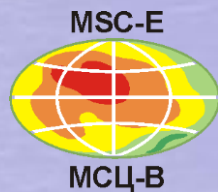


# Monitoring/modelling activities on POPs in 2015 and future work

Victor Shatalov on behalf  
of MSC-E and CCC



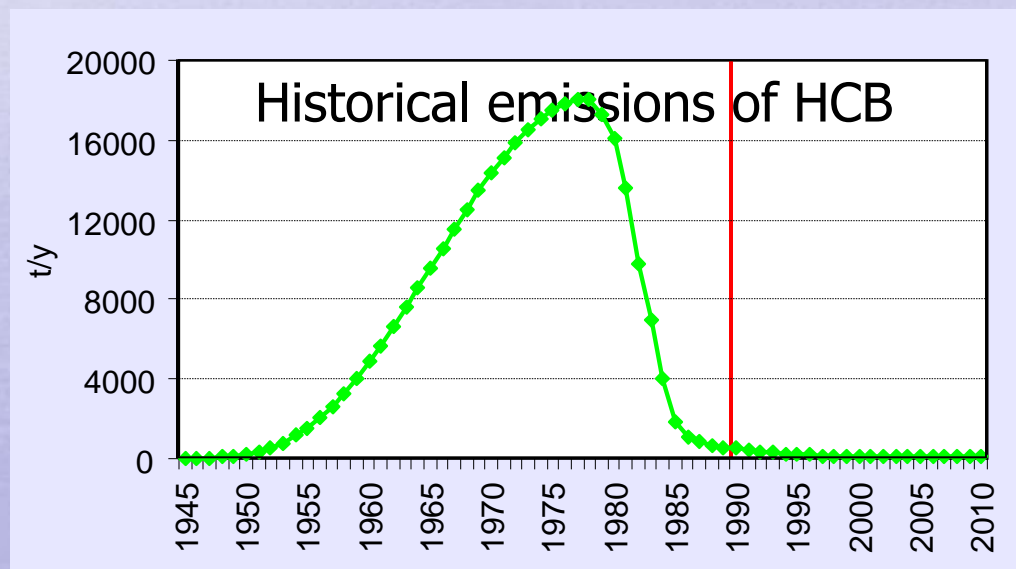
# Work-plan items on POPs in 2015

Activity	Body	Work-plan elements
Collection of monitoring data and trend analysis	CCC	1.1.4, 1.1.8
Emission data for modelling	CEIP, MSC-E	1.3.8, 1.4.4
Further development of GLEMOS system for POPs	MSC-E	1.3.4, 1.3.8
Current state of transboundary pollution in 2013	MSC-E	1.3.2., 1.3.6
Long-term trends of POP pollution, 1990 – 2012	TFMM, MSC-E, CCC	1.1.4, 1.3.4, 1.1.8
Co-operation with national experts, international organizations and programmes (TFMM, WGE, UNEP SC, HELCOM, ...)	MSC-E	1.1.7

# Assessment of pollution on regional/global scale

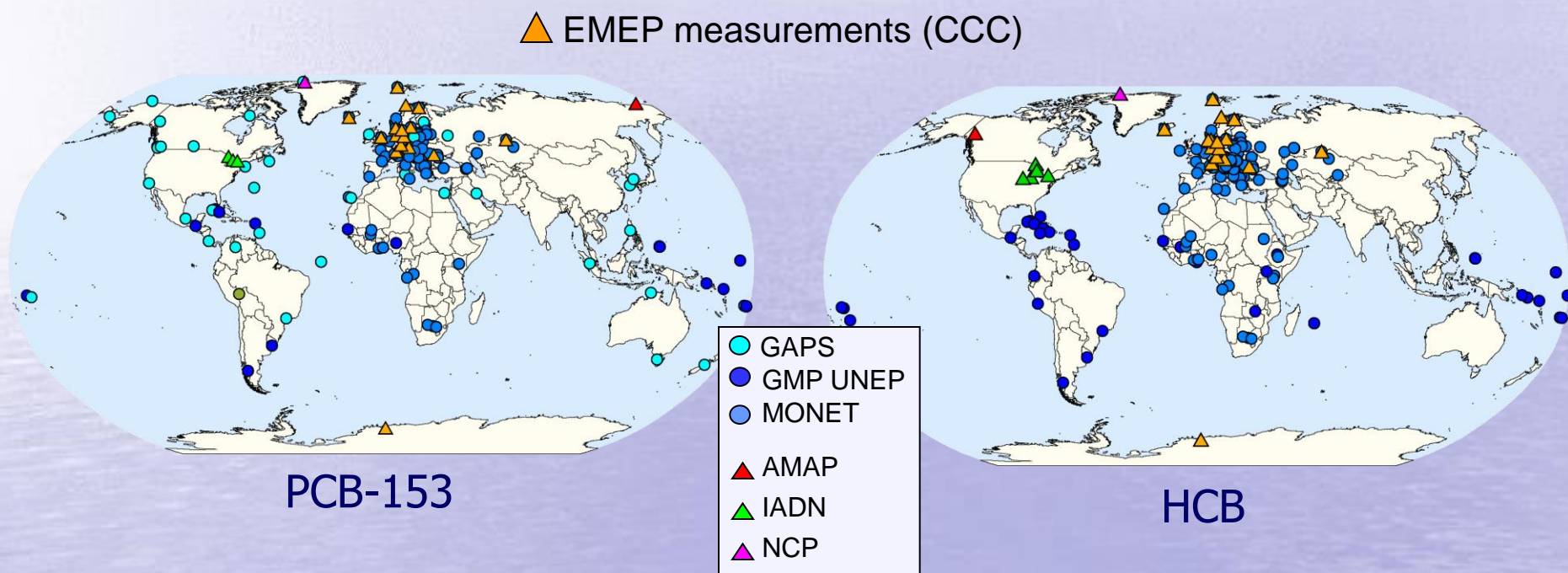
## Additional emission data for modelling

- Gridded emissions on regional/global scale
- Emissions to other compartments
- Historical emissions (1945 - 1990)
- Congener composition of emissions
- Seasonal variations of emissions



# Assessment of pollution on regional/global scale

Additional measurements used for PCB-153 and HCB assessment of pollution



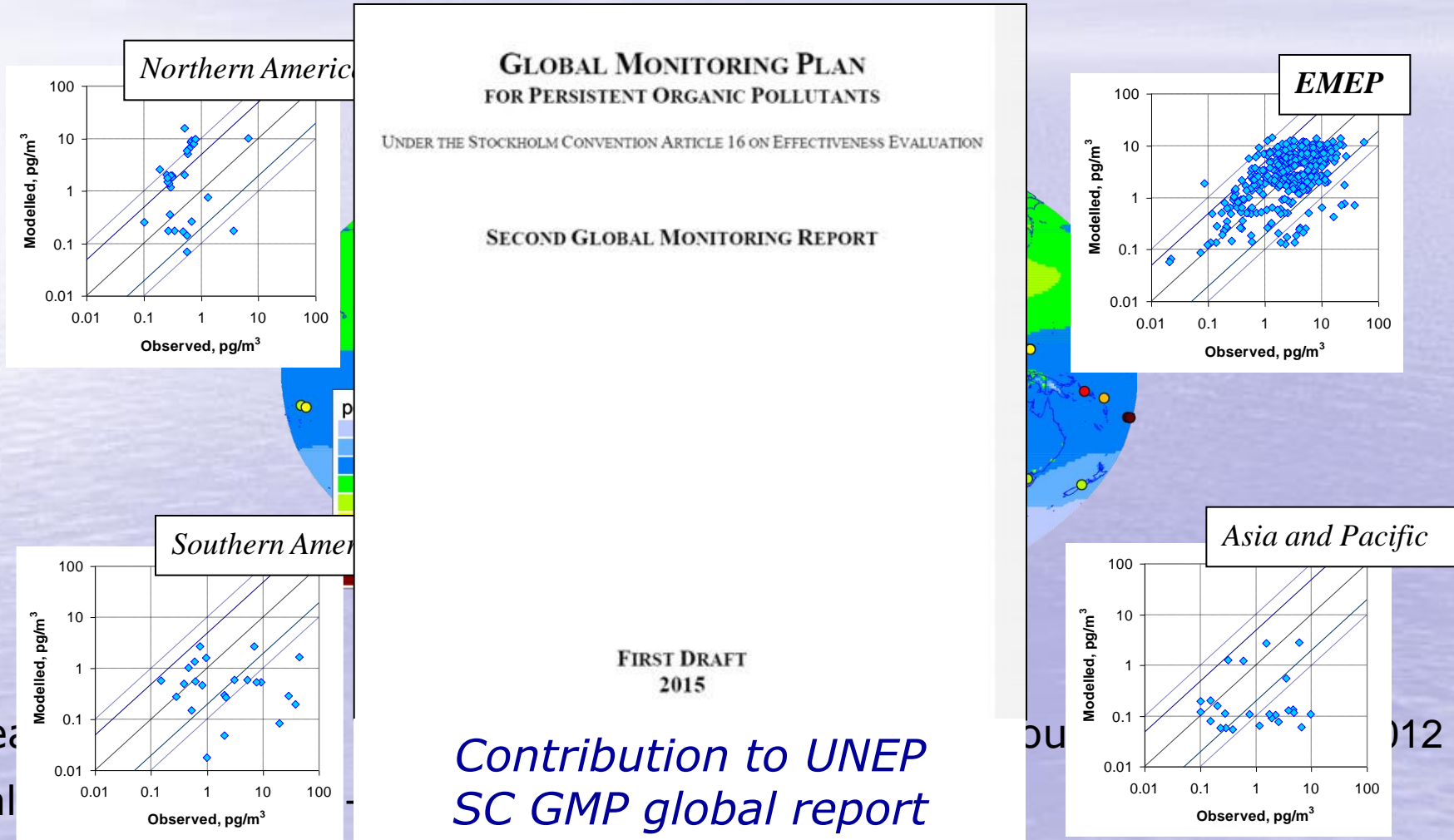
PCB-153

HCB

Measurement data: EMEP, UNEP SC GMP Data Warehouse, ..., 1990 – 2013

# Assessment of pollution on regional/global scale

## Comparison of modelled and measured concentrations (PCB-153)



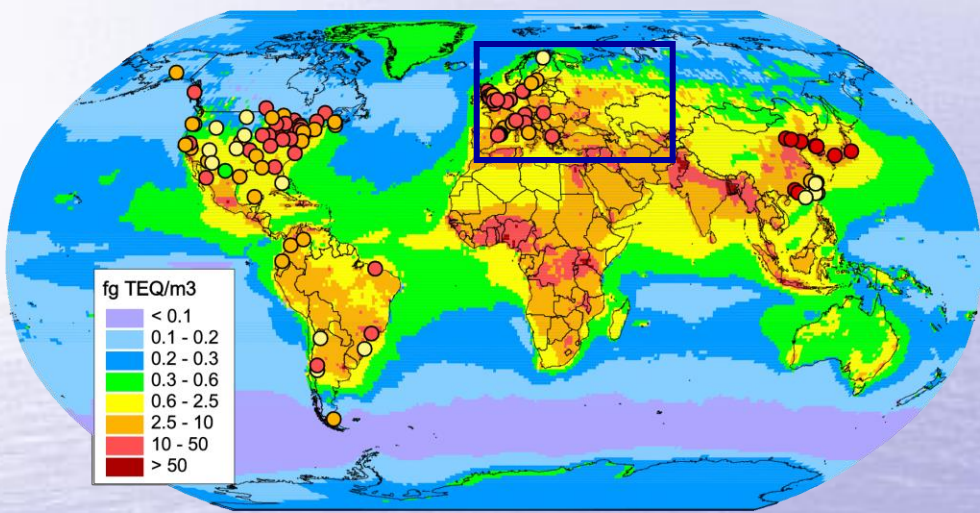
Mea  
Cal

OU

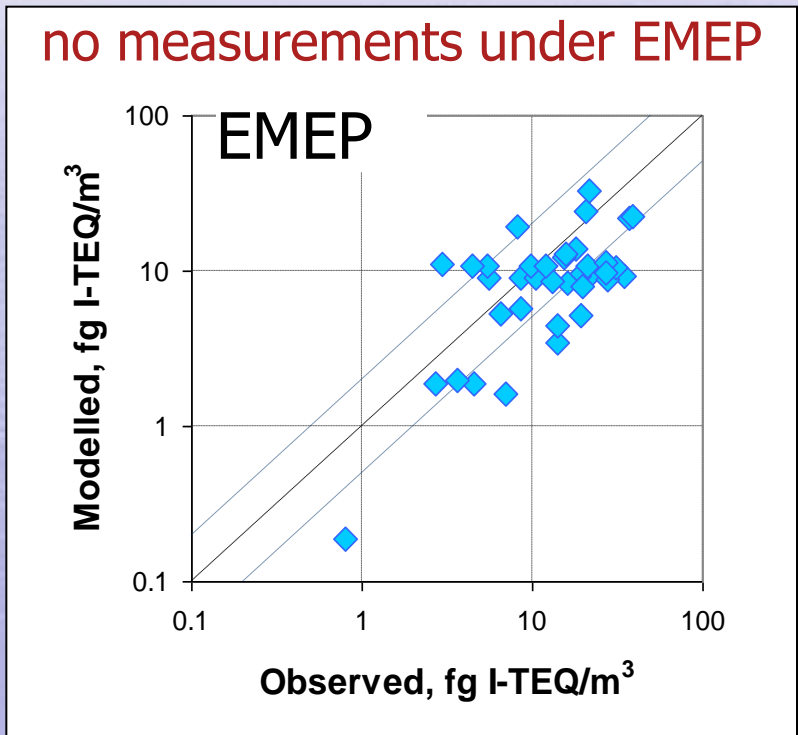
12

# Assessment of pollution on regional/global scale

## Comparison of modelled and measured concentrations (PCDD/Fs)



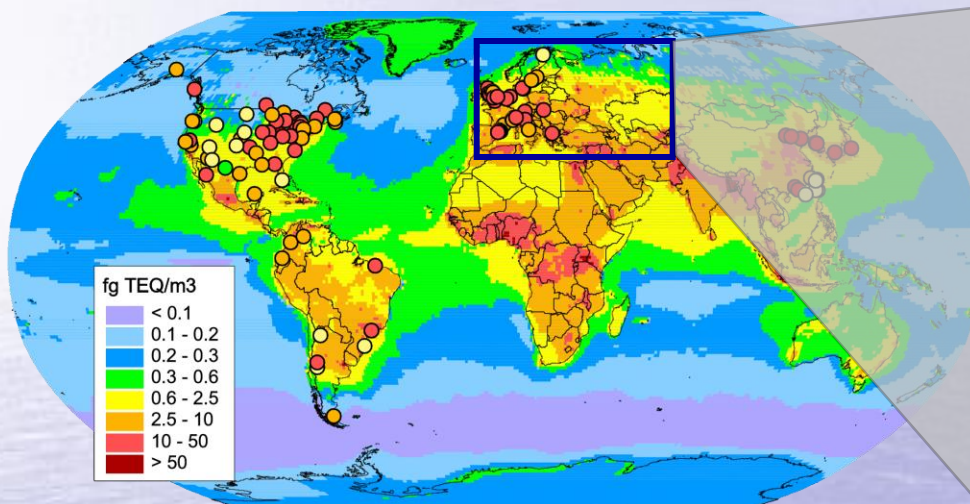
Modelling results against observed PCDD/F air concentrations in various regions



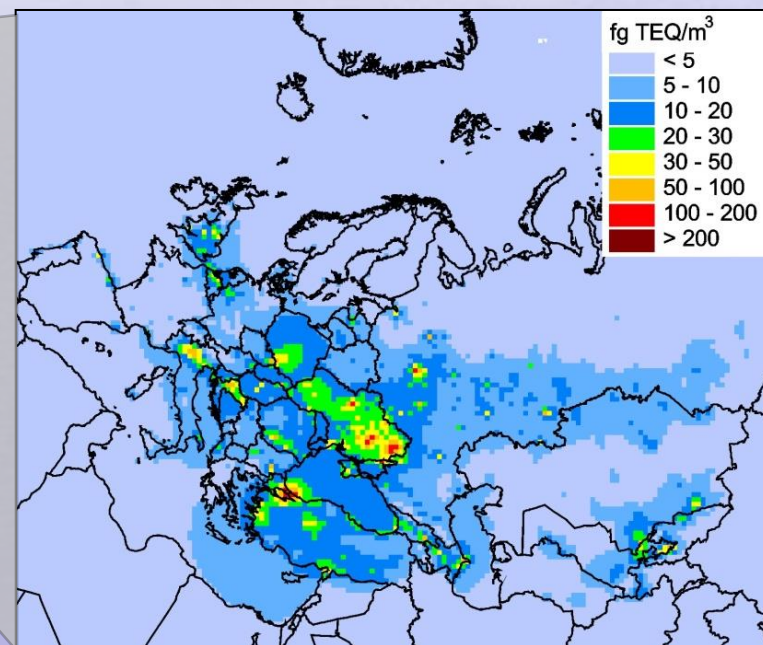
Evaluation of PCDD/F global transport and fate based on EMEP official data and UNEP SC emission inventory and research monitoring data

# Assessment of pollution on regional/global scale

## Calculations of PCDD/F pollution at regional scale



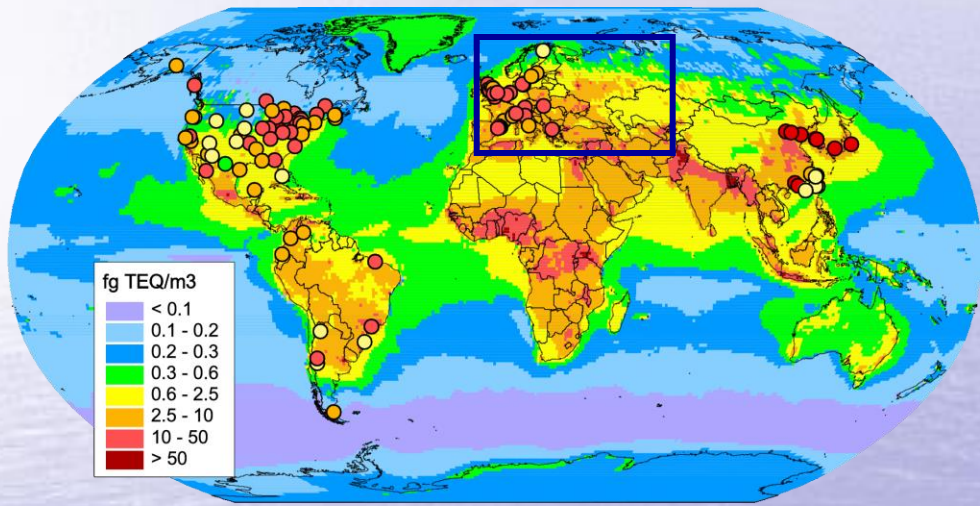
Modelling results against observed PCDD/F air concentrations in various regions



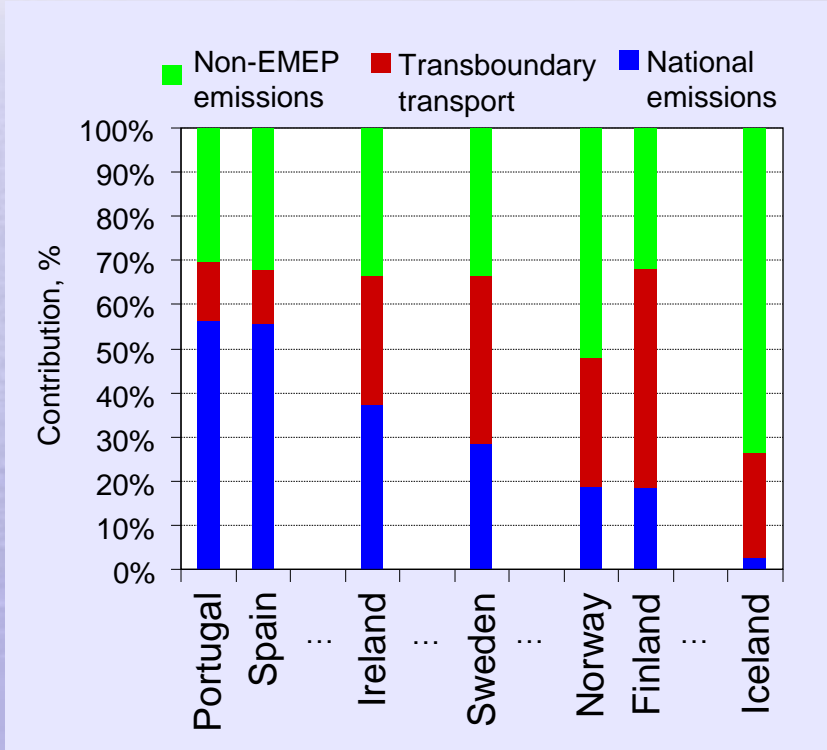
Calculated annual mean air concentrations of PCDD/Fs in the EMEP domain for 2013

# Assessment of pollution on regional/global scale

## Calculations of PCDD/F pollution at regional scale



Modelling results against observed PCDD/F air concentrations in various regions



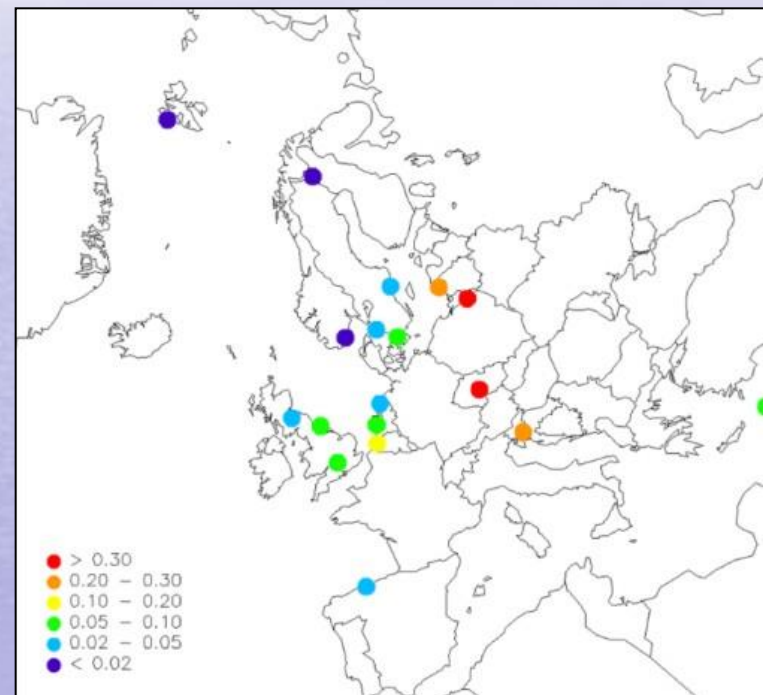
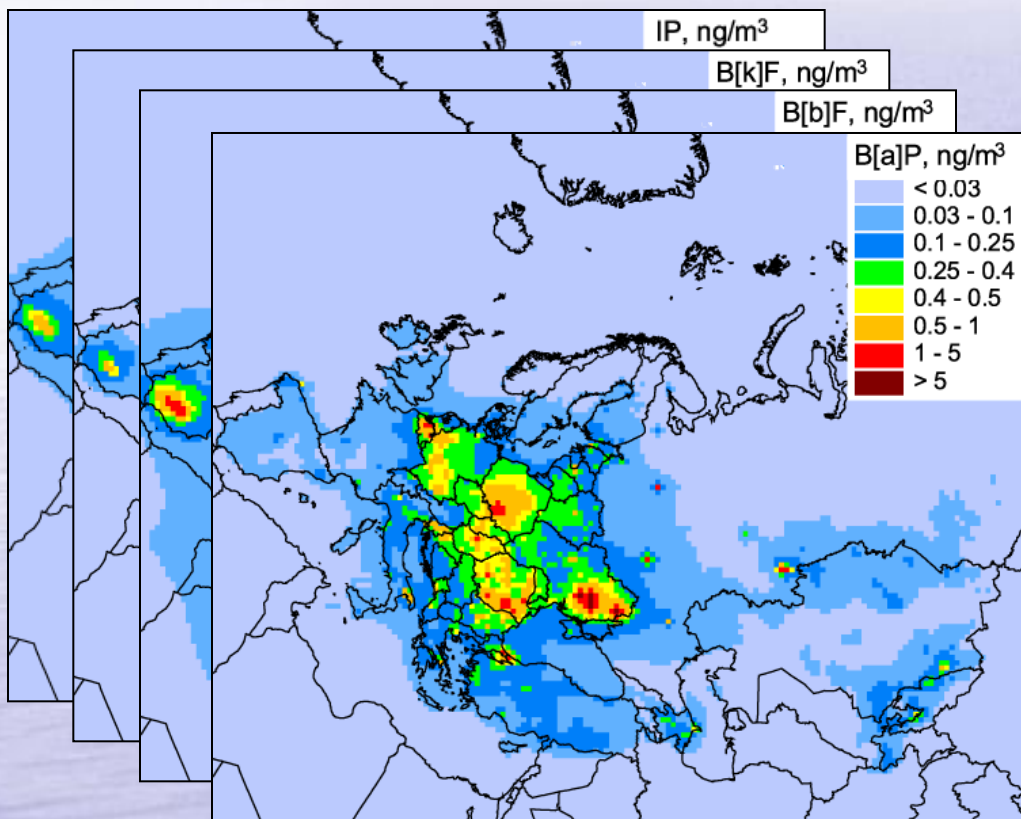
Deposition to EMEP countries in 2013 from emissions of the current year



# Assessment of pollution in the EMEP region

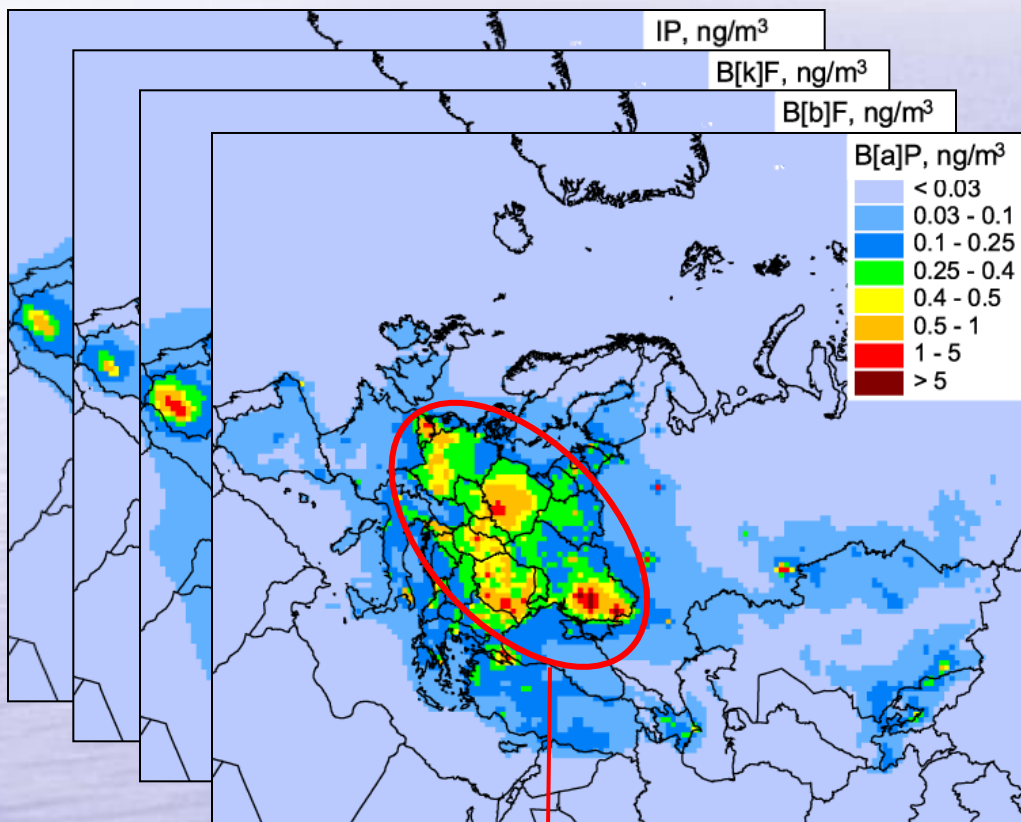
Concentration of 4 indicator PAHs  
(B[a]P, B[b]F, B[k]F, IP),  
measured/calculated for 2013

B[a]P measurements, 2013 (CCC)



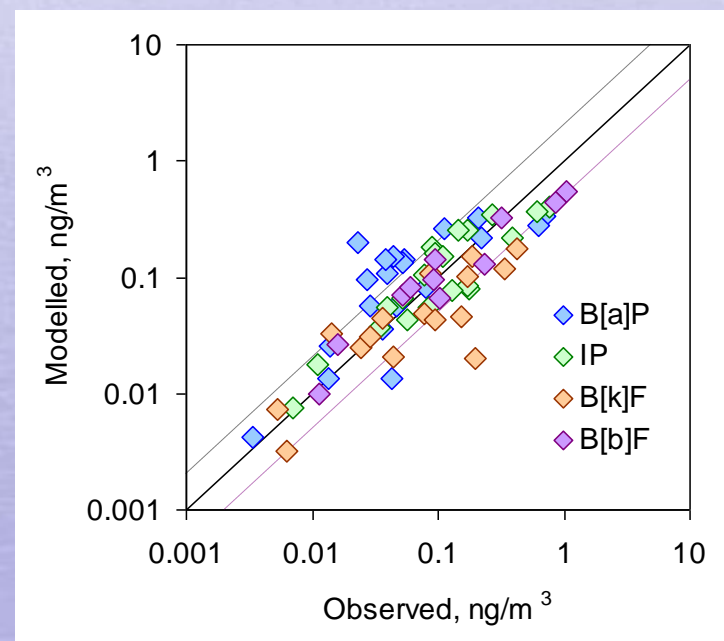
# Assessment of pollution in the EMEP region

Concentration of 4 indicator PAHs  
(B[a]P, B[b]F, B[k]F, IP),  
measured/calculated for 2013



Elevated concentrations  
in Central Europe

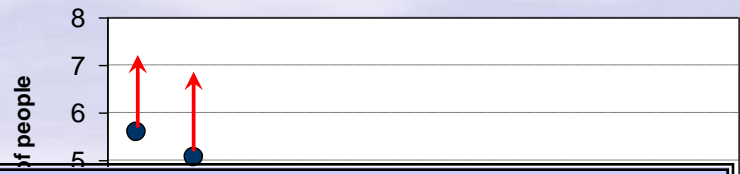
Measurement/modelling  
agreement



Agreement within a factor  
of 2 at most locations

# Information for effect evaluation (examples)

## Effects on human health

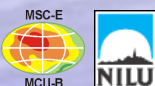
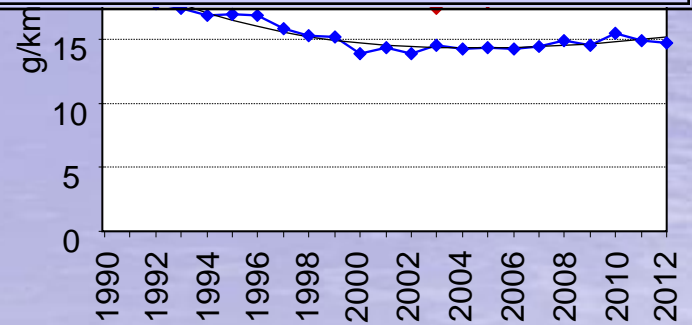


### EAA indicator reports on HM and POP emissions, 2015

#### Increase of B(a)P emissions

“BaP emissions have increased over the last decade by more than 20%, driven by the increase (24%) in emissions from domestic combustion in Europe. **Exposure of European citizens to B[a]P is therefore a matter of increasing concern.**”

Changes of B[a]P deposition to deciduous forest and arable lands within the EMEP region



# Information on pollution

## Country-specific report for France

Convention on Long-Range Transboundary Air Pollution

**emep**

MSC-E  
MCI-B

**msc-e**  
Meteorological Synthesizing Centre

**General information**

- About
- MSC-E staff
- EMEP centres
- Co-operation

**Publications**

- Peer-reviewed papers
- Reports
- Presentations
- Projects

**Pollution assessment**

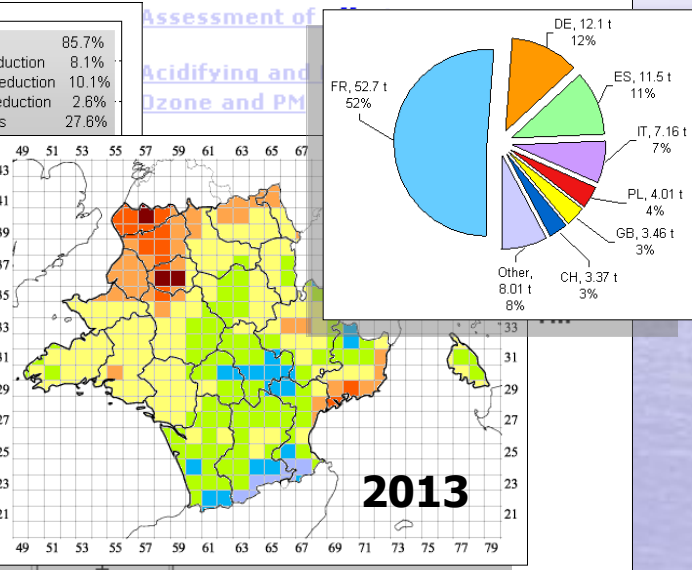
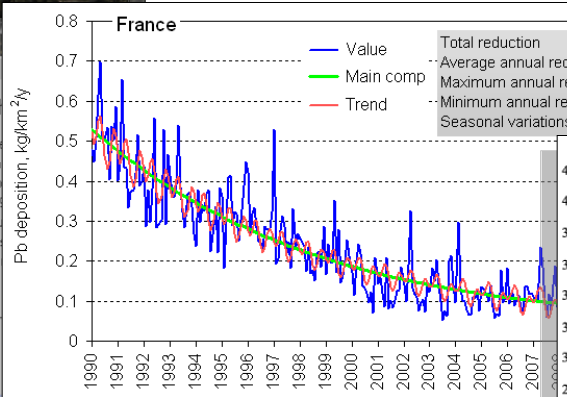
- Pollutants

**Meteorological Synthesizing Centre**

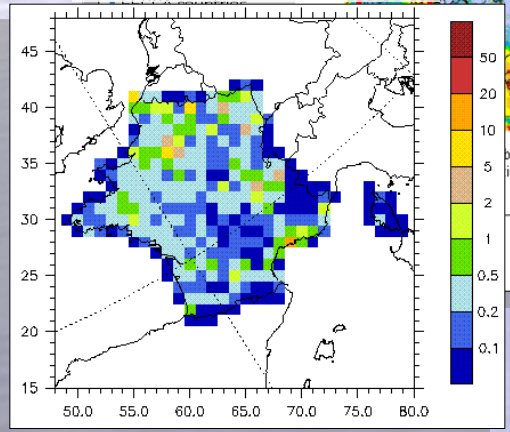
Meteorological Synthesizing Centre of the Co-operative Programme on the Assessment and Monitoring of Air Quality and Air Pollution in Europe (EMEP) was established in 1979 to support the political process by heavy metals (HMs) and persistent organic pollutants (POPs) in Europe.

**Pollution assessment**

## Modelling results



## Emissions data

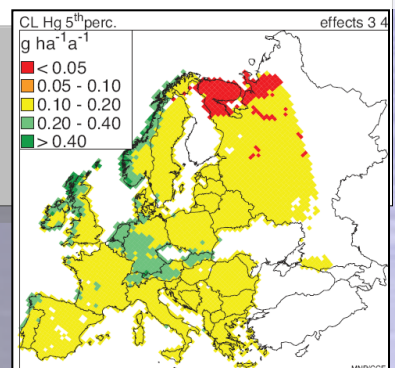


Convention 1979	+
EMEP Protocol 1984	+
Sulphur Protocol 1985	+
NOx Protocol 1988	+

## Measurement data

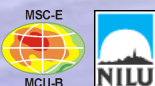
mm	Cd precip	Pb precip
5.400	0.087	2.270
0.000	-9999.990	-9999.990
2.900	0.270	5.900
2.900	0.460	12.700
2.700	0.170	7.500
12.400	0.050	1.400
12.100	0.130	4.600
21.400	0.040	1.200
9.300	0.050	1.500
18.100	0.040	0.700
19.300	0.010	0.900
28.400	0.010	0.250
23.200	0.010	0.250

## Assessment of effects



MSC-E

east.org



# MSC-E work-plan elements in 2016 - 2017

- ❖ Prepare contributions to TFMM and WGE reports on trends and CLRTAP Assessment report
- ❖ Perform country-specific trend analysis of PCDD/Fs, PCB-153 and HCB
- ❖ Evaluate POP background pollution levels in selected cities of the EMEP domain
- ❖ Transition to long-lat grid at various spatial resolutions. Investigate processes of interactions between POPs and atmospheric aerosol
- ❖ Further develop integrated emission/monitoring/modelling approach of evaluation of POP pollution
- ❖ Further co-operate with international bodies (AMAP, UNEP SC, HELCOM, ...)
- ❖ Evaluate POP contamination levels and transboundary transport in the EMEP region for 2014 - 2015, including ecosystem-dependent deposition

# Issue for discussion

What is needed for better quality assessment of POP pollution levels in the EMEP domain ?

Additional data:

- emissions (gridded on a regional/global scale, to other compartments, historical, seasonal variations, LPS, ...)
- measurements on regional and global scale from relevant international and national programs
- PCDD/Fs measurements under EMEP

How to enhance cooperation with WGE ?

(In particular, adverse effect of B[a]P on human health and environment)