

# Data for assessing the conditions of European forests in a changing environment

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# Content

*International Programmes*

*Swedish National Programmes*

*Ongoing work*

*Results and findings*

*BioSoil*

A number of programmes exists

Forests and other Ecosystems

UN ECE CLRTAP

EMEP

WGE

CAFE

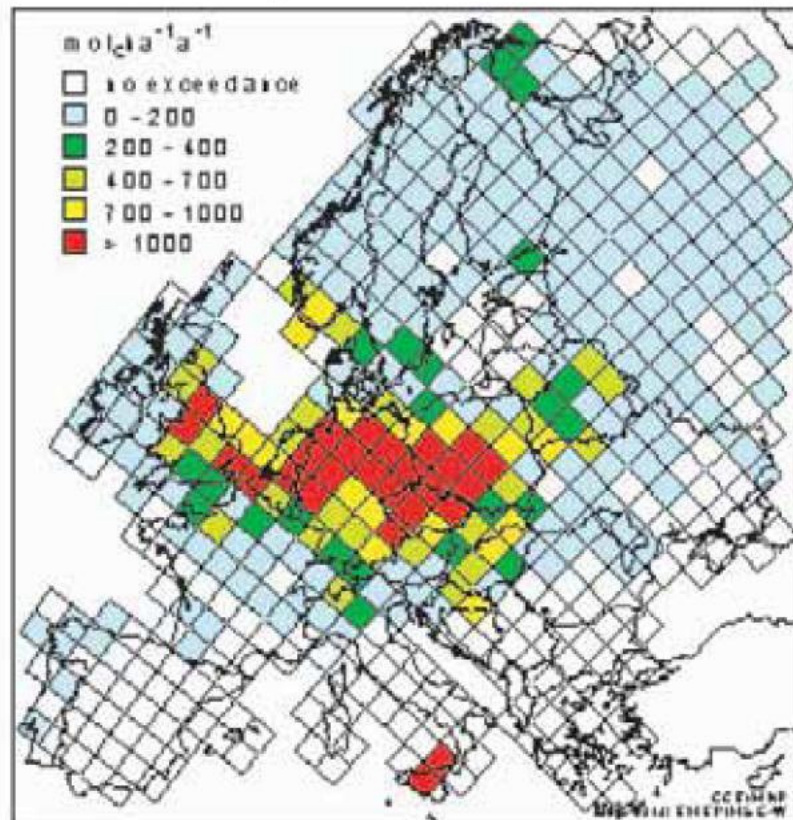
NFI

A-LTER

# EMEP grid and acidity CL exceedance

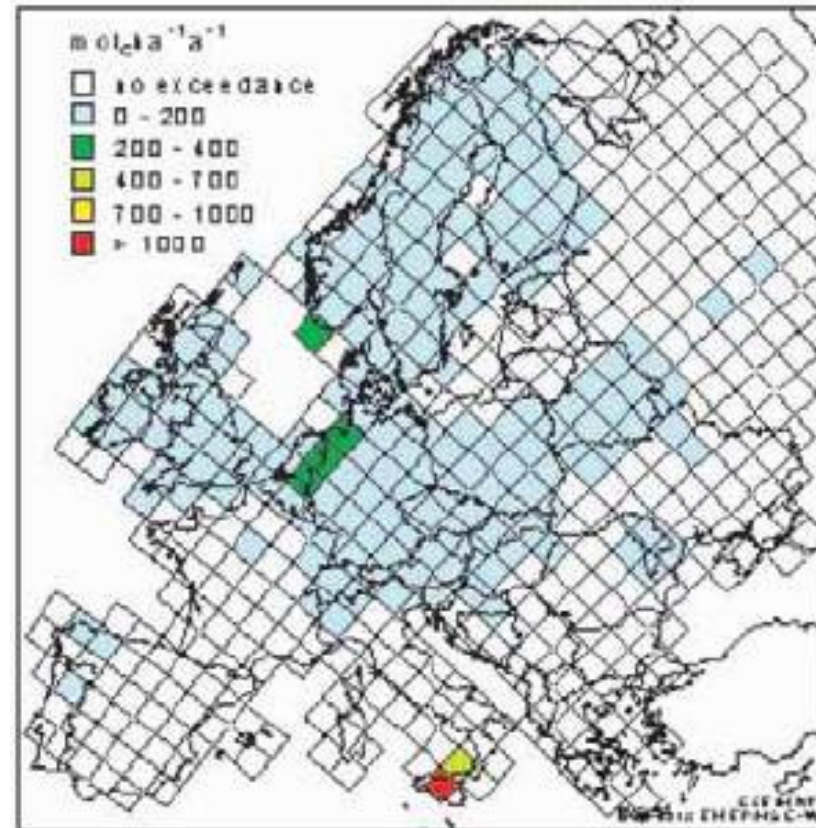
Exceedance of acidity CLs

1990

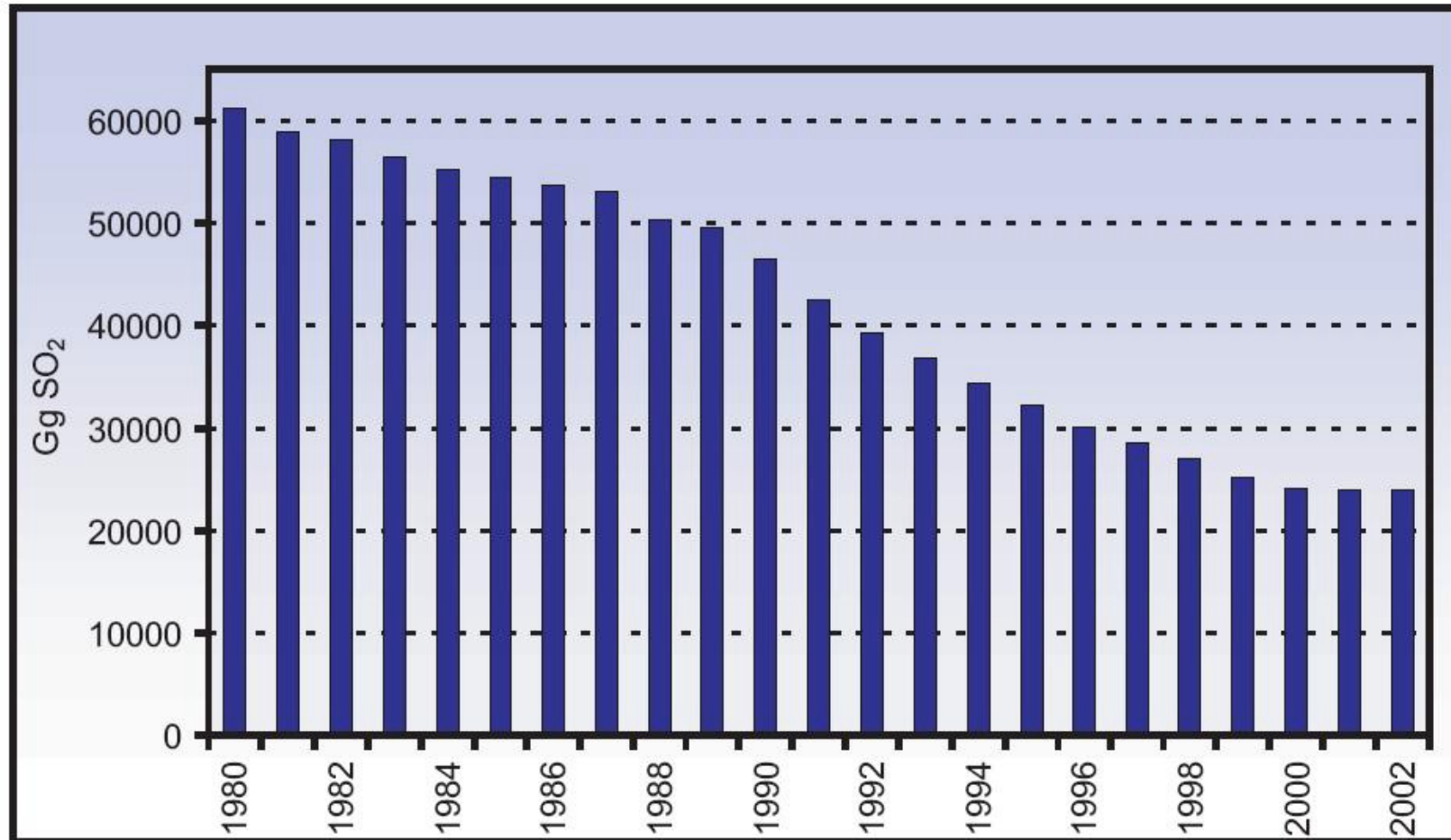


Exceedance of acidity CLs

2010

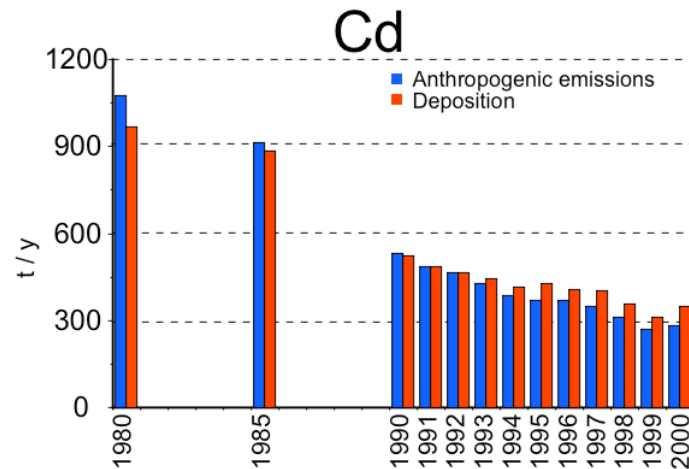
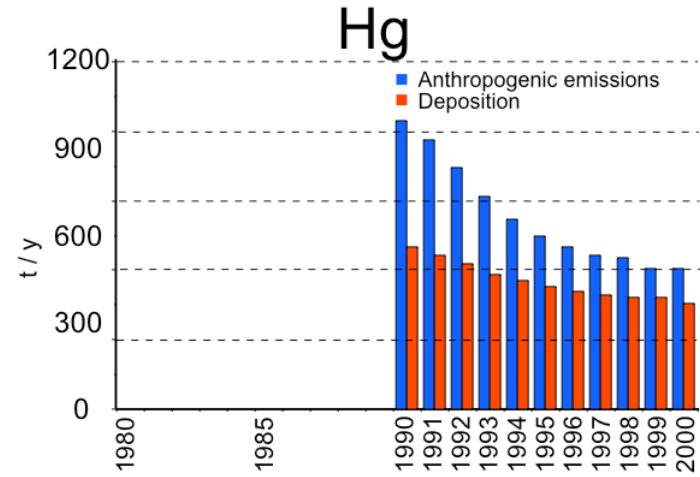
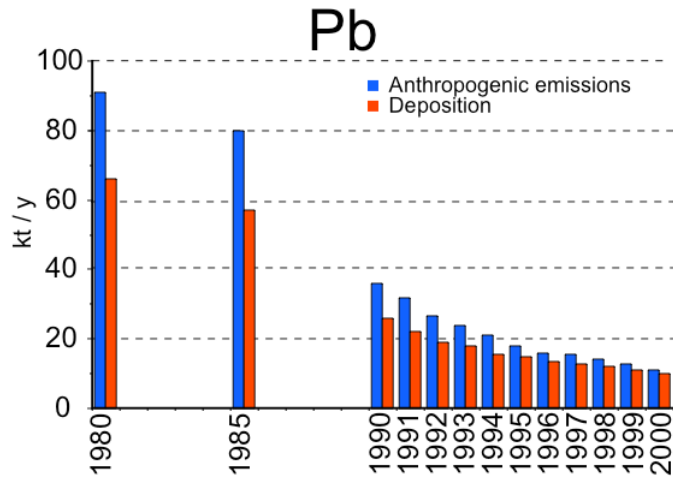


## *SO<sub>4</sub> emissions 1980 - 2002*

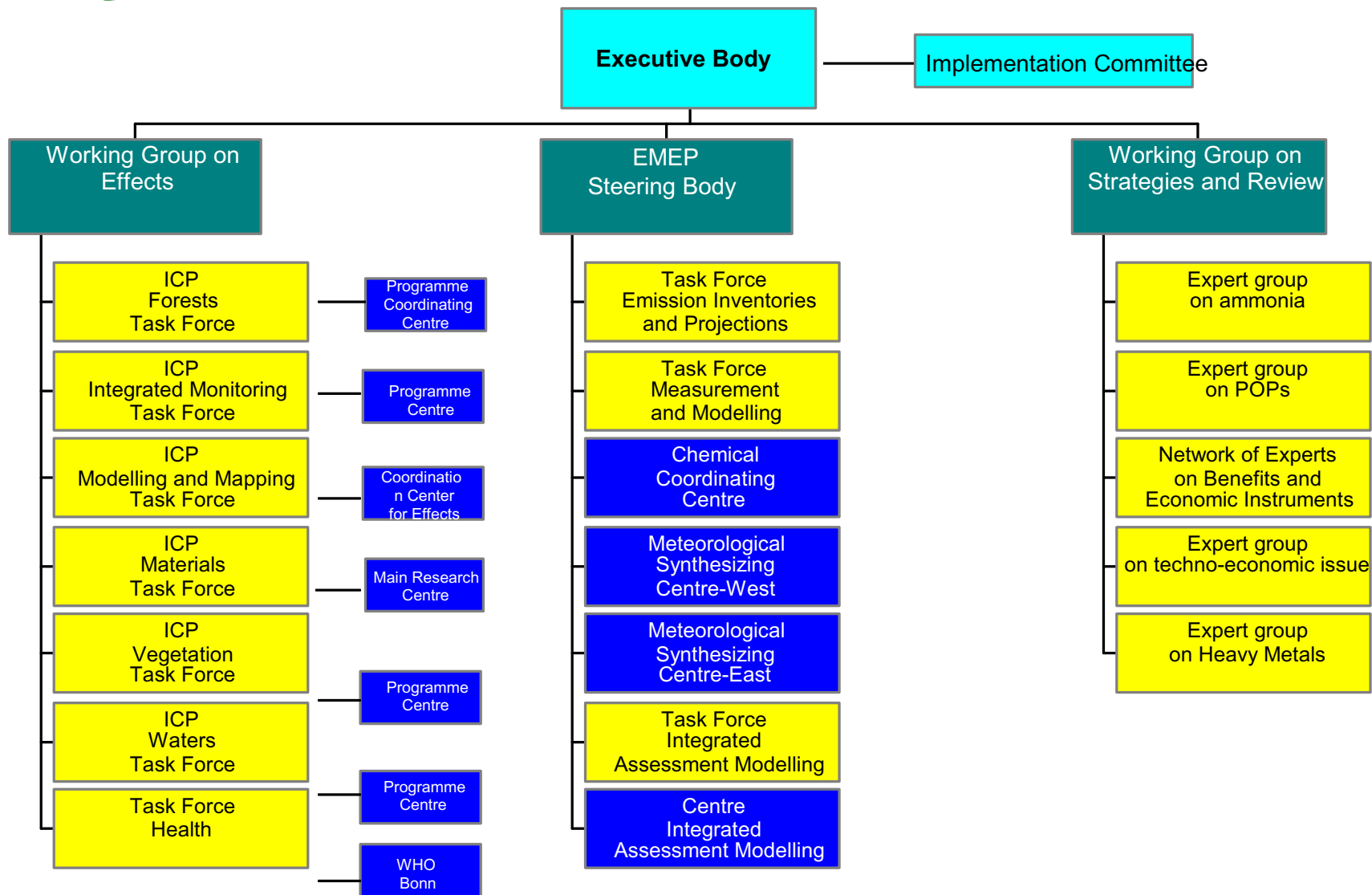


**Figure 2.1.** Annual emissions of SO<sub>2</sub> in Europe From 1980 to 2000 (in kilotons), including marine and natural emission sources (Vestreng et al. 2004)

# EMEP emission / deposition



# CLRTAP



# Other programmes exist

ENFORS

BRIM

MAB

Often protected  
forests

Climate change

Carbo Europe

Carboinvent

SE Lustra

Less common in  
managed forests

**Level I**

**The large-scale forest condition monitoring**

**Level II**

**The Intensive Monitoring of European Forest  
Ecosystems**

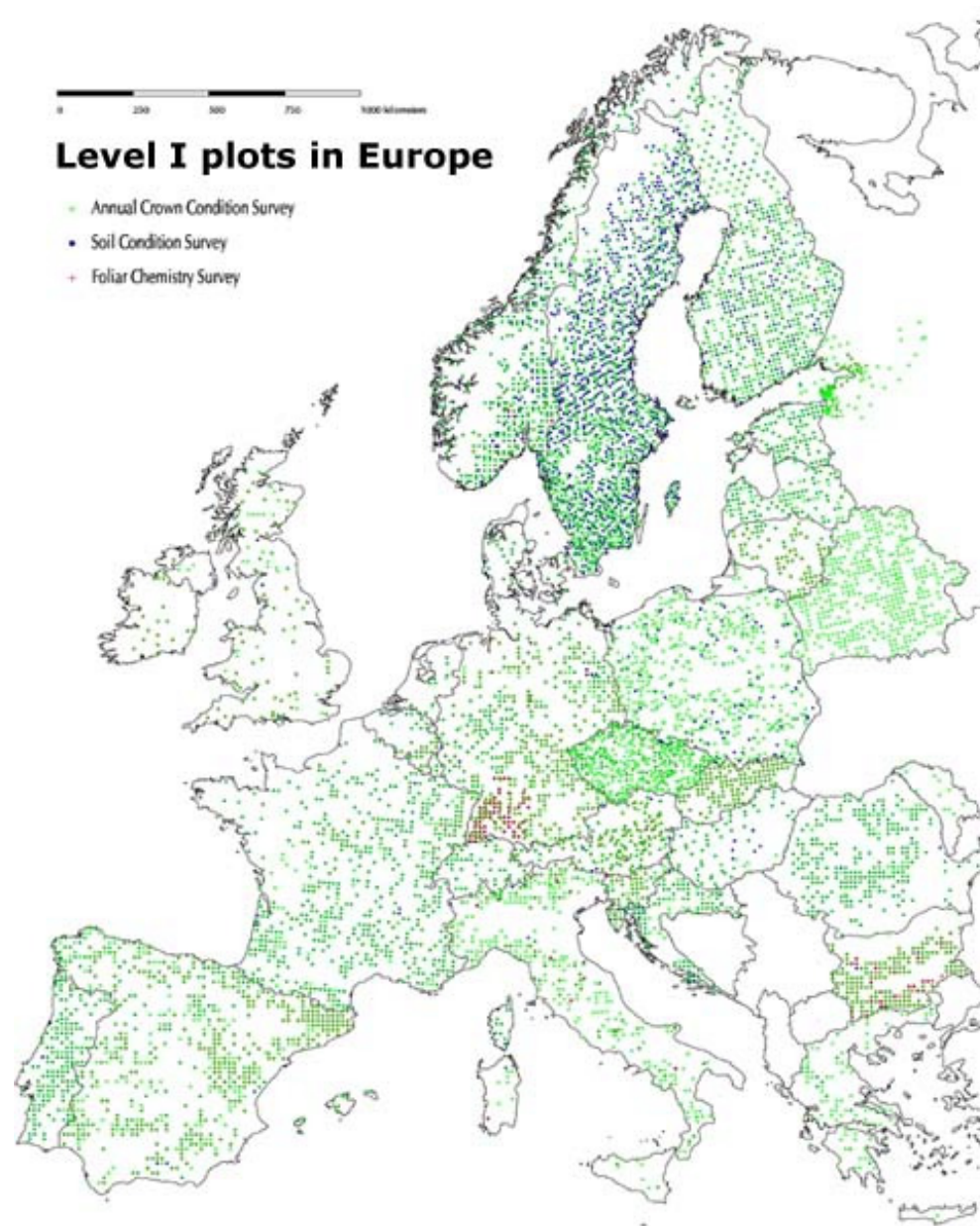
**EU JRC BioSoil**

Level I

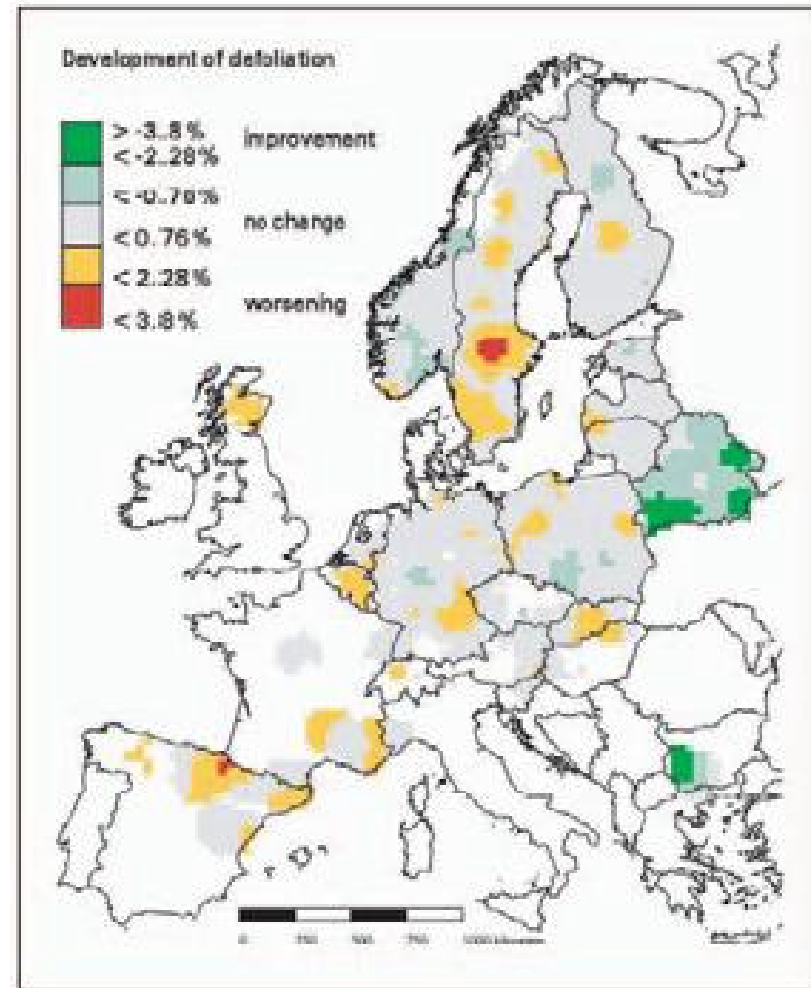
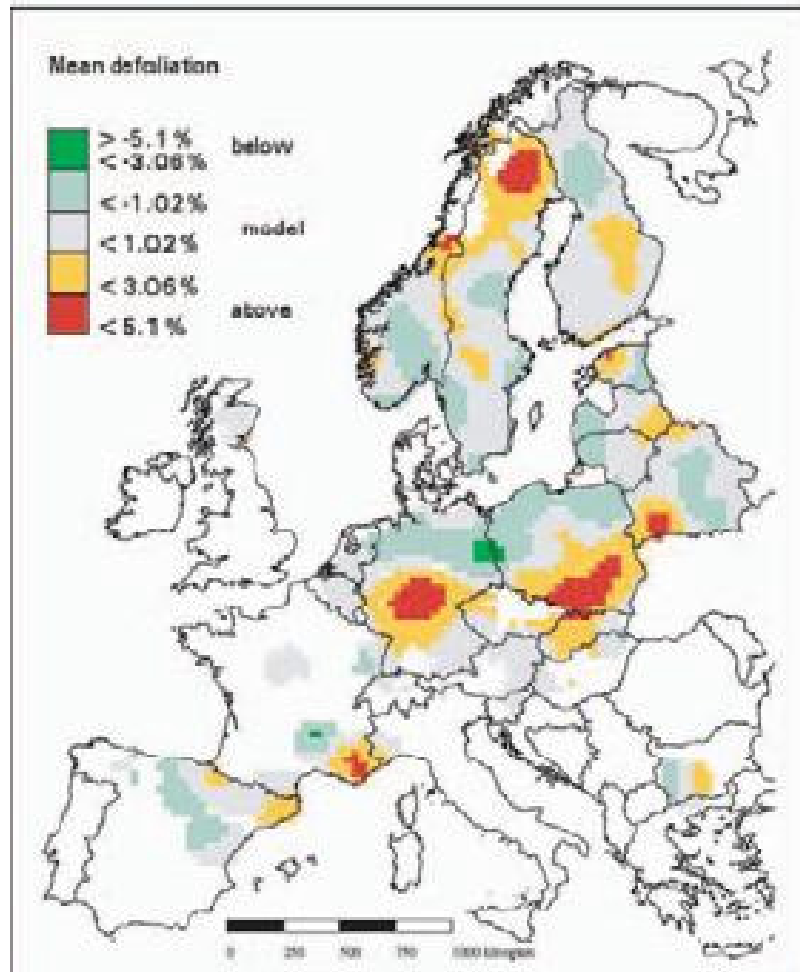
## Assessment interval and Plot coverage

Crown condition:	Defoliation & discolouration annually all plots
Foliar condition	once up to now c. 1 400 plots
Soil chemistry	once up to now c. 5 300

\* Repetition for the coming years is foreseen.



# Defoliation



## Level II

### Surveys on Intensive Monitoring plots

Survey Frequency Intensity

All plots

Crown condition                      at least annually

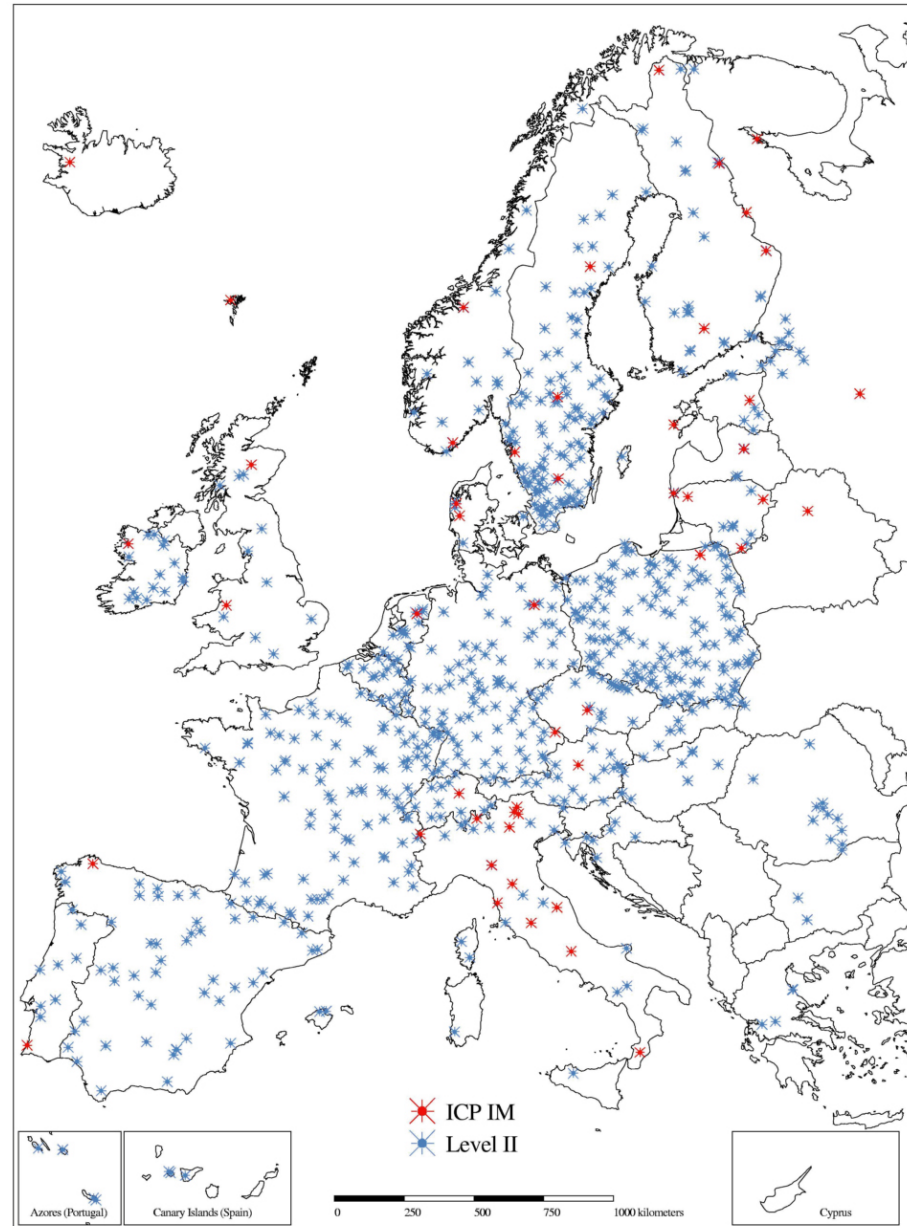
Soil (solid phase)                      every 10 years

Foliage                                      every 2 years

Forest growth                            every 5 years

Ground vegetation                      every 5 years

# ICP Forests Level II plots



# Surveys on Intensive Monitoring plots

Survey Frequency Intensity

Continuous on part of the plots

Ambient air quality

Meteorology

Deposition

Soil solution

# **Optional Surveys on Intensive Monitoring plots**

Survey Frequency Intensity

Phenology *several times per years*

Remote sensing *preferably at plot installation*

# **Surveys on Intensive Monitoring plots**

**Expert panels on each or group of variables**

**Working groups**

**Ambient air quality, Biotic damage, Biodiversity**

**ICP Forests monitor managed forests**

**ICP Integrated monitoring - ICP IM  
monitor natural forest ecosystems**

# ICPs of wge studies effects of air pollution

Acidification

Eutrophication

Ozone

Heavy metals

POPs

PM

Nowadays in relation to climate change

Next is presentation on the  
Swedish National Inventory of  
Forests - RIS

National Forest Inventory - NFI

Swedish Forest Soil Inventory -  
MI