



g Regulation well helps to control the drainage depth and groundwater level.



Tools for mitigating environmental damages will be developed and applied especially for agricultural practices. Different drainage systems will be tested in the pilot areas in Mustasaari and Pietarsaari. Traditional subsurface drainage, regulated subsurface drainage, and regulated drainage combined with underground irrigation are compared and their impact on soil properties, leaching of acidity and metals, and crop yields are monitored.

CATERMASS

Life+-project 2010-2012

Climate Change Adaptation Tools for Environmental Risk Mitigation of Acid Sulphate Soils

PARTNERS:

Finnish Environment Institute SYKE, Centre for Economic Development, Transport and the Environment of Southern Ostrobothnia, Geological Survey of Finland (GTK), Agrifood Research Finland (MTT), Finnish Game and Fisheries Research Institute (RKTL), University of Helsinki, Åbo Akademi

IN COLLABORATION WITH:

Österbottens svenska producentförbund, ProAgria, Centre for Economic Development, Transport and the Environment of Northern Ostrobothnia, interest groups

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a Drainage in Söderfjärden, Mustasaari.

b Landscape in Söderfjärden.

c AS-soil that has not yet been exposed to oxygen is black or dark blue.

d A canal through the region of Jurvajärvi that once was a lake.

e Oxidized crack surfaces in AS-soils gain often reddish brown color due to iron in it.

f A landscape in Maalahdenjoki – a river that occasionally suffers from acidification.

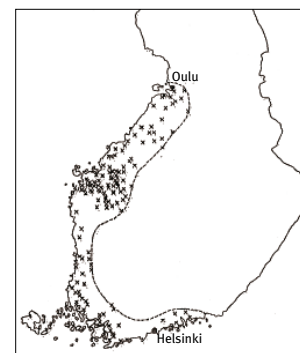
Climate Change Adaptation Tools for Environmental Risk Mitigation of Acid Sulphate Soils– The project objectives:

- Collate information on the occurrence and environmental damages of acid sulphate soils (AS-soils)
- Develop methods for mitigation of environmental damages and mapping of AS-soils
- Assess environmental risks and socio-economic impacts of AS-soils in changing climate conditions
- Promote AS-soil water protection, risk management, and adaptation of land use to climate change

The project will be carried out during 2010 – 2012. The total budget is 2.8 million €.

Finland has Europe's largest areas of acid sulphate soils. 50 000 – 336 000 hectares of these lands are cultivated. Furthermore, AS-soils occur on bogs and forest soils. Most of the AS-soils are found on the coast at the elevation less than 60 meters.

Drainage of sulphate-bearing lands has led to acidification of water system, especially on the coast of Ostrobothnia. Due to the land uplift and drainage, the sulphide-bearing sediments have emerged above water-level and have been exposed to oxygen, thus producing sulphuric acid. At the same time, enormous quantities of toxic metals restored in the soil are mobilized. In general, water is most acidic during spring and autumn floods as rainfalls and melting waters induce leaching of acidity and heavy metals from soil into the water bodies.



Occurrence of AS-soils in the cultivated areas. (Puustinen, Merilä, Palko ja Seuna. 1994. Kuivatustila, viljelykäytäntö ja vesistökuormitukseen vaikuttavat ominaisuudet Suomen pelloilla. Vesi- ja ympäristöhallituksen julkaisu Sarja A 198.)

CATERMASS consists of five substance actions:

- 1 Mapping and risk classification of acid sulphate soils
- 2 Environmental impact assessment and risk scenarios
- 3 Mitigation methods and their adaptation to the changing climate
- 4 Socio-economic impacts and analysis of adaptation tools
- 5 Dissemination of the best environmental practices for AS-soils

Cooperation is needed to mitigate damages induced by AS-soils!