# Acid sulfate soils are an environmental hazard in Finland

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Acid sulfate soils (ASS) create significant threats to the environment on coastal regions of the Baltic Sea in Finland. The sediments were deposited during the ancient Litorina Sea phase of the Baltic Sea about 7500-4500 years ago. Finland has larger spatial extent of the ASS than any other European country. Mostly based on anthropogenic reasons (cultivation, trenching etc.) ASS deposits are currently being exposed to oxygen which leads to chemical reaction creating sulfuric acid. The acidic waters then dissolve metals form the soil. Acidic surface run off including the metals are then leached into the water bodies weakening the water quality and killing fish or vegetation. In constructed areas acidic waters may corrode building materials.

Geological Survey of Finland (GTK) is mapping ASS deposits in Finland. The goal is to map a total of 5 million hectares of the potentially ASS affected region. It has been estimated that the problematic Litorina Sea deposits, which are situated 0-100 m above the recent Baltic Sea shoreline, cover 500 000 hectares area. There are several phases in mapping. The work begins at the office with gathering the existing data, interpreting airborne geophysical data and compiling a field working plan. In the field, quality of the soil is studied and in uncertain cases samples are taken to laboratory analyses. Also electrical conductivity and pH of soil and water are measured in the field. Laboratory methods include multielemental determinations with ICP-OES, analyses of grain size and humus content (LOI), and incubation.

So far, approximately 60 % of the potential ASS affected regions in Finland are mapped. Over 15 000 sites have been studied in the field and 4000 laboratory analyses are done. The spatial database presented in the scale of 1: 250 000 can be viewed at the GTK's web pages (http://gtkdata.gtk.fi/hasu/index.html).