

Review of the European Air Quality Directive

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CAFE: Clean Air For Europe programme

6th Environmental Action Programme of the EC

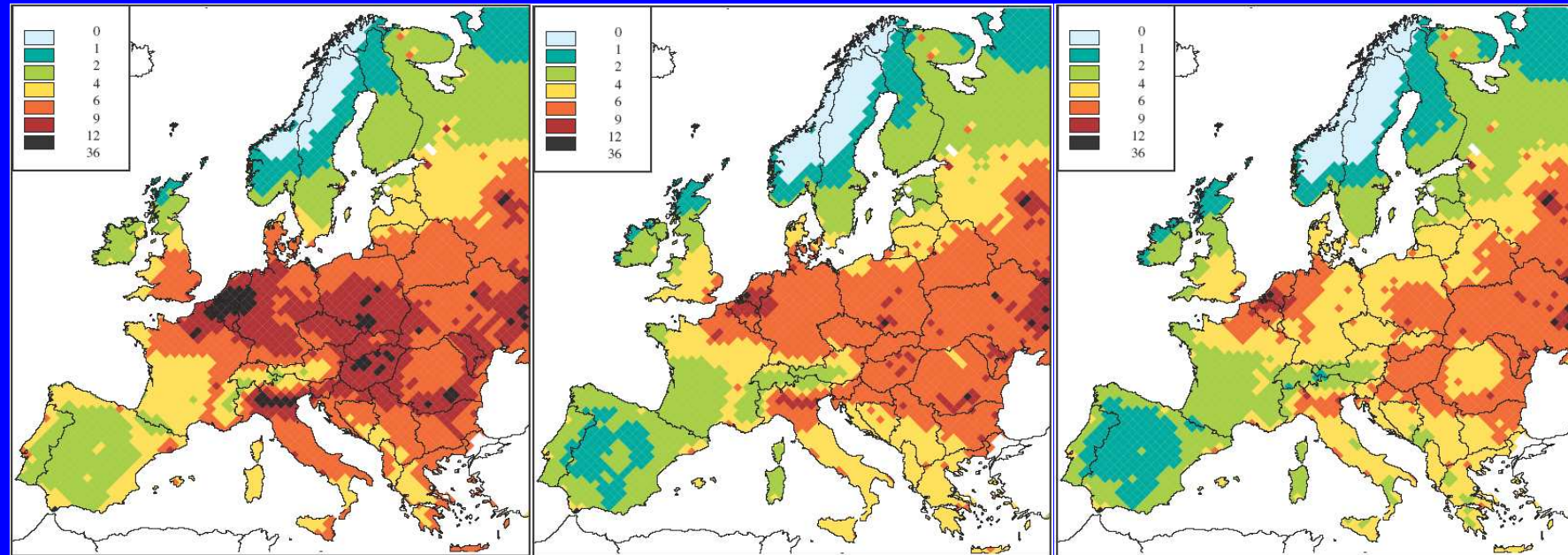
"to achieve levels of air pollution that do not give rise to significant negative impacts on and risks to human health and the environment"

- ⇒ **thematic strategy** on air pollution (sept 2005):
 - aims to achieve by 2020 a 40% reduction in the annual number of premature deaths from pollution related diseases from the 2000 level. If achieved, it is estimated that 140 000 lives will be saved annually
 - focus on health risks due to exposure to PM_{2.5}

- ⇒ new **Air Quality Directive** (sept 2005): merge existing and introduce new PM_{2.5} legislation

- ⇒ review of NECD (2001/81/EC) inclusive PM_{2.5}-ceilings for 2020
NECPI WG (april 2005)

Loss in statistical life expectancy attributable to anthropogenic PM_{2.5} [months]



2000

2010











2020

Source : IIASA

Survey of EU Directives on Air Quality





- **Framework Directive 96/62/EC**
 - establish air quality zones throughout the territory
 - define limit values (or target values)
 - establish common assessing methods (monitoring, models, inventories)
 - establish information to public and reporting to Commission
- **Daughter Directives**
 - 1st : 1999/30/EC : SO₂, NO₂, NO_x, PM₁₀ and Pb
 - 2nd : 2000/69/EC : CO and Benzene
 - 3rd : 2002/3/EC : Ozone
 - 4th : 2004/107/EC : As, Cd, Hg, Ni and PAH's
- **Cleaner Air for Europe** (new directive 2007/.../EC)

EU limit values (all in force since 1 January 2005)

avg time	1-hour	max 8-hour	24-hours	year
<i>1999/30/EC</i>				
SO₂	350 24x yr 		125 3x yr 	
NO₂	200 18x yr 			40  (2010)
PM₁₀			50 35x yr 	40 
Pb				0,5 
<i>2000/69/EC</i>				
CO		10 000 		
Benzene				5  (2010)
<i>2002/3/EC</i>				
O₃		120 25x yr 3y_avg 		
Target Value		(2010)		

(concentrations in µg/m³)

WHO updated Air Quality guidelines (2005)

	1-hour	max8-hour	24-hour	year
SO₂	500 (10')		20	
NO₂	200 			40 
PM₁₀			50 3x year 	20 
PM_{2.5}			25 3x year 	10 
O₃		100 		

WHO guidelines are :

- lowest levels with still statistical significant health effects according to epidemiological studies (*time-series/cohorte*)
- levels that protect sufficiently public health - not excluding any health effect
(concentrations in $\mu\text{g}/\text{m}^3$)

Why make a new air quality directive ?

- **Monitor, regulate and abate PM_{2,5}**
- **Merge, harmonise and streamline existing legislation:**
 - Framework directive (96/62/EC)
 - 3 daughter directives:
 - 1/ SO₂, Pb, NO₂, NO_x and PM₁₀ (1999/30/EC)
 - 2/ CO and benzene (2000/69/EC)
 - 3/ Ozone (2002/3/EC)
 - (4/ Heavy metals (Cd, As, Hg, Ni) and PAHs (2004/107/EC) will follow)
 - EoI Decision (Exchange of Information) (97/101/CE)
- **Introduce a conditional flexibility**
 - disregard -well demonstrated- contributions from natural sources when checking compliance with limit values
 - postpone -under strict conditions- attainment date for some limit values

The new CAFE directive

- **genesis**
- PM₁₀
- PM_{2.5}
- Postponement of deadlines
- contributions from natural sources
- Community at source measures
- attainability of current PM₁₀ LV in cities

Genesis: codecision by the EU Council and the EP

Commission proposes to : (21 Sept 2005)

European Parliament (EP)

- Committee on Environment (ENVI)
draft report by rapporteur (Krahmer) (29 June 2006)
- Plenary session
 - 1st reading (195 amendments) (26 Sept 2006) ⇒ **"EP"**
 - 2nd reading ?

Council

- Working Parties on Environment (WPE) (23 sessions since Nov 2005)
- Environment Council of the Union
 - Common position (**end April 2007**) ⇒ **"Council"**
 - 2nd reading ?

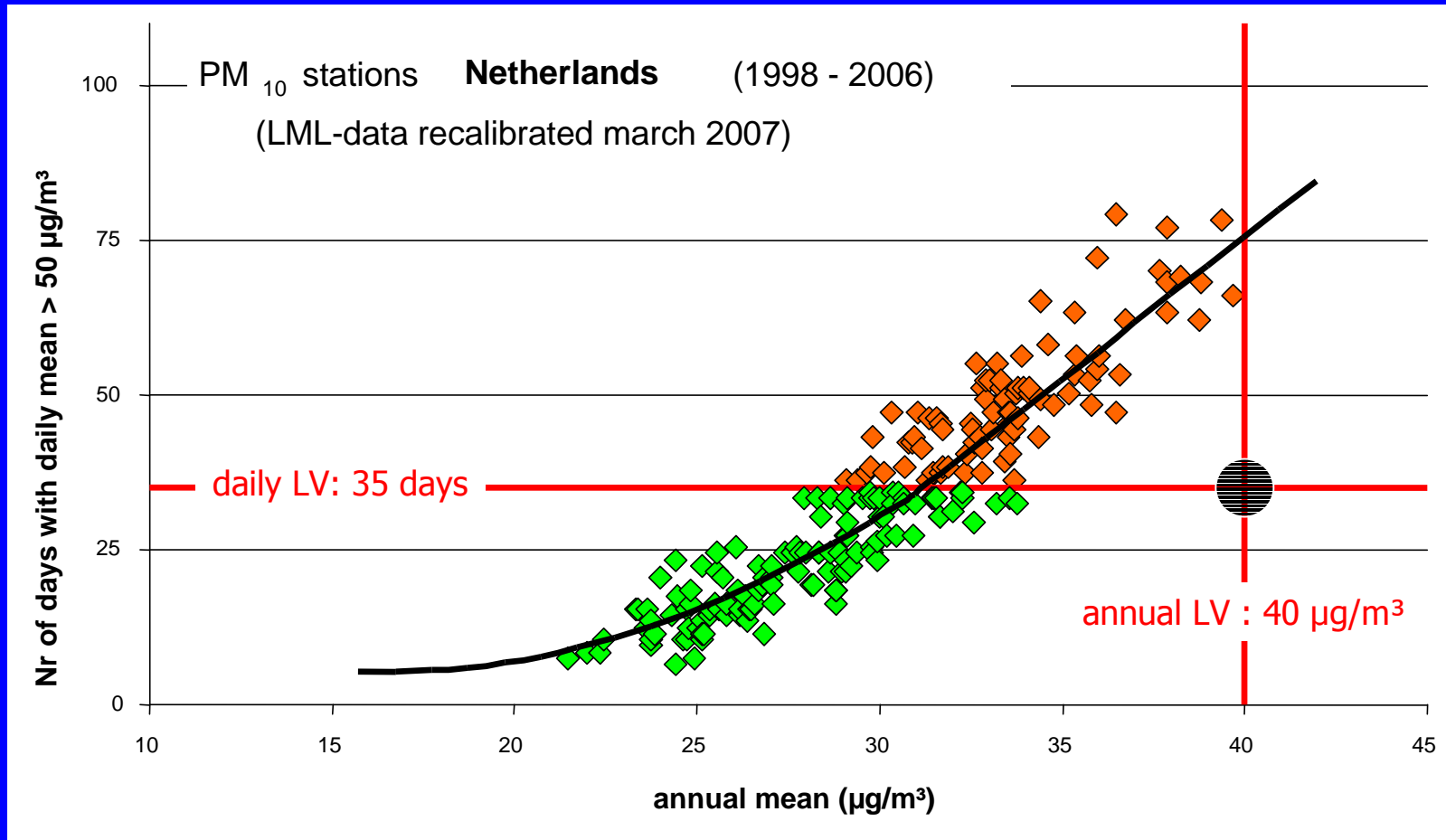
Conciliation ? Council and EP

3rd readings ? in Council and EP

The new CAFE directive

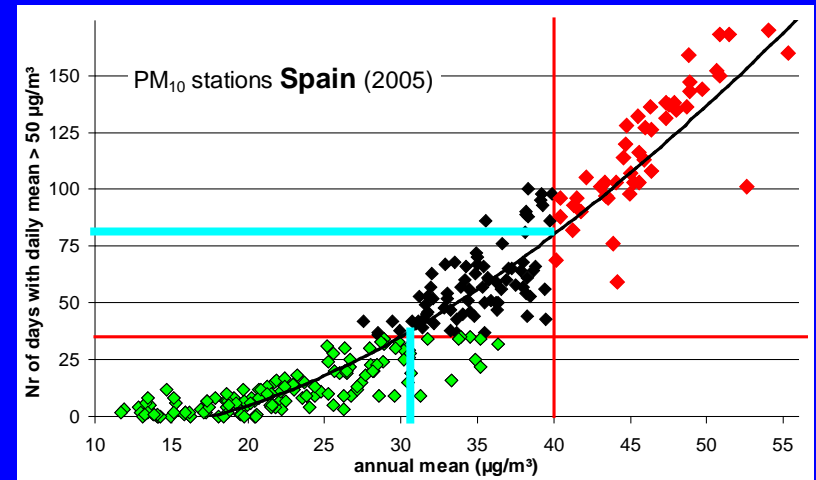
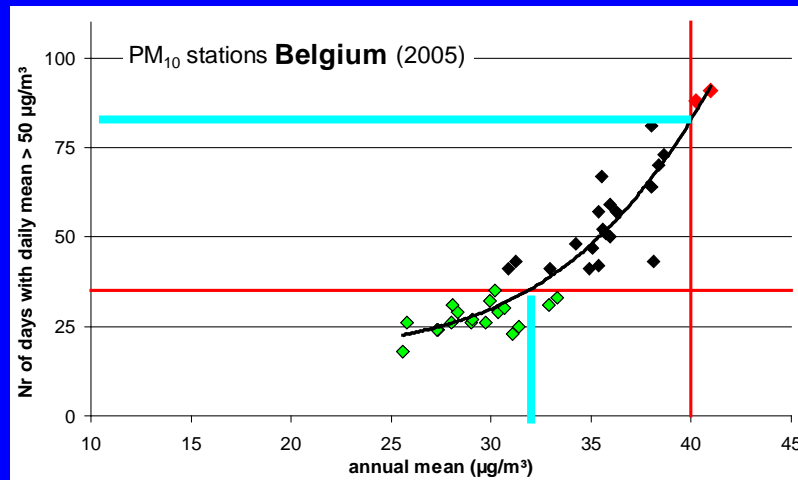
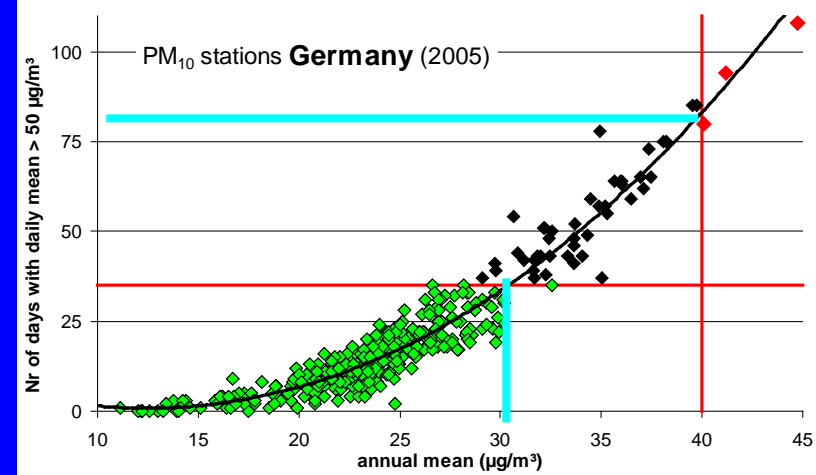
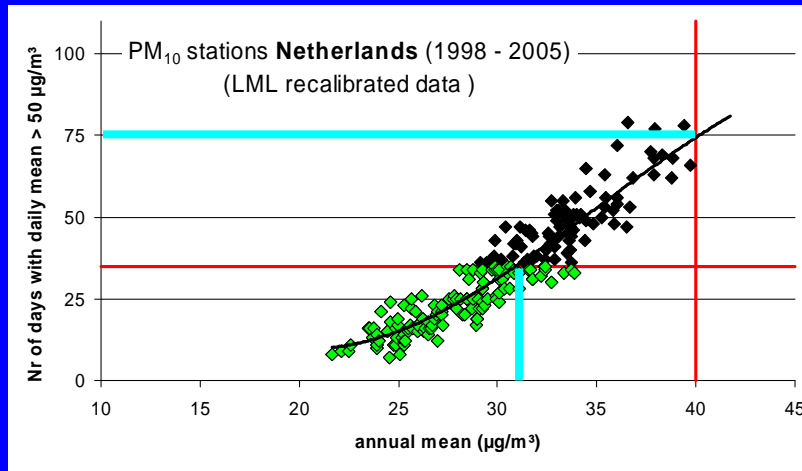
- genesis
- **PM₁₀**
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PM₁₀ Netherlands 1998 - 2006 (recalibrated)



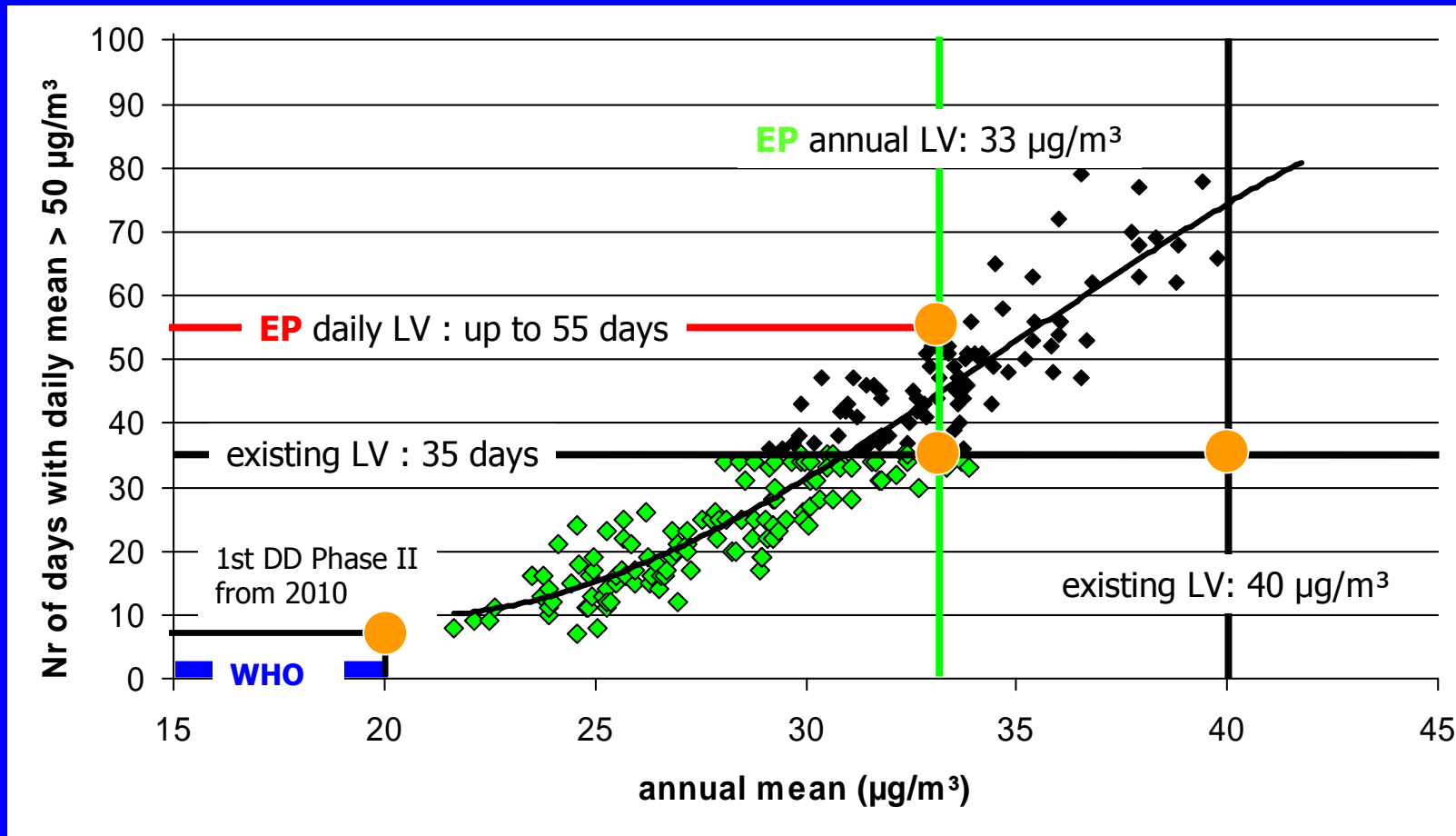
Source: RIVM report 680708001/2007 (Beijk et al, March 2007)

PM₁₀: compliance with Limit Values (2005)



Source: AIRBASE (EEA) query 13/3/2007

EP : new PM₁₀ Limit Values from 2010



Source of data: PM₁₀ stations in the Netherlands 1998-2006 (recalibrated data - RIVM report 680708001/2007)

The new CAFE directive

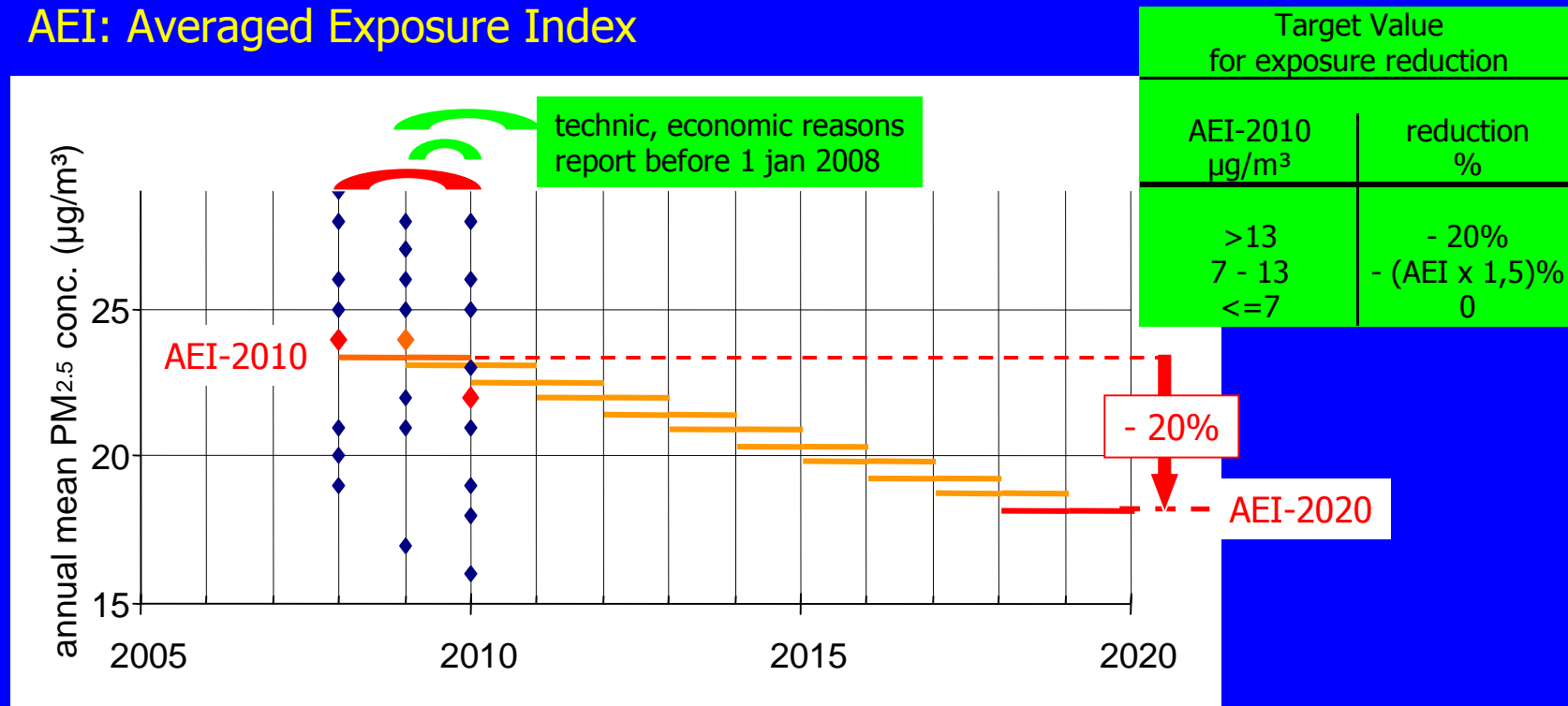
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PM_{2.5}

- **Rural background measuring station**
 - “EMEP”-like station: 1 per 100 000 km² (e.g. NL + BE + NRWF)
 - annual mean of total PM_{2.5} mass concentration
 - annual mean of chemical speciation concentrations :
EC, OC, SO₄²⁻, NO₃⁻, NH₄⁺, Na⁺, K⁺, Ca²⁺, Mg²⁺, Cl⁻
- **TV / LV to protect human health throughout all zones**
 - TV: “*not entailing disproportionate costs*”:
annual mean 25 (EP: 20) µg/m³ on 1 January 2010
 - LV: annual mean 25 (EP: 20) µg/m³ on 1 January 2015
- **TV for exposure reduction**
 - 20% urban background exposure reduction in 2020
 - review in 2013 with view to make legally binding obligation (LV?)
 - latest scientific knowledge (WHO)
 - air quality and reduction potentials in MS
 - revision of NECD (NECPI WG)
 - implementing Community at source measures

PM_{2.5} Target Value for reduction of national exposure

AEI: Averaged Exposure Index



AEI: 3 year running average of annual means in all "urban background" stations in the whole MS
 "urban background" : in urban areas representative of exposure of general urban population
 (in AIRBASE : urban & suburban background)

min nr of urban background stations:

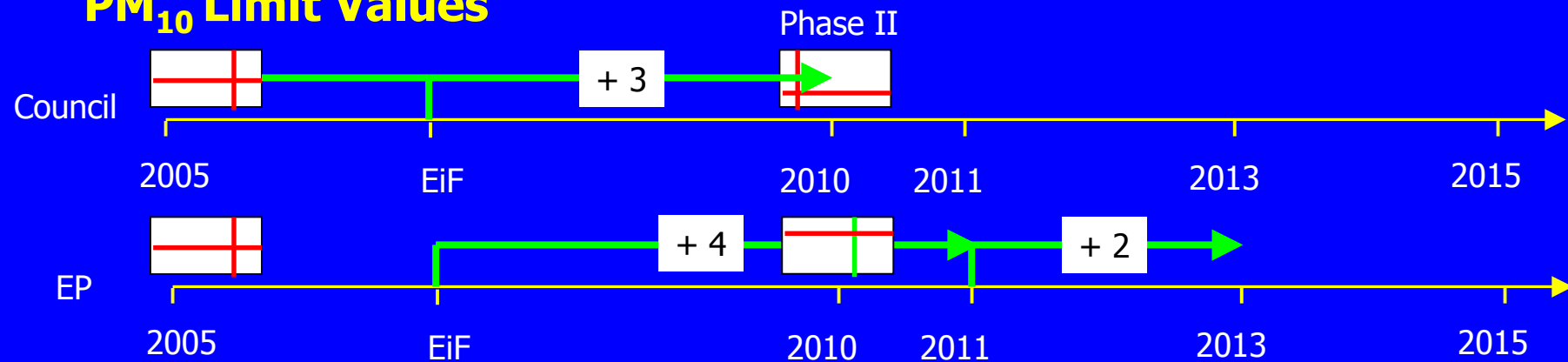
1 for every million citizens (sum of people living in cities with more than 100 000 people)

The new CAFE directive

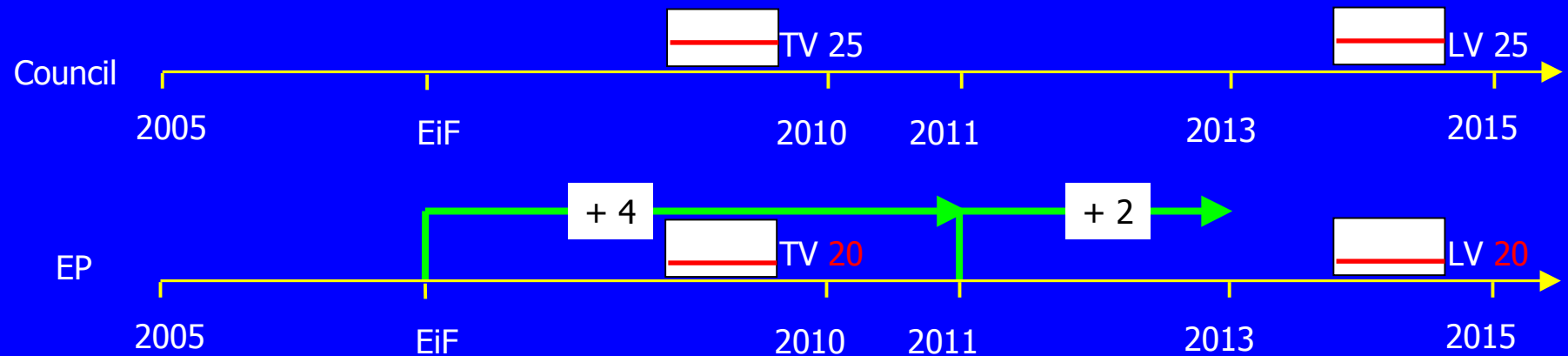
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Postponement of PM deadlines

PM₁₀ Limit Values

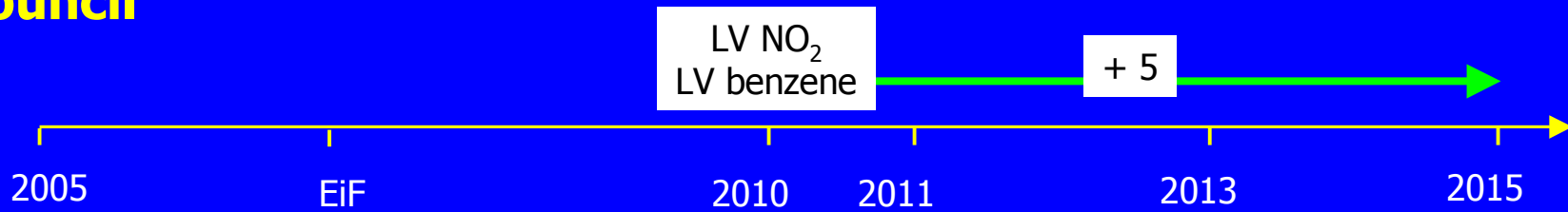


PM_{2.5} Target and Limit values

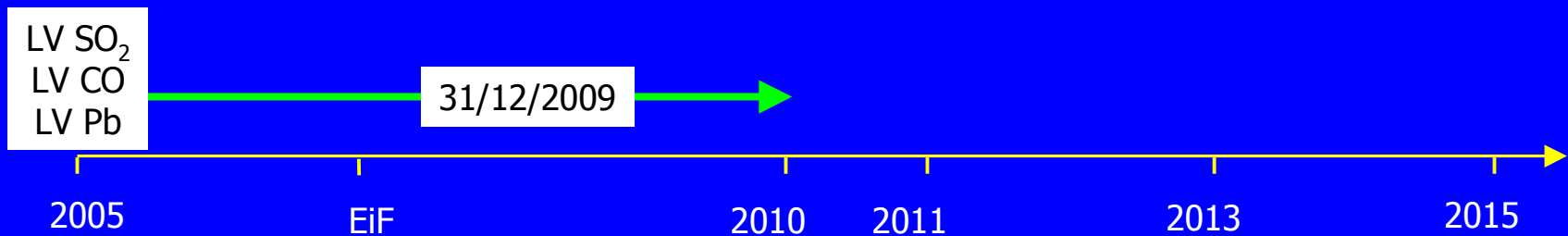
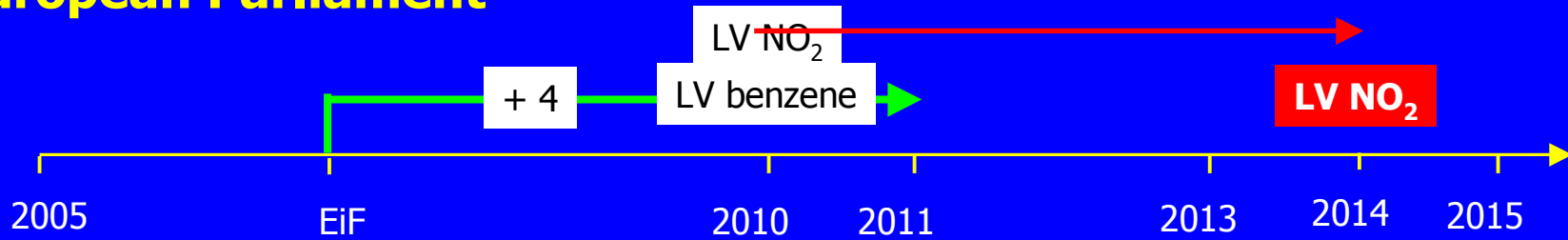


Postponement of non-PM deadlines

Council



European Parliament



Conditions for postponement of deadlines

- **NO₂ EP: moved without conditions to 2014 for all zones**
- **NO₂, benzene**
 - EP: all appropriate measures taken at national, regional and local level
 - **Air Quality Plan**
- **PM₁₀ (EP: also PM2.5)**
 - postponement must be due to
 - site specific dispersion characteristics
 - adverse climate conditions
 - transboundary contributions
 - EP: all appropriate measures taken at national, regional and local level
 - **Air Quality Plan**

Air Quality Plan

- analysis of the situation + proposed measures
- how will conformity be reached before the new deadline
- efforts done in the field of 13 EU directives

The new CAFE directive

- genesis
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- $PM_{2.5}$
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- **contributions from natural sources**
 - Community at source measures
 - attainability of current PM_{10} LV in cities

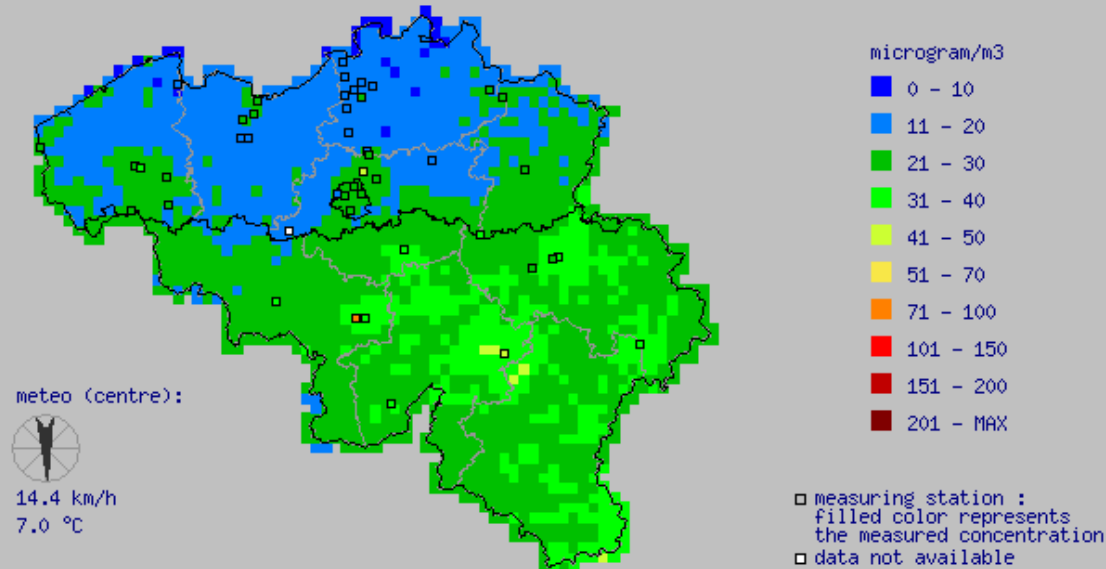
Contributions (EP: "emissions") from natural sources

- Definition:
 - Volcanic eruptions
 - seismic and geothermal activities
 - wild-land fires (EP: "unintentional outdoor fires")
 - high-wind events
 - sea sprays (EP: "sea salt")
 - or atmospheric resuspension or transport of natural particles from dry (EP arid) regions
- Article 20:
 - list of zones where exceedances of Limit Values (EP: and Target Values) are attributable to natural sources
+ evidence demonstrating attributability
 - then "**COM will not consider them as an exceedance for the purpose of this directive**"
 - COM will publish guidelines (WG)

Natural source : Sahara dust

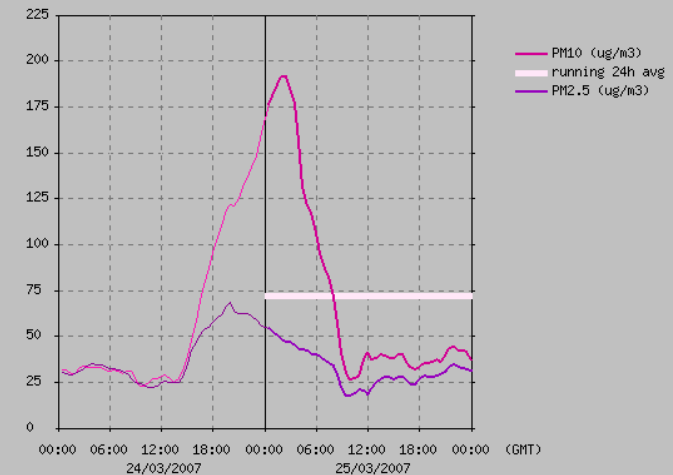
atmospheric re-suspension or transport of natural particles from dry regions

PM10 (1-hour average) measurements on Saturday 24/03/2007 : situation at 12h00 (UT)



Saturday 24 March -
Sunday 25 March 2007

evolution of 1/2 hour PM measurements :
41R001 (Sint-Jans-Molenbeek)



Time and duration

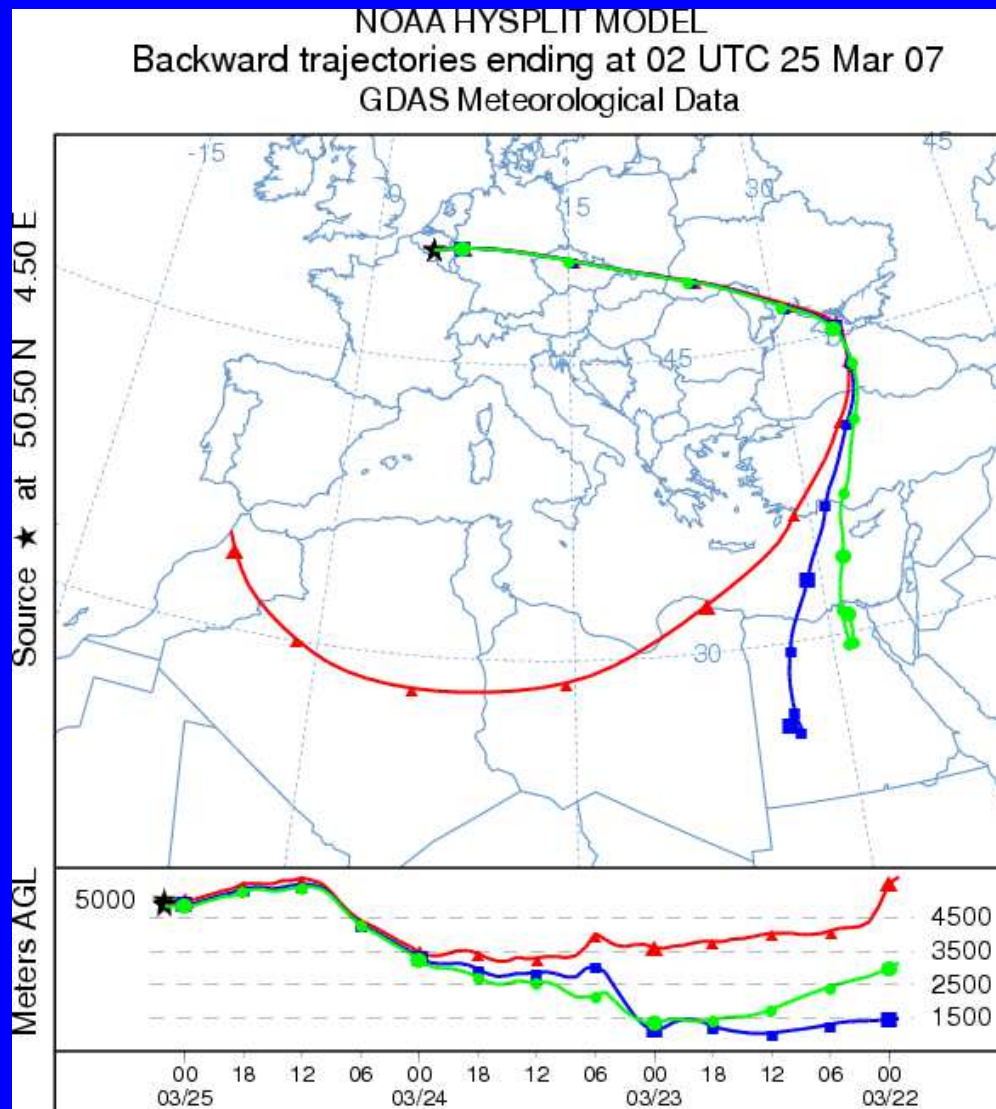
backtrajectories and track of transit in other countries

$PM_{2.5}/PM_{10} = 0.2$ (normally 0.6-0.8)

$PM_{10}\text{-FDMS}/PM_{10}\text{-TEOM50} = 1$ (no volatile aerosol)

chemical analysis of PM_{10} (Si)

Back trajectories ending at 25 March 2007 02 h UTC in Brussels



<http://www.arl.noaa.gov/ready/hysplit4.html>



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Community at source measures

- EP

new Annex XVII : enter into force by 1 January 2010 of:

- inclusion of 20 - 50 MWatt combustion plants in IPPC Directive (96/61/EC) Integrated Pollution Prevention and Control
- Euro 5/6 new passenger cars standards for PM / NO_x
- EURO VI for heavy duty vehicles
- new standards for domestic heating installations
- reduce ship emissions

if not in force: postponement for PM₁₀ and PM_{2.5} till 2012

- a group of MEMBER STATES insist on Community measures

Euro 5/6 Regulation adopted by Council & EP (april 2007):

- Euro 5 : PM from 1/9/2009
- Euro 6: NOx from 1/9/2014

- COMMISSION

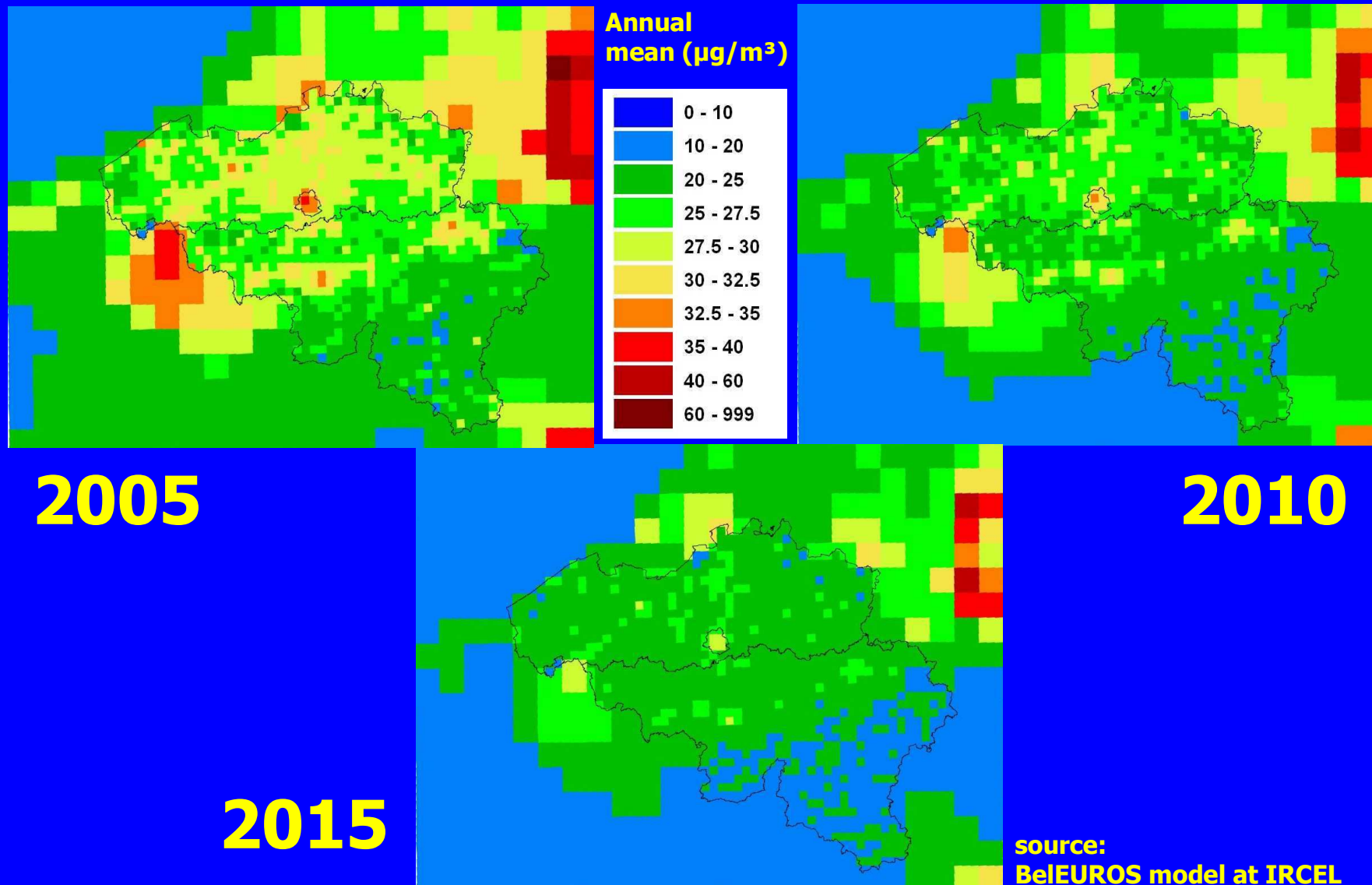
Art 35: *This Directive is addressed to the Member State*

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- **attainability of current PM₁₀ LV in cities**

PM₁₀ in Belgium : attainment analysis 2010 - 2015

CLE emission scenario with meteo 2002



Attainability of PM₁₀ limit values in cities (BE)

Year	urban background ¹ annual mean $\mu\text{g}/\text{m}^3$	street increment (narrow busy streets) ² $\mu\text{g}/\text{m}^3$	annual mean (narrow busy streets) $\mu\text{g}/\text{m}^3$	# of days lim value $>50 \mu\text{g}/\text{m}^3$
2005	30 - 35	10	40 - 45	73 - 94
2010	27.5 - 32.5	10	37.5 - 42.5	62 - 83
2015	25 - 30	5	30 - 35	31 - 52

(¹) BeIEUROS model at IRCEL

(²) Air pollution at street level, EEA technical report 1/2006

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- **lunch**

Thank you

URL's

CAFE directive: Interinstitutional file 2005/0183(COD)

EP: procedure file + Text adopted in plenary P6_TA(2006)0362

<http://www.europarl.europa.eu/oeil/file.jsp?id=5287672>

Council (Commission): procedure file

http://ec.europa.eu/prelex/detail_dossier_real.cfm?CL=en&DosId=193497

AIRBASE (ETC/ACC)

<http://air-climate.eionet.europa.eu/databases/airbase/>

IRCEL (Belgian Interregional Environment Agency)

<http://www.irceline.be>