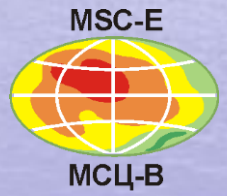
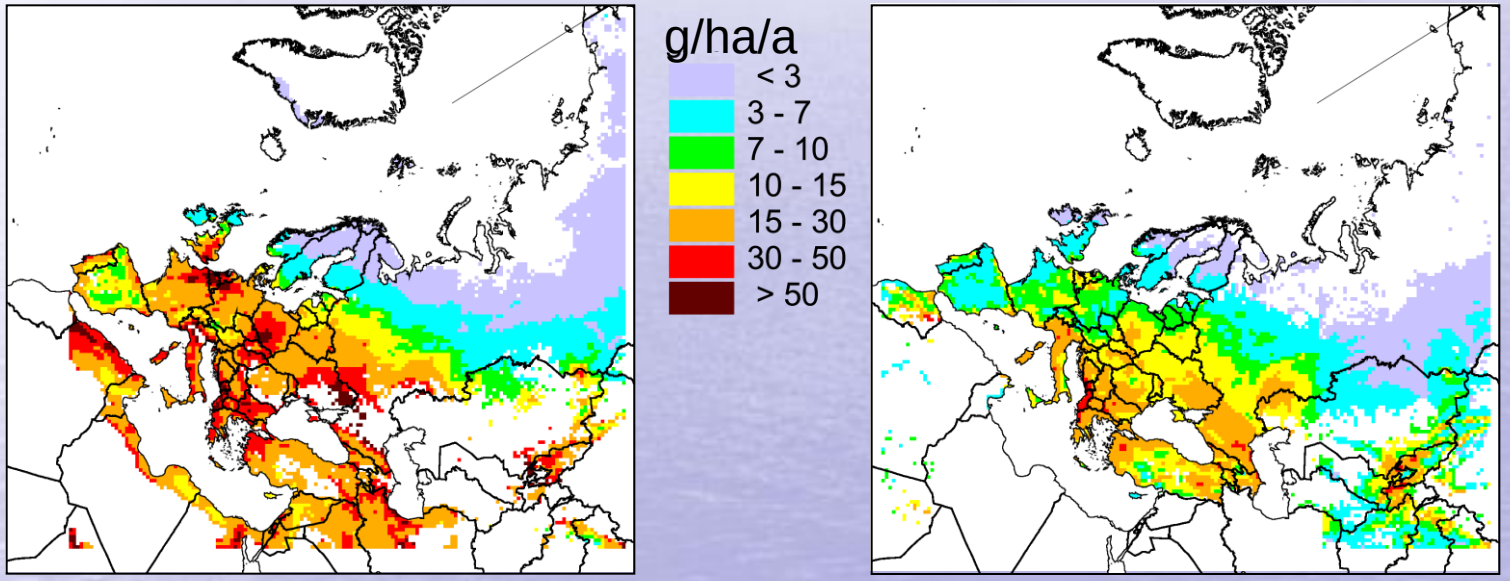
Information for effect community

Meteorological Synthesizing Centre East



Information for effect community

Information generated by MSC-E for HMs



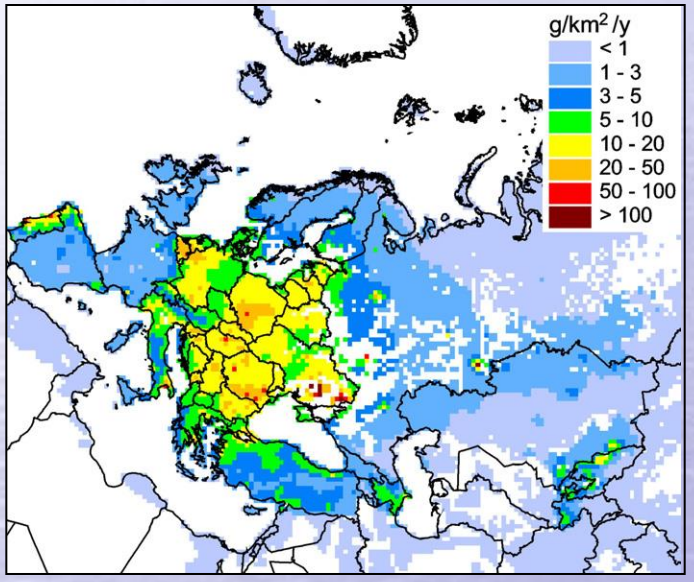
Coniferous forests

Arable lands

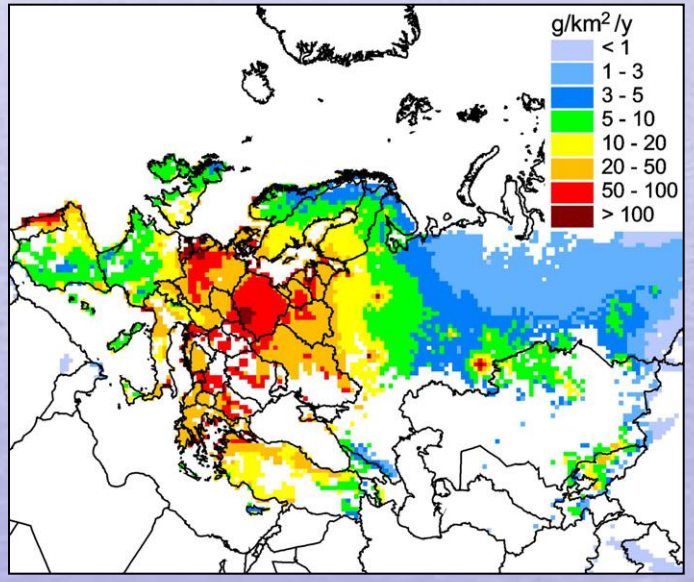
Deposition fluxes of Pb to areas covered by various types of underlying surface for 2011, g/km^2/y

Information for effect community

Information generated by MSC-E for POPs



grasslands

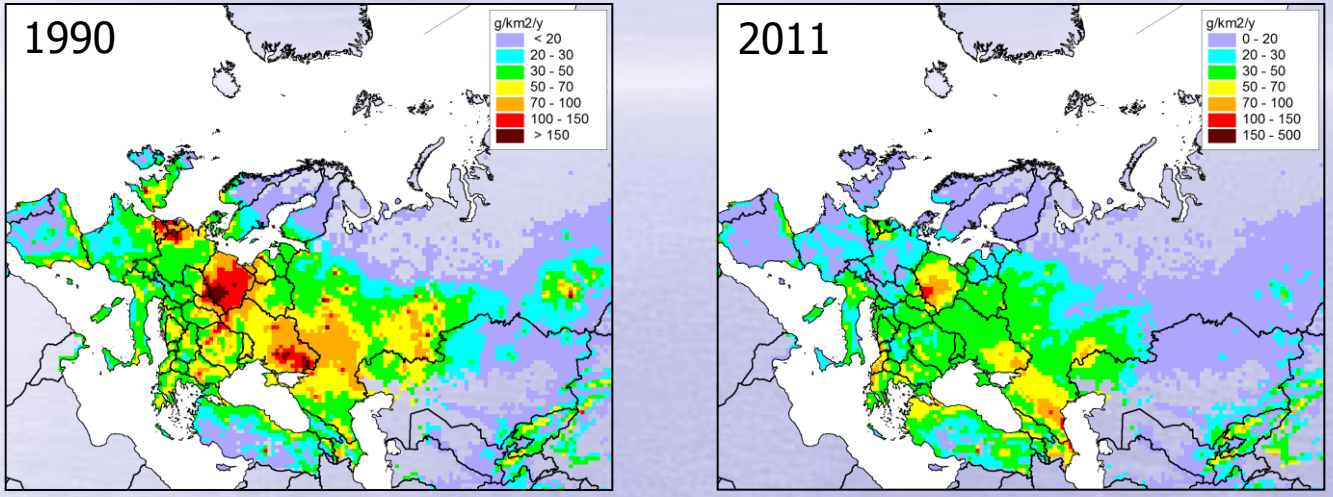


Coniferous forest

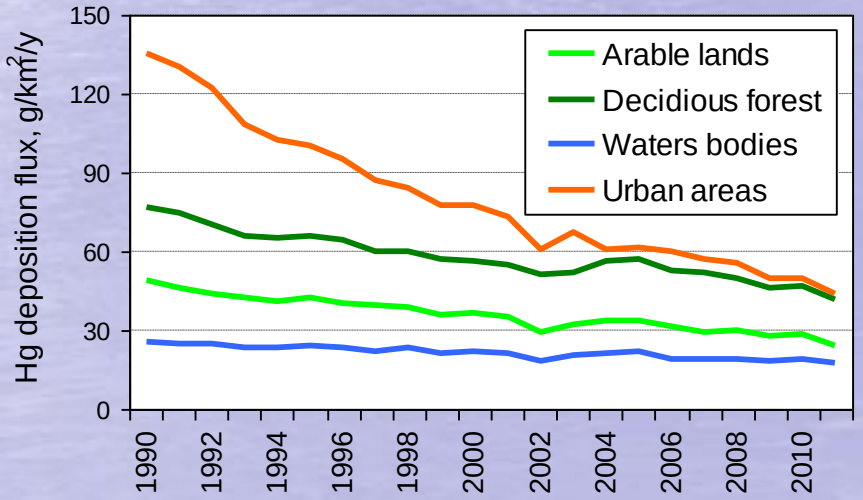
Deposition fluxes of B[a]P to areas covered by various types of underlying surface for 2011, g/km2/y

Long-term trends

Spatial distribution of Pb deposition to arable land



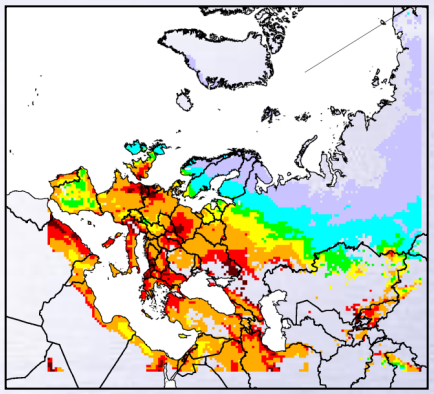
Long-term changes of Hg deposition to different land use categories

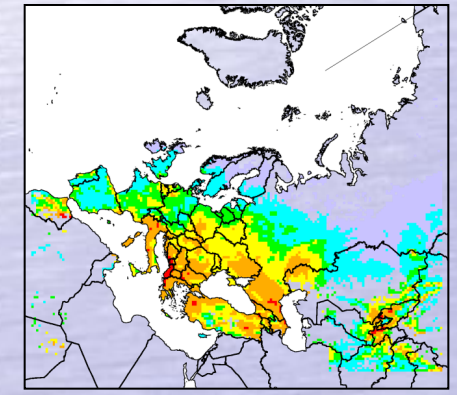


Exceedance of critical loads

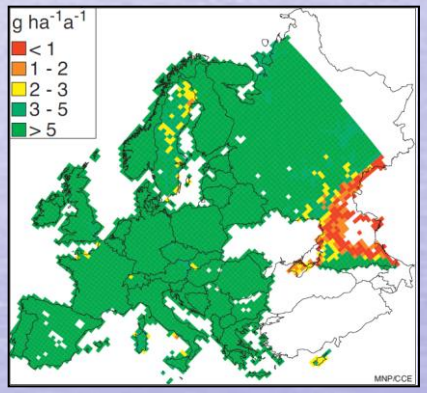
MSC-E

CCE

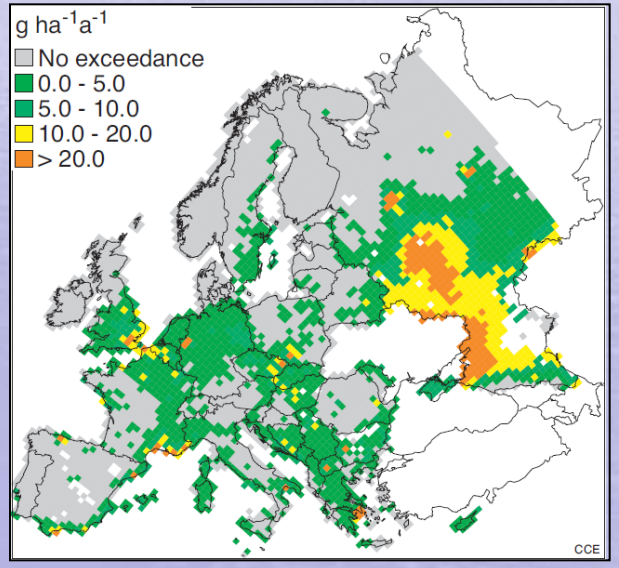




Pb depositions to ecosystems

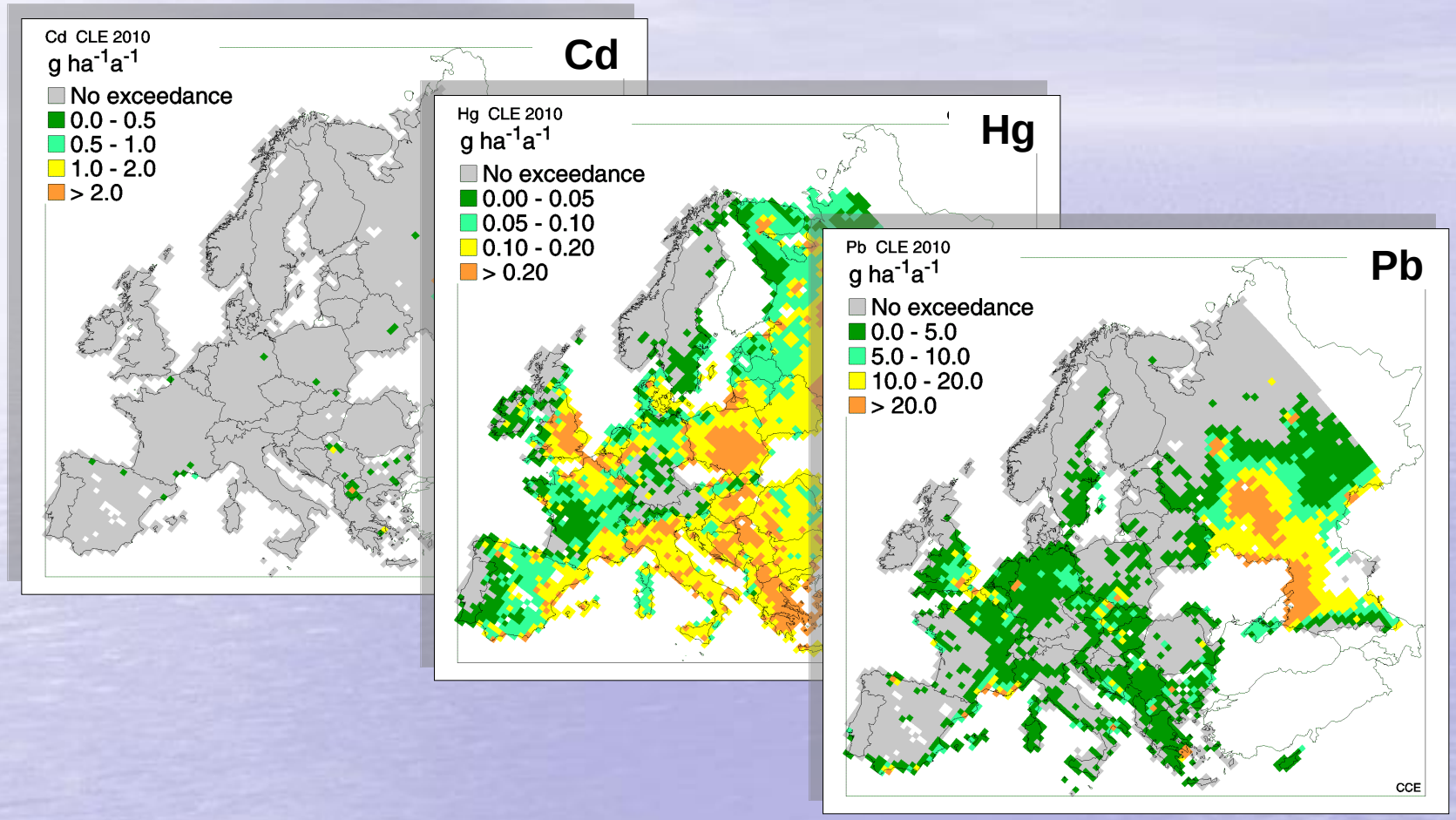


CL of Pb (all effects)



Pb exceedance in 2010, g/ha/a

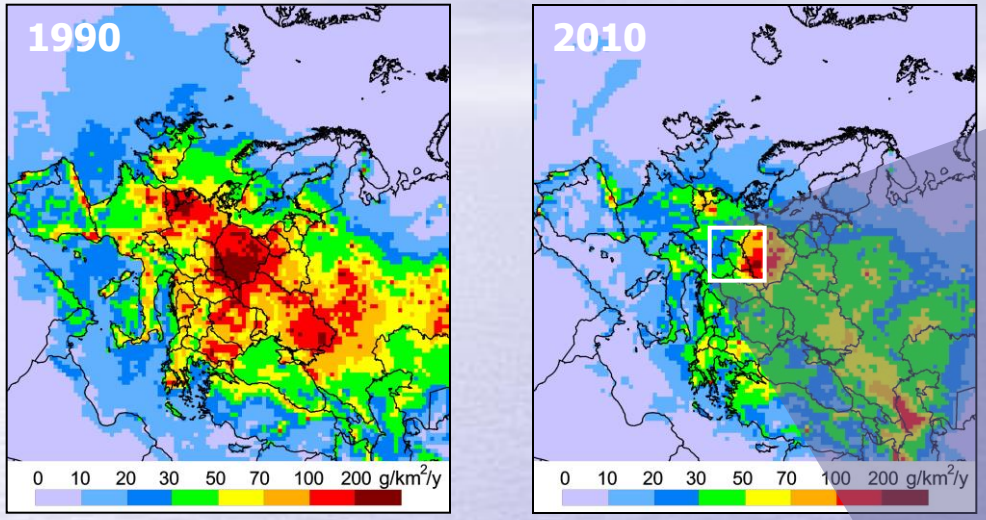
Exceedance of critical loads

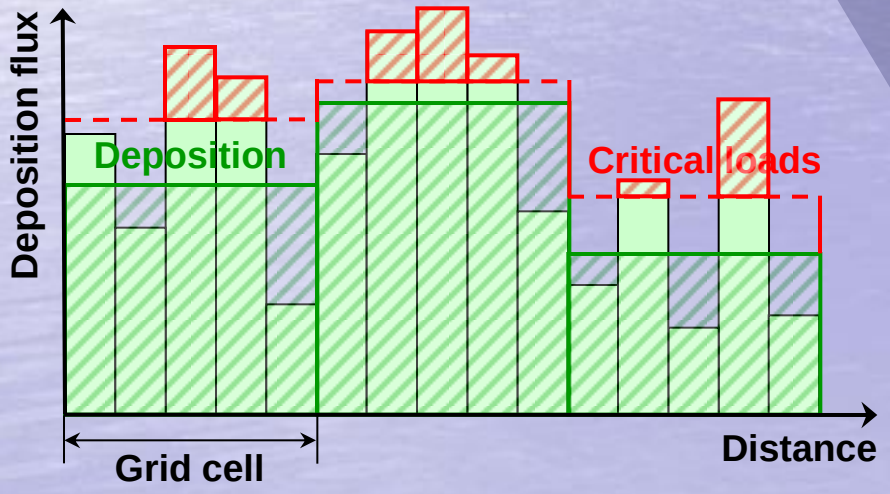


Jointly prepared by MSC-E and CCE

Effect of spatial resolution

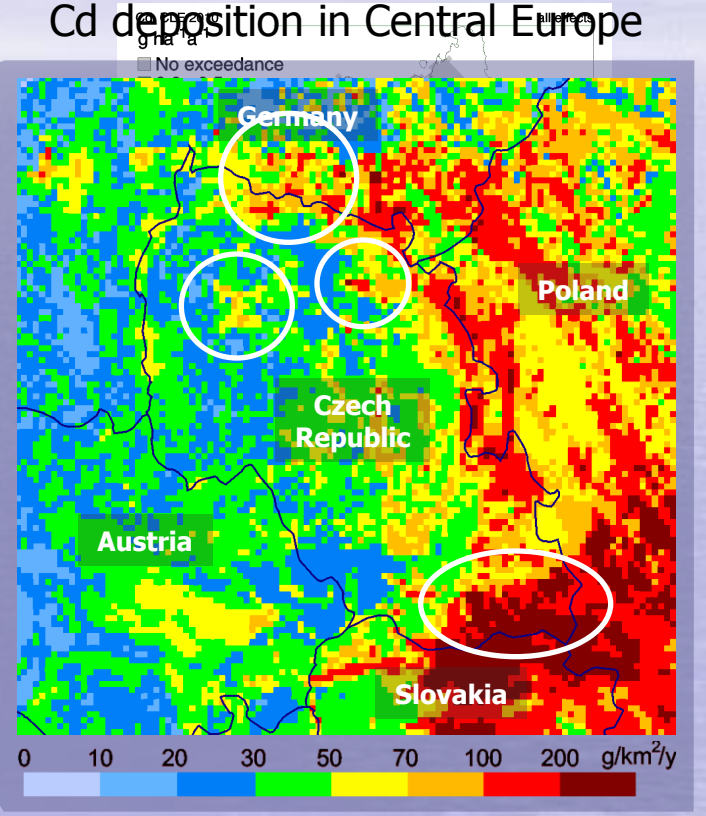
Deposition of Cd in EMEP countries (50% reduction)





Exceedance of critical loads of Cd in 2010

Cd deposition in Central Europe

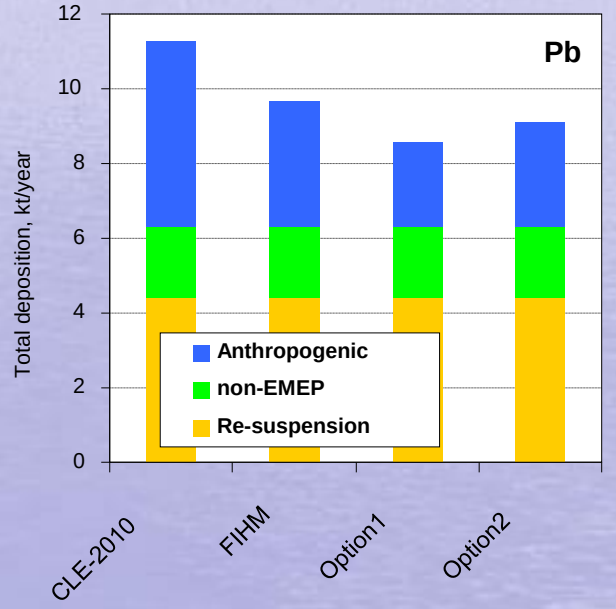


MSC-E contribution to VROM project

"Calculations of deposition of Cadmium, Mercury and Lead for different options under the current and amended Heavy Metal Protocol"

Emission scenarios:

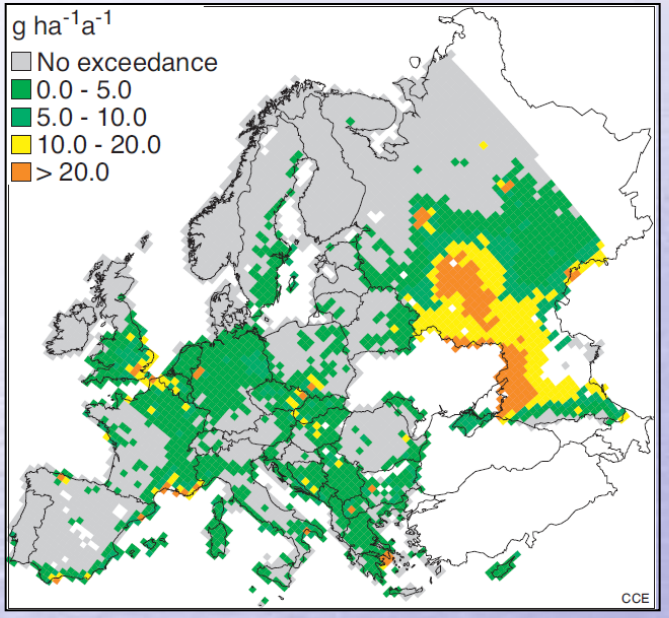
- ***CLE 2010*** : 2010 current legislation of the HM Protocol
- ***FIHM*** : 2020 full ratification of the HM Protocol
- ***Option 1*** : 2020 full ratification of the HM Protocol Option 1 for dust plus Hg measures
- ***Option 2*** : 2020 full ratification of the amended HM Protocol Option 2 for dust plus Hg measures



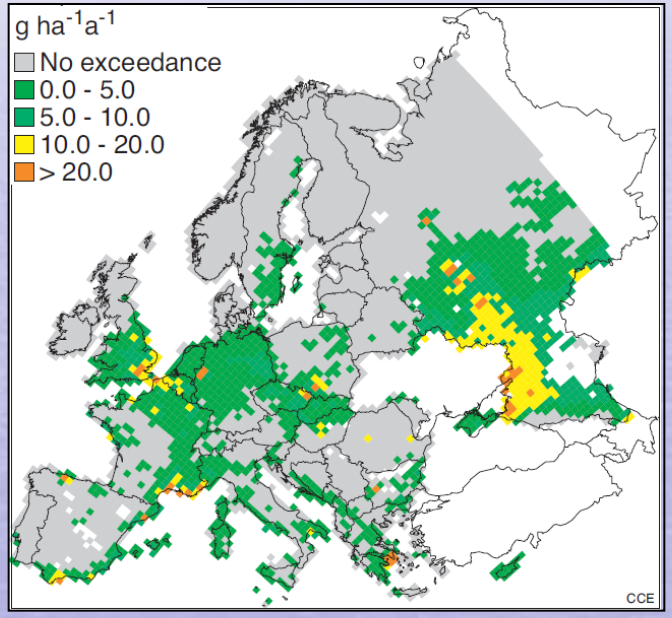
Total Pb deposition to EMEP region

Evaluation of critical load exceedances

Exceedances of Pb critical loads for 2010 and for 2020 ('Option 2' scenario)



2010, Scenario 'Current legislation'



2020, Scenario 'Option 2'

Exceedance of EU thresholds

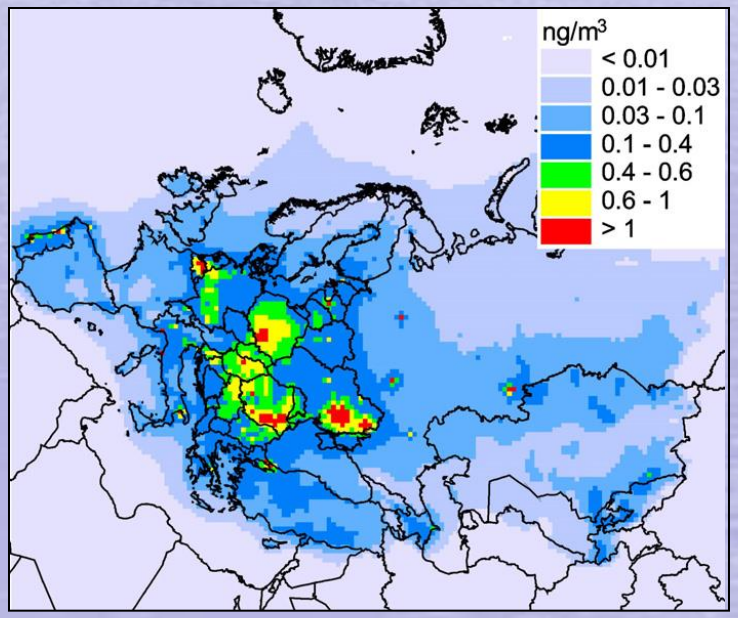
Air concentrations of B[a]P

EU legislation:

Target value (TV)	1 ng/m^3
Upper assessment threshold (UAT)	0.6 ng/m^3
Lower assessment threshold (LAT)	0.4 ng/m^3

B[a]P air concentrations in 2011, ng/m^3, annual averages.

(Areas where the target value is exceeded are marked red)



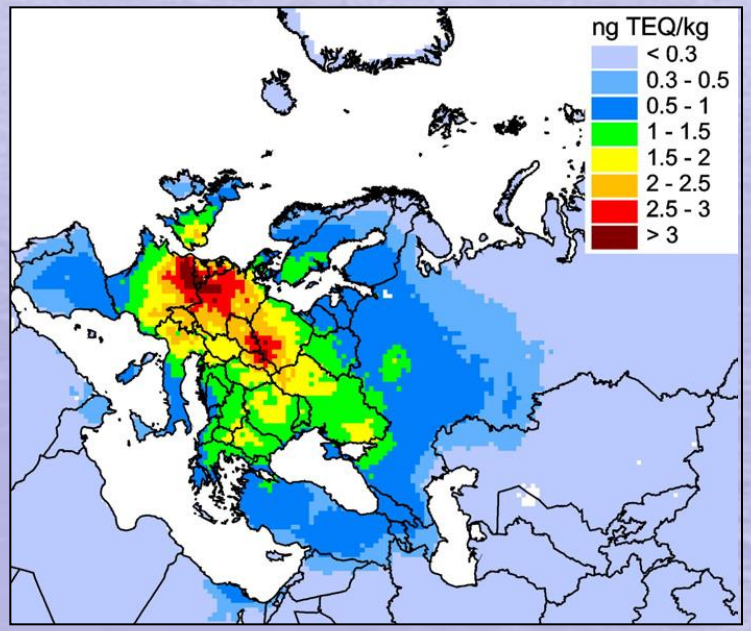
In-cell spatial variation can essentially widen the exceedance area

Exceedance of national thresholds

Soil concentrations of PCDD/Fs

Thresholds levels for PCDD/F soil concentrations are established in a number of national legislations for characterization of risk from PCDD/Fs to human health and the environment:

Canada	4ng TEQ/kg
Italy	10 ng TEQ/kg
…	

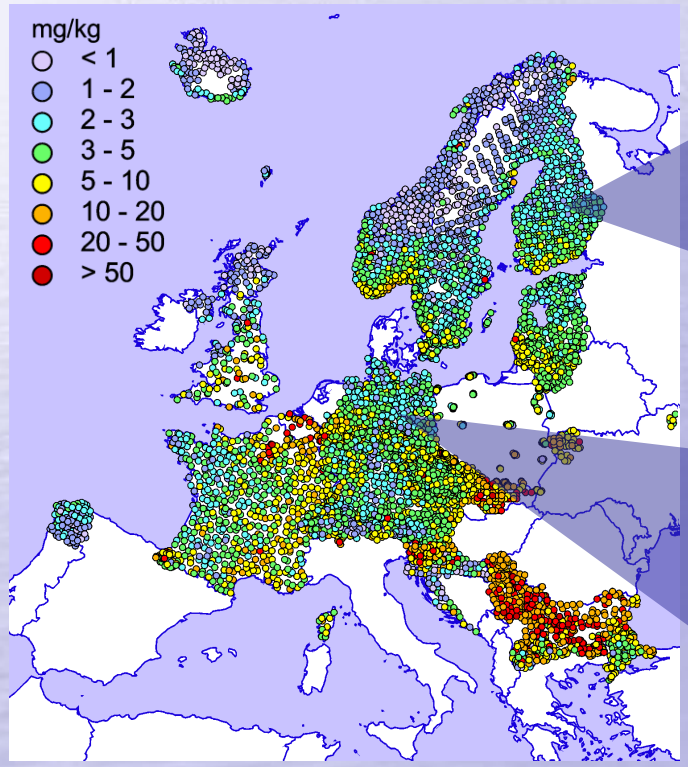


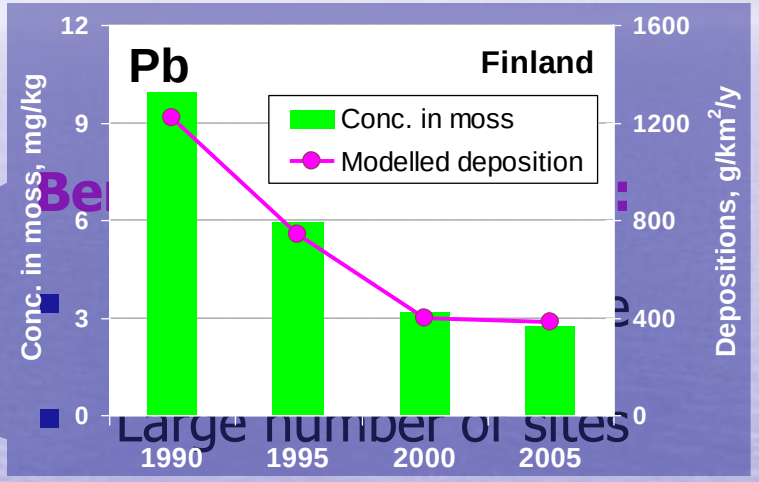
Concentrations of PCDD/Fs in top 5 cm soil layer in 2011, ng TEQ/kg

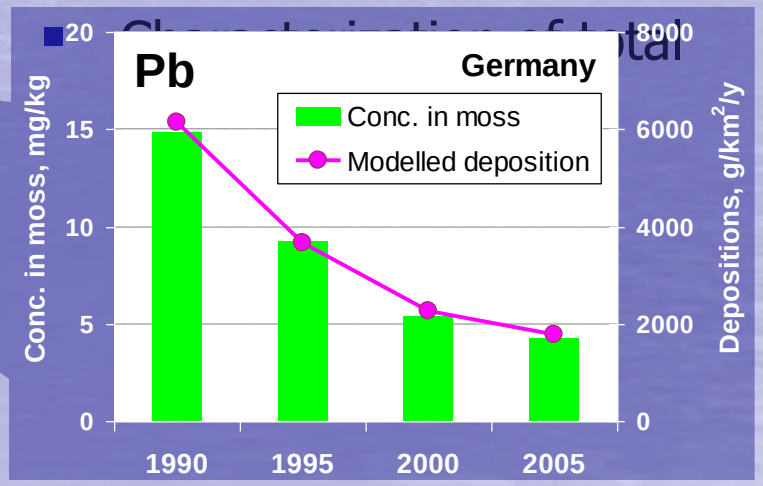
Supplementary measurements data

Heavy metal concentration in mosses

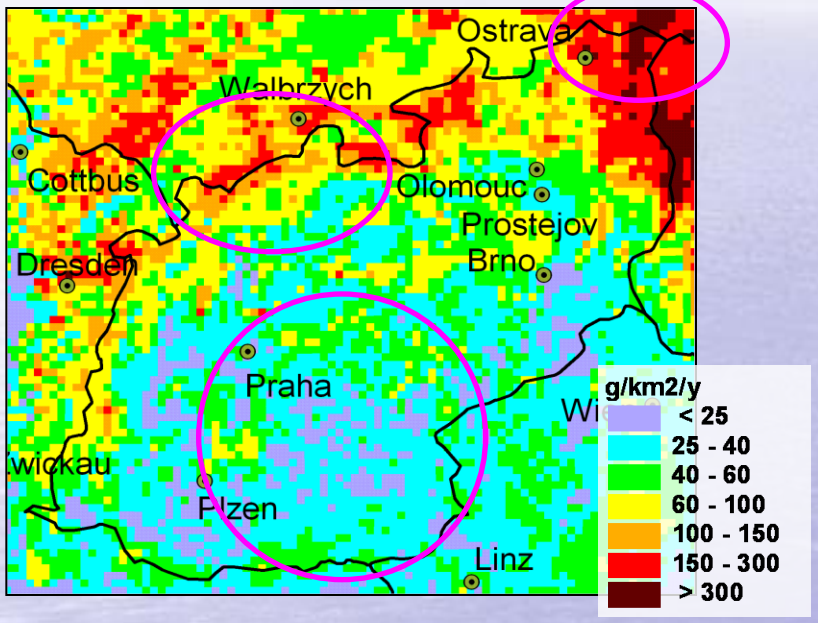
HM monitoring in Europe (~5600 sites)



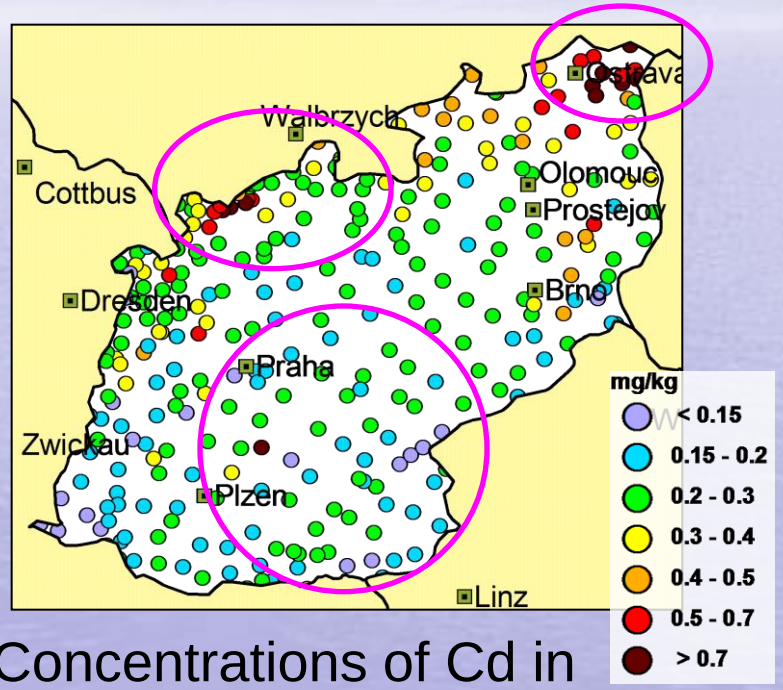




Evaluation of spatial distribution using moss measurement data



Modelled total deposition flux of Cd in 2007 (5x5 km)



Concentrations of Cd in mosses (survey of 2005)

Proposals for future co-operation

- Further work on application of measurements in mosses and other ICP data for the model evaluation and pollution assessment of HMs (and POPs)
- Information exchange and joint analysis of critical loads exceedances for heavy metals
- Dynamic modelling of heavy metal and POP cycling and accumulation in soil
- Joint analysis of secondary sources of heavy metals and POPs (re-suspension, re-volatilization etc.)