual or effective acidity around 3.7 pH units according to the method of soil:water suspension (1:2.5) and around 2.5 pH units according to the method of soil:water suspension (1:5). We hypothesize that the old peat bog contained hypersulfidic material that was oxidized during the drainage, which could have caused a decrease in pH in organic soils. The main goal of this study is to characterize these peat bog soils to know their potential acidity and the consequences that could generate in the current environment. The experimental design has been based on delimiting the study area, describing several profiles in the field and augering to determine the volume extent of the black organic horizons. Subsequently, the samples have been analysed in the laboratory to determine the main chemical characteristics of the soils. From these results, on the one hand, it is discussed what could have happened to obtain high electrical conductivities and, on the other, whether the pH values could be an indication of acid sulfate soils and to evaluate the possible hypersulfidic or sulfuric materials, not reported until now in the Pyrenees. The results will be useful to locate other spots with acidification risk and eventually add it to the geological risk programme of the Cartographic and Geological Service of Catalonia (ICGC).