



Tools for environmental risk mitigation of acid sulphate soils

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CATERMASS 2010–2012



Project: Climate Change Adaptation Tools for Environmental Risk Mitigation of Acid Sulphate Soils (CATERMASS)

Funding: Life+ Environment Policy and Governance 2008-C1

Coordinator: Finnish Environment Institute (SYKE)

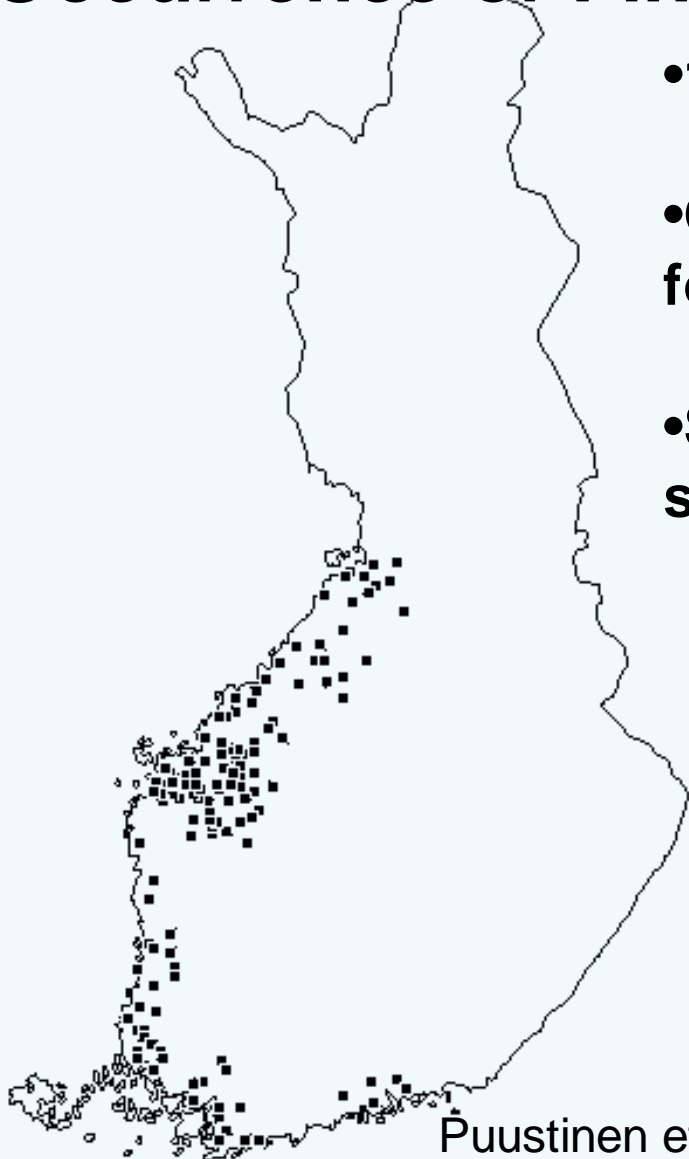
Partners: Geological Survey of Finland (GTK), MTT Agrifood research Finland, Finnish Game and Fisheries Research Institute (RKTL), Centre for Economic Development, Transport and the Environment, University of Helsinki, Åbo Academi University

Action 3: Mitigation methods and their adaptation to changing climate conditions



Occurrence of Finnish acid sulphate (AS) soils

- 1000–2000 km²
- Originate from anoxic basins of the former Baltic Sea
- Sulphate reducing bacteria converted sulphate to sulphides in bottom sediments



Puustinen et al. 1994.



Photo: R. Rosendahl

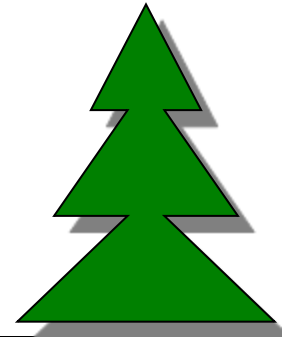


Sulphide clay soils in natural state

O₂

A black arrow pointing downwards from the text "O₂" to the ground surface.

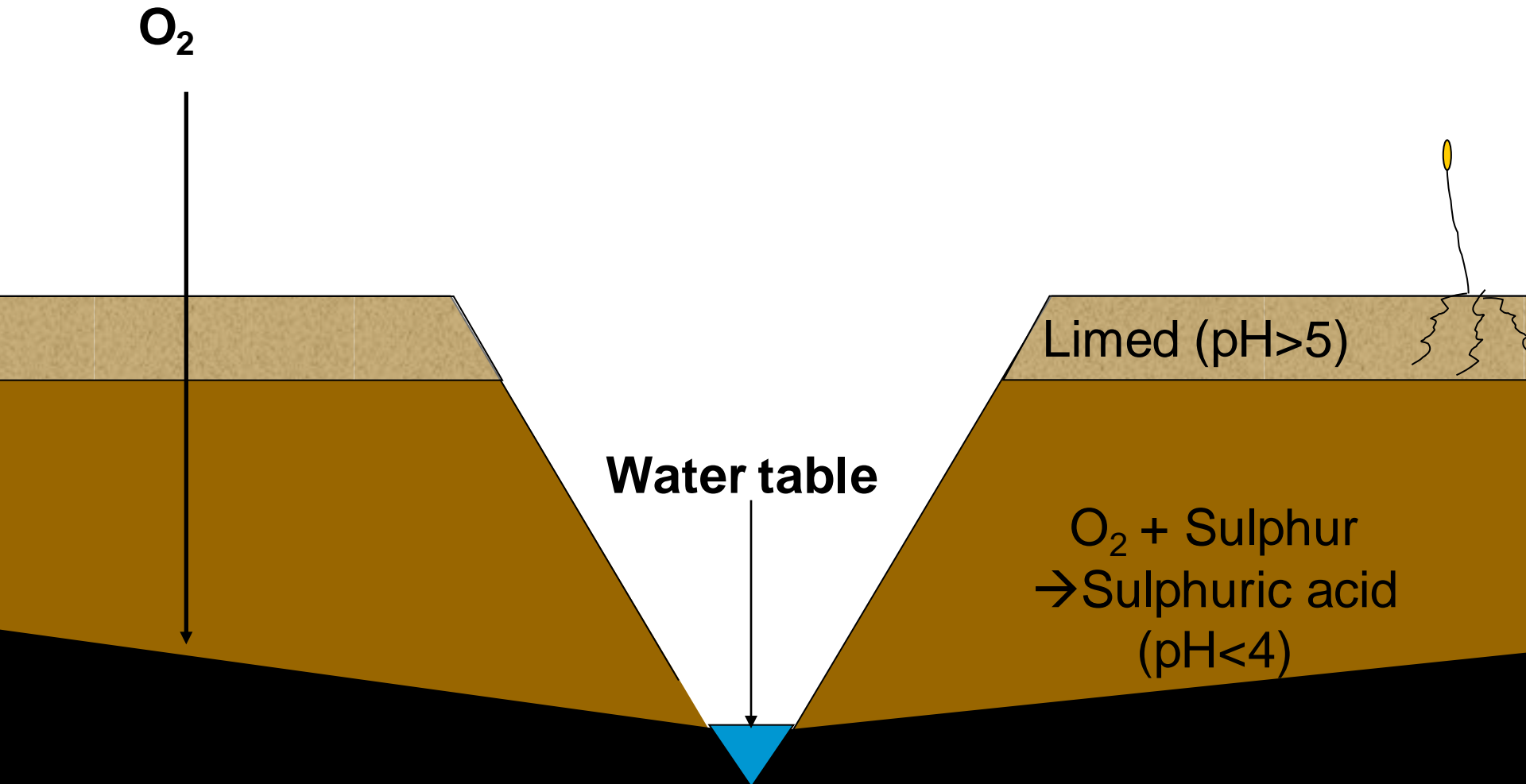
Water table

A black arrow pointing downwards from the text "Water table" to the water table line in the soil profile.

No oxygen below water table
pH 7

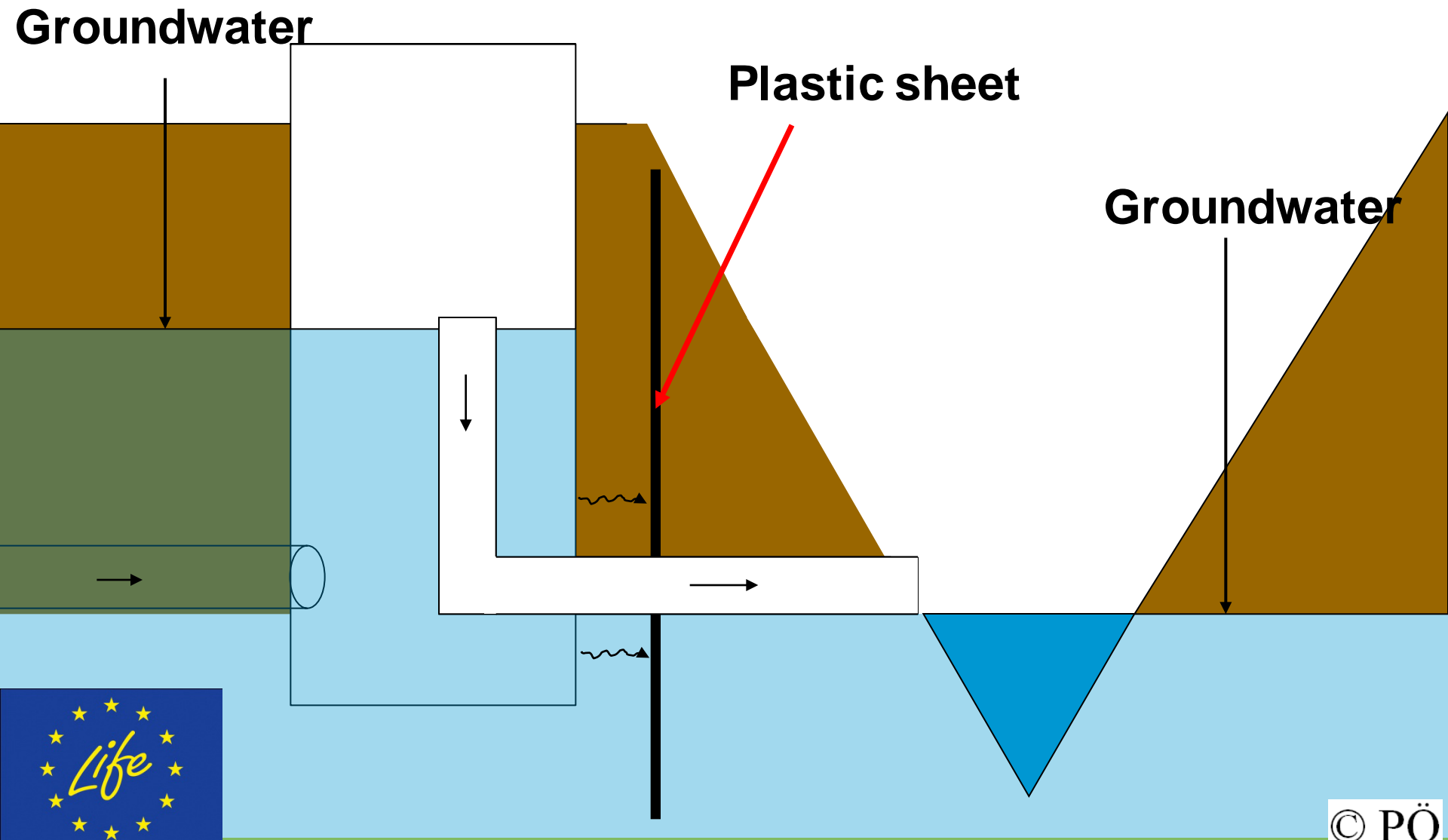


Situation after drainage



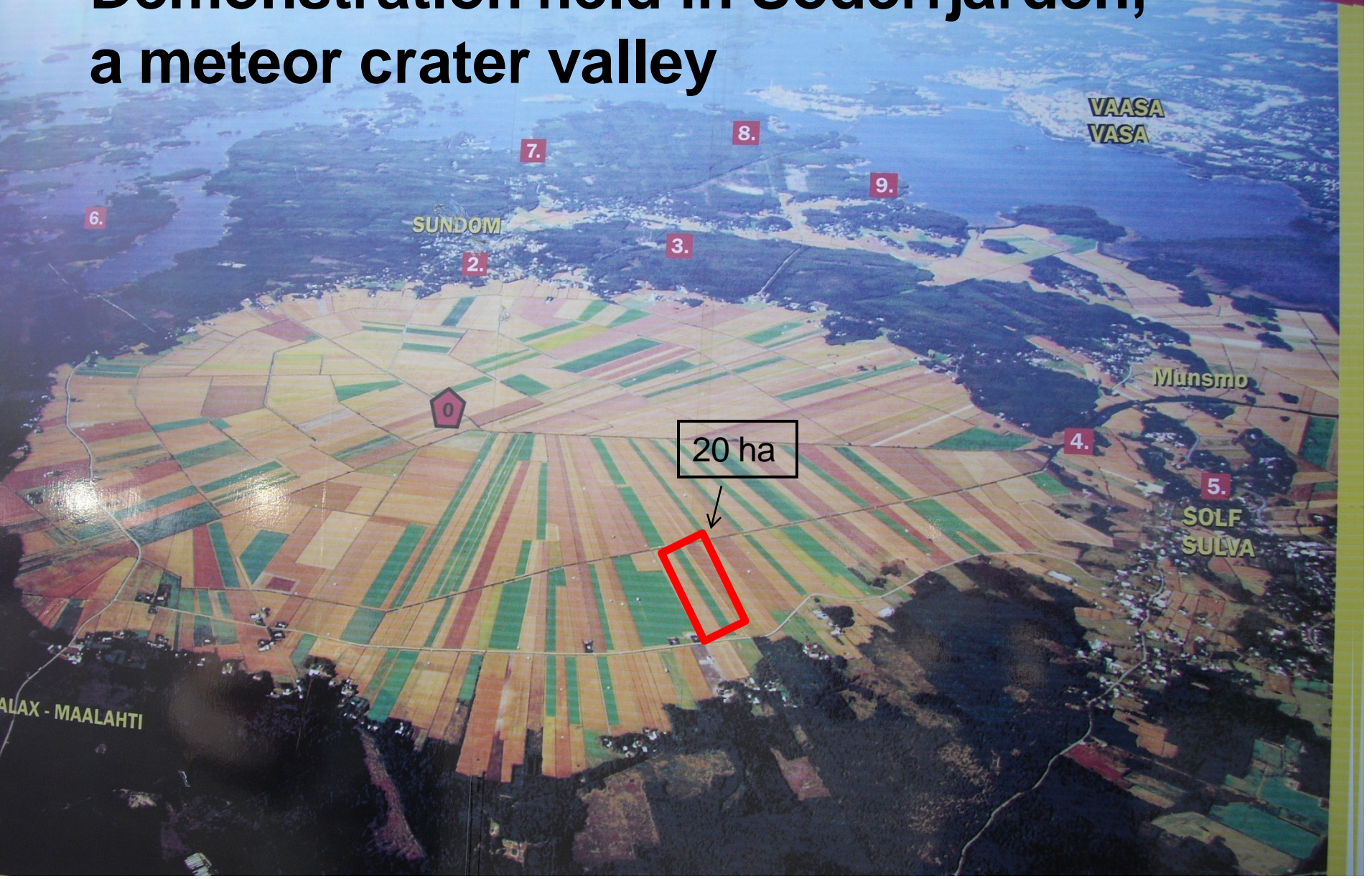
No oxygen below water table (pH 7)

Elevated groundwater level via controlled drainage system



rd! • Ainutlaatuinen paikka maapallollamme! • An outstanding place

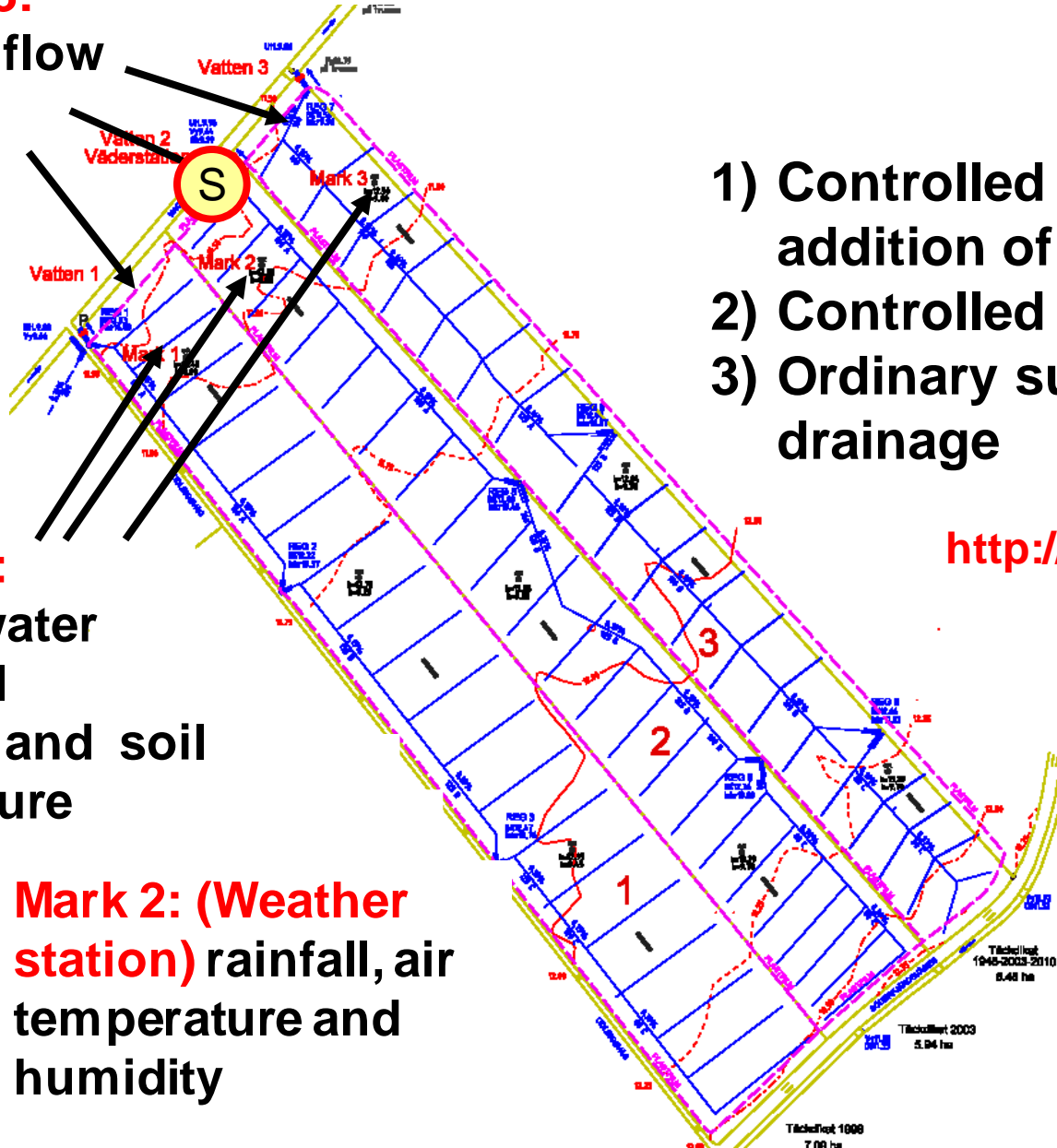
Demonstration field in Söderfjärden, a meteor crater valley



Söderfjärden demonstration field



Vatten1–3:
drainage flow
pH, EC



- 1) Controlled drainage with addition of water
- 2) Controlled drainage
- 3) Ordinary subsurface drainage

Mark 1–3:
ground water
level, soil
moisture and soil
temperature

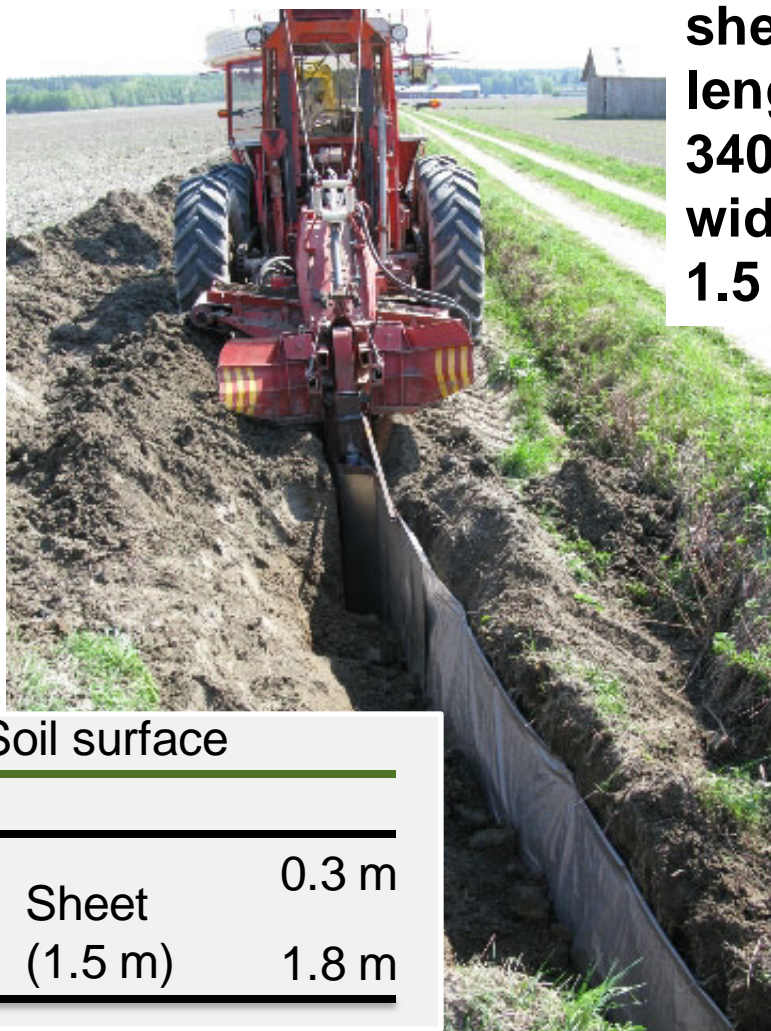
<http://www.pnet.fi>

(S) Mark 2: (Weather station) rainfall, air temperature and humidity



Map: R. Rosendahl

Installation of a plastic sheet



Plastic sheet:
length of 3400 m and width of 1.5 m



Soil surface

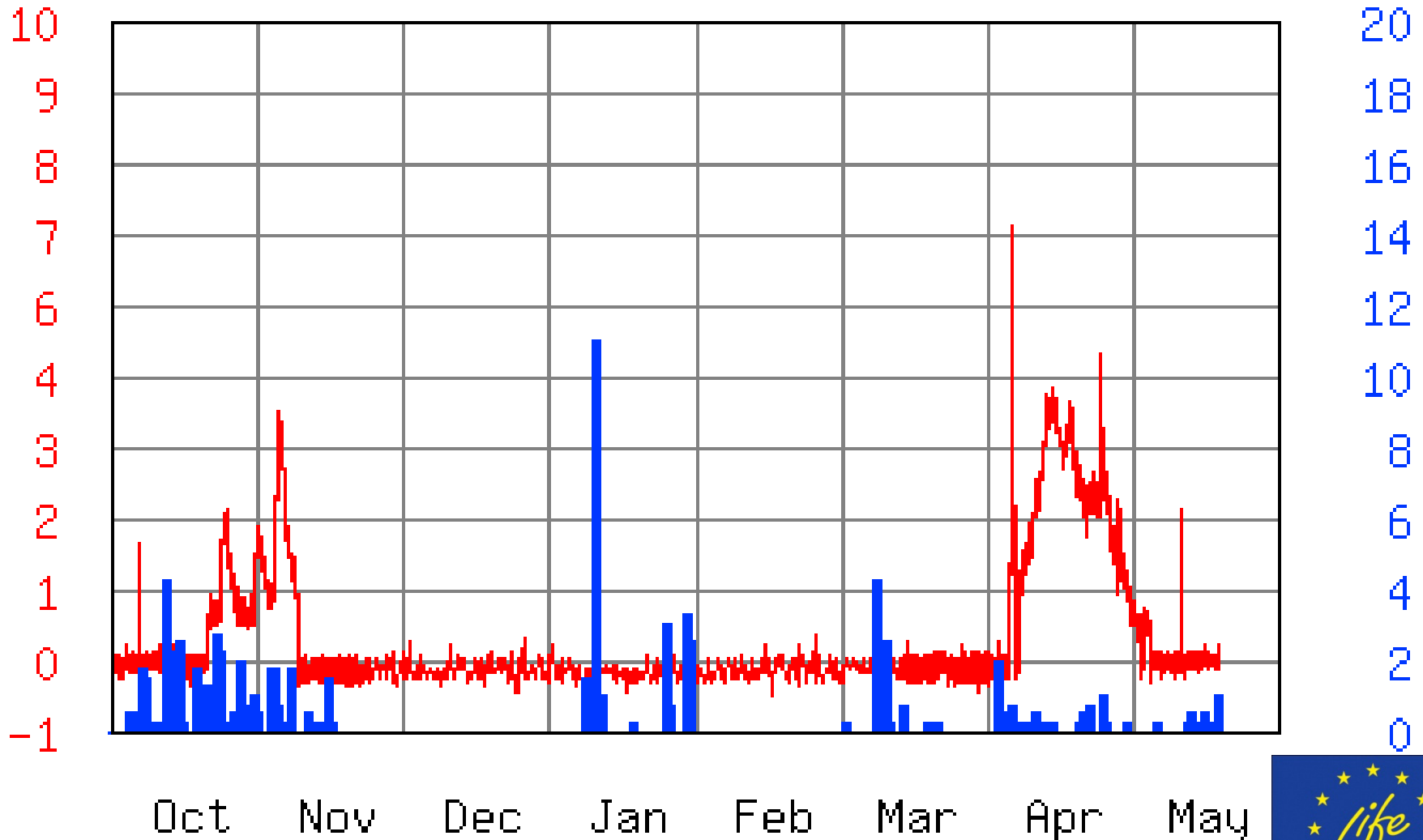
	0.3 m
Sheet (1.5 m)	1.8 m

Rainfall and subdrainage water

l/s

<http://www.pnet.fi>

mm



pH and electrical conductivity (EC)



pH

<http://www.pnet.fi>

mS/m

7.0

300

6.6

270

6.2

240

5.8

210

5.4

180

5.0

150

4.6

120

4.2

90

3.8

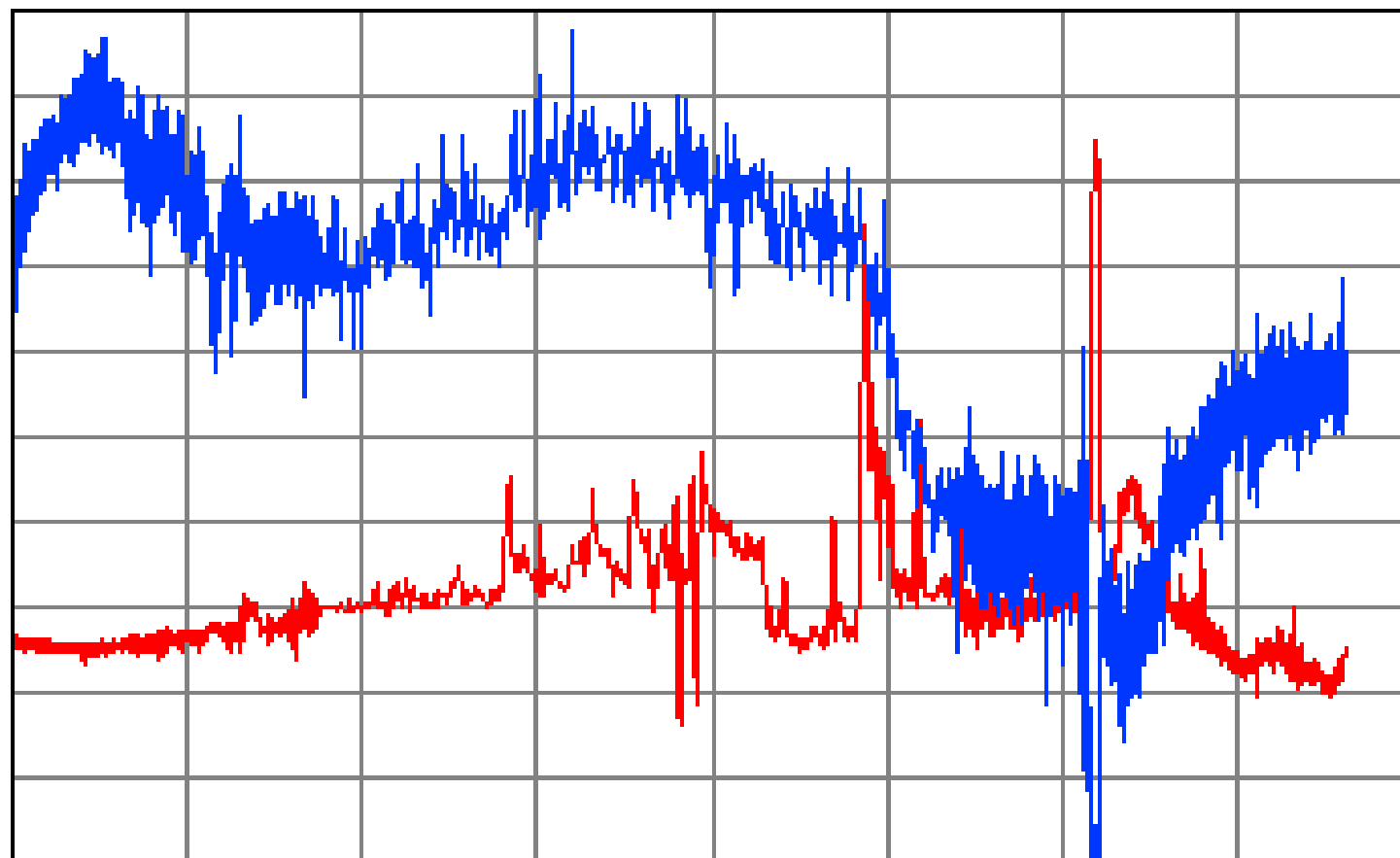
60

3.4

30

3.0

0



Oct

Nov

Dec

Jan

Feb

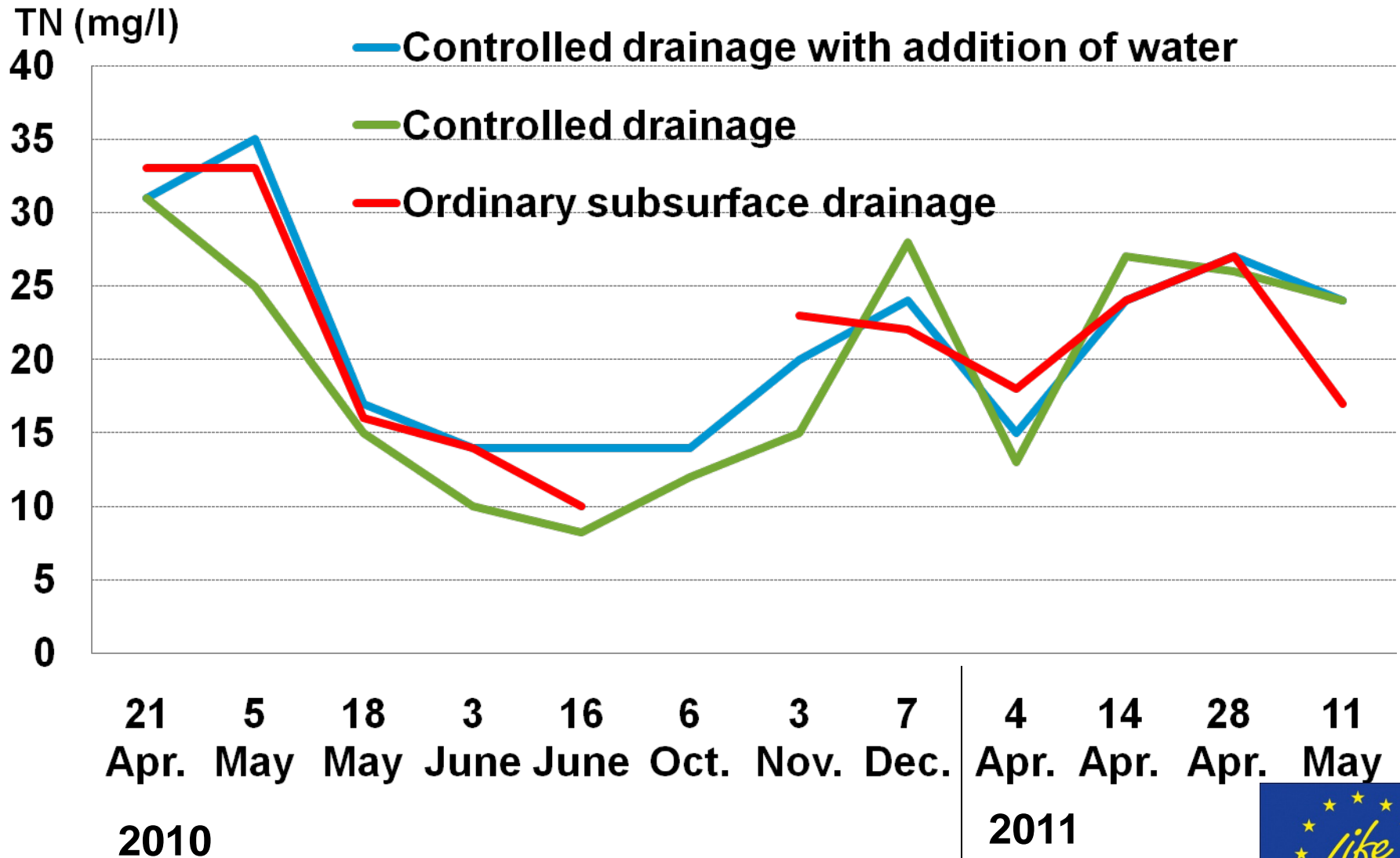
Mar

Apr

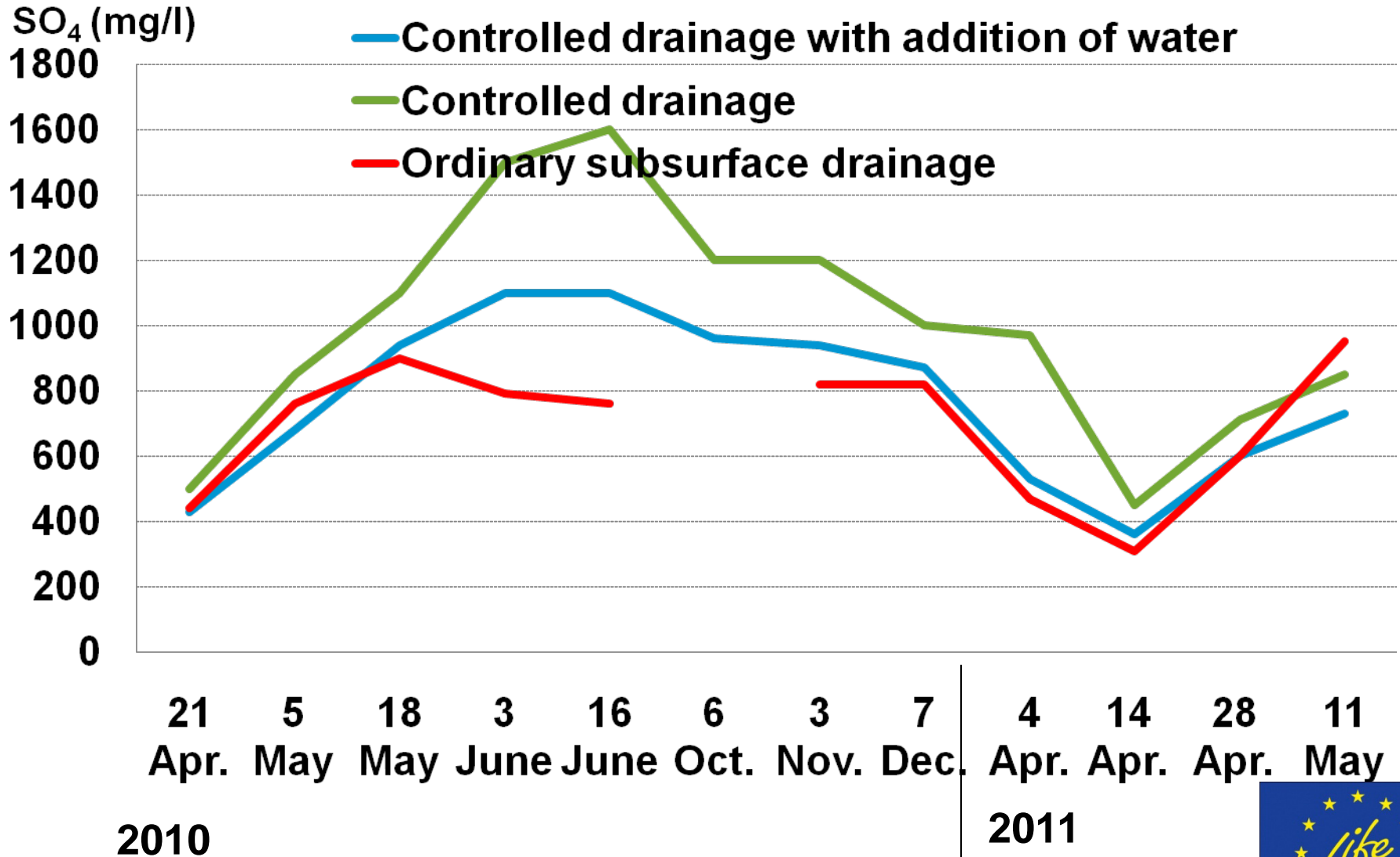
May



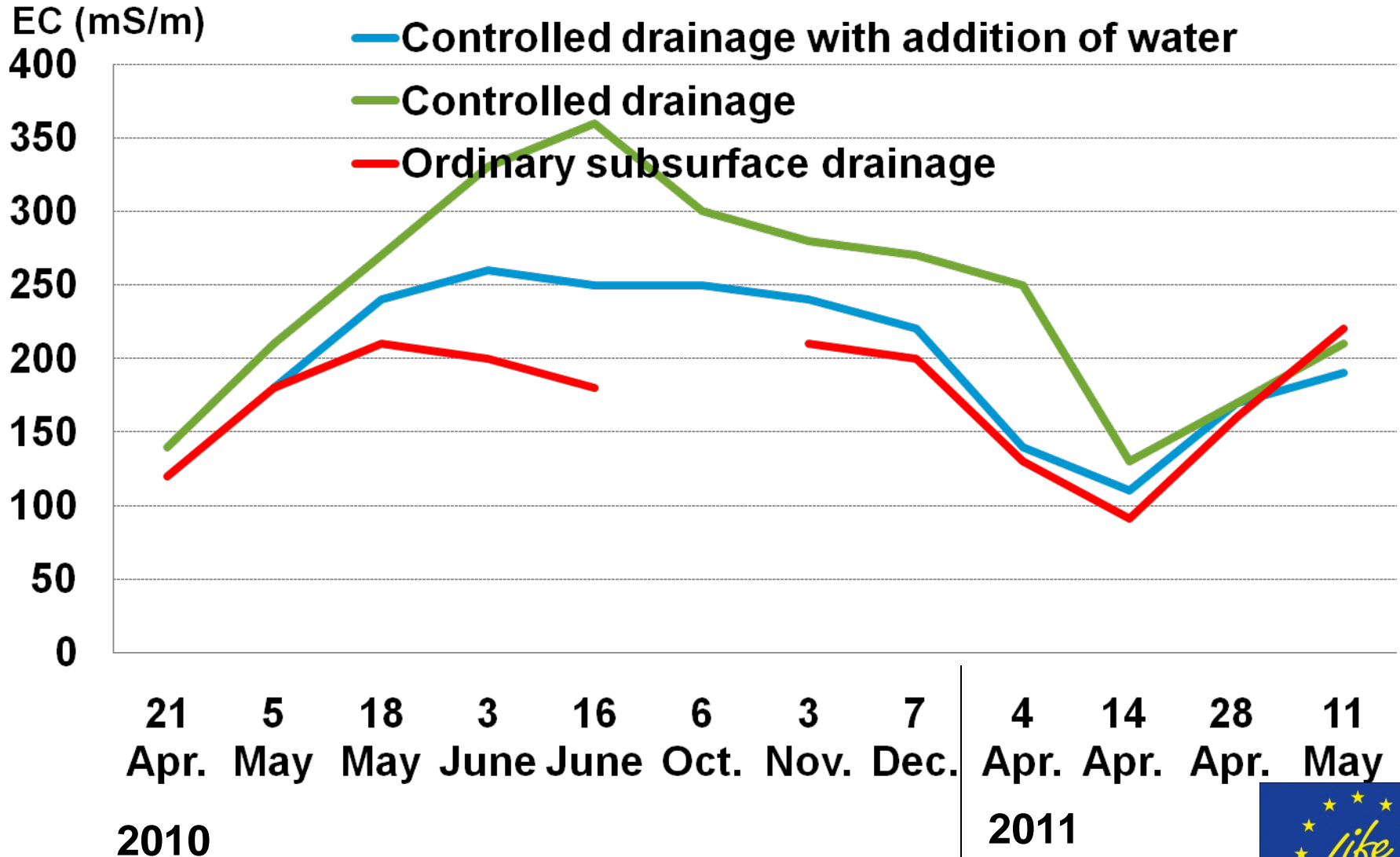
Total N in drainage water in 2010–2011



SO₄ in drainage water in 2010–2011



Electrical conductivity in drainage water



7th IASSC
26 August - 1 September 2012
Vaasa, Finland



First Circular

Welcome to the
7th International Acid Sulfate Soil Conference
in Vaasa, Finland 2012

Conference August 26 - 30
Excursions August 31 – September 1

Towards Harmony between Land Use and Environment



Söderfjärden. Site for the mid-conference tour. Vaasa is located in the upper- right corner.
© Sundom bygdeförening.

**Thank you and
welcome to Vaasa
next year!**



Acid Sulfate Soil Working Group
International Union of Soil Sciences

