FACILITATING RESPONSIBLE USE OF MODELLING IN IMPLEMENTATION OF EU AIR QUALITY DIRECTIVES

AN EU PERSPECTIVE

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HARMO13, Paris, June 2009

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Outline

- **Restructuring in the European Commission**
- **AQ Implementation frame: Directive 2008/50/EC**
  - Assessment
  - Management
- **Activities and challenges (related to modelling)**
  - Time extension & enforcement
  - Workshop NO2 in April 2010
  - Guidance, Implementing Provisions on Reporting
  - FAIRMODE and GMES
- **Perspectives**

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Restructuring in the Commission

- **In 2010 new Commission**
  - Janez Potočnik new ENV Commissioner (former RTD)
  - DG ENV split into ENV and CLIMA
- **Old Clean Air and Transport unit split…**
  - ENV part united with industrial emissions, national emission ceilings,E-PRTR…
  - Name: Industrial emissions (to be changed soon)
  - Head of Unit : Marianne Wenning
- **Synergies – related work on emissions and Air Quality reunited**
  - Continuous work to exploit commonalities with climate change

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2002: 6th Environmental Action Programme

'achieving levels of air quality that do not give rise to <u>significant negative impacts on and risks to human health</u> and the environment';

(Art 7.1. of 6th EAP)

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EU Air Quality – Objectives, management

- **Minimum set at EU level**
  - ➔ Limit values: to be complied everywhere
  - ➔ New PM2.5 : exposure reduction target

- **Everywhere: implementation of EU measures, also relevant national measures**
- **Further action triggered where needed at lower level**
  - ➔ Requirement to prepare **Air Quality Plan**
- **Member States free to choose at which governance level problem is addressed and which measures are chosen**

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EU Air Quality – Implementation

- **Minimum common requirements for assessment**
  - ➔ Comparable level of protection, level playing field
  - ➔ Member States often go beyond as better information enables more effective measures or to cover local objectives
- **Planning and fast timing of measures essential**
- **Exchange of experience very important**
- **Public acceptance often needed**

- **AQ Directive includes provisions for public info**

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Modelling in…

- **Policy development**
  - ➔ Identify risk, set objectives
  - ➔ Identify, develop Community measures
  - ➔ integrated assessment, cost/benefit analysis
  - ➔ Research
- **Implementation**
  - ➔ Concentration levels
    - Assessment/nowcasting/forecasting
  - ➔ AQ Management
    - Spatial planning: **Environmental Impact Assessment**
    - Source apportionment
    - Measures, integrated assessment
  - ➔ Public information, Input to services, Enforcement
- **Multiple actors, Integration of policies, costly action**

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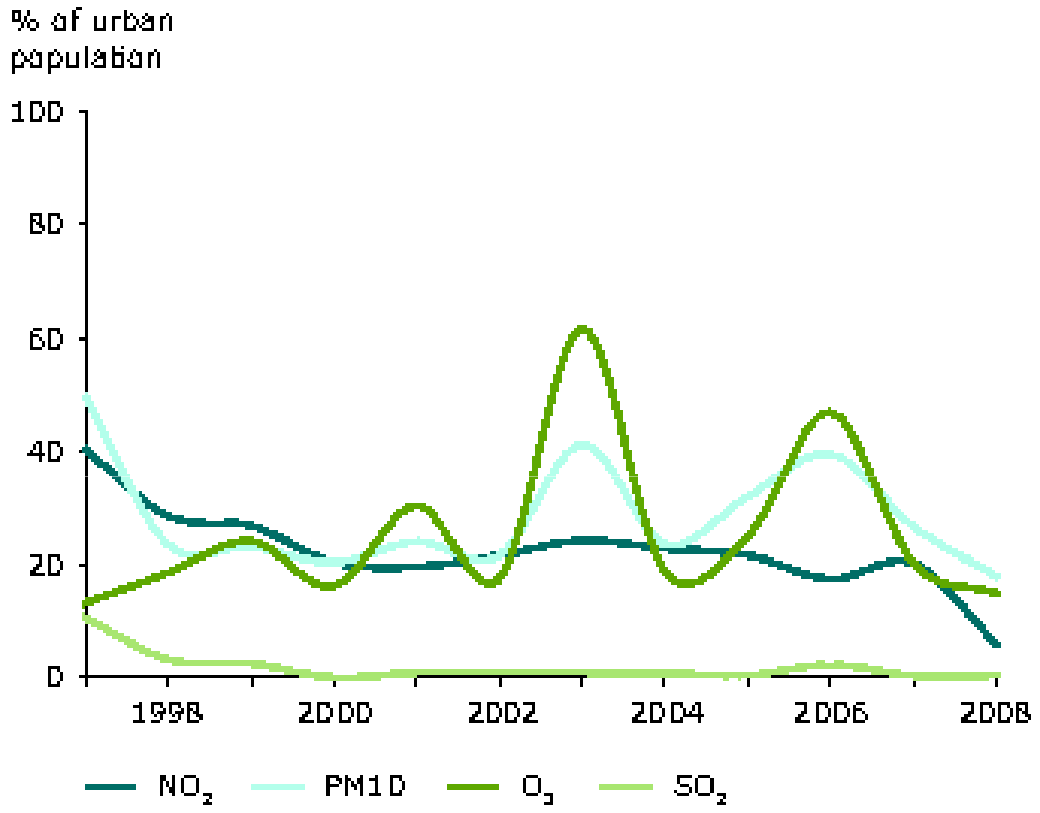
Percentage of urban population resident in areas in exceedance of current limit values (EEA CSI-004)



By EEA ETC/ACC, draft

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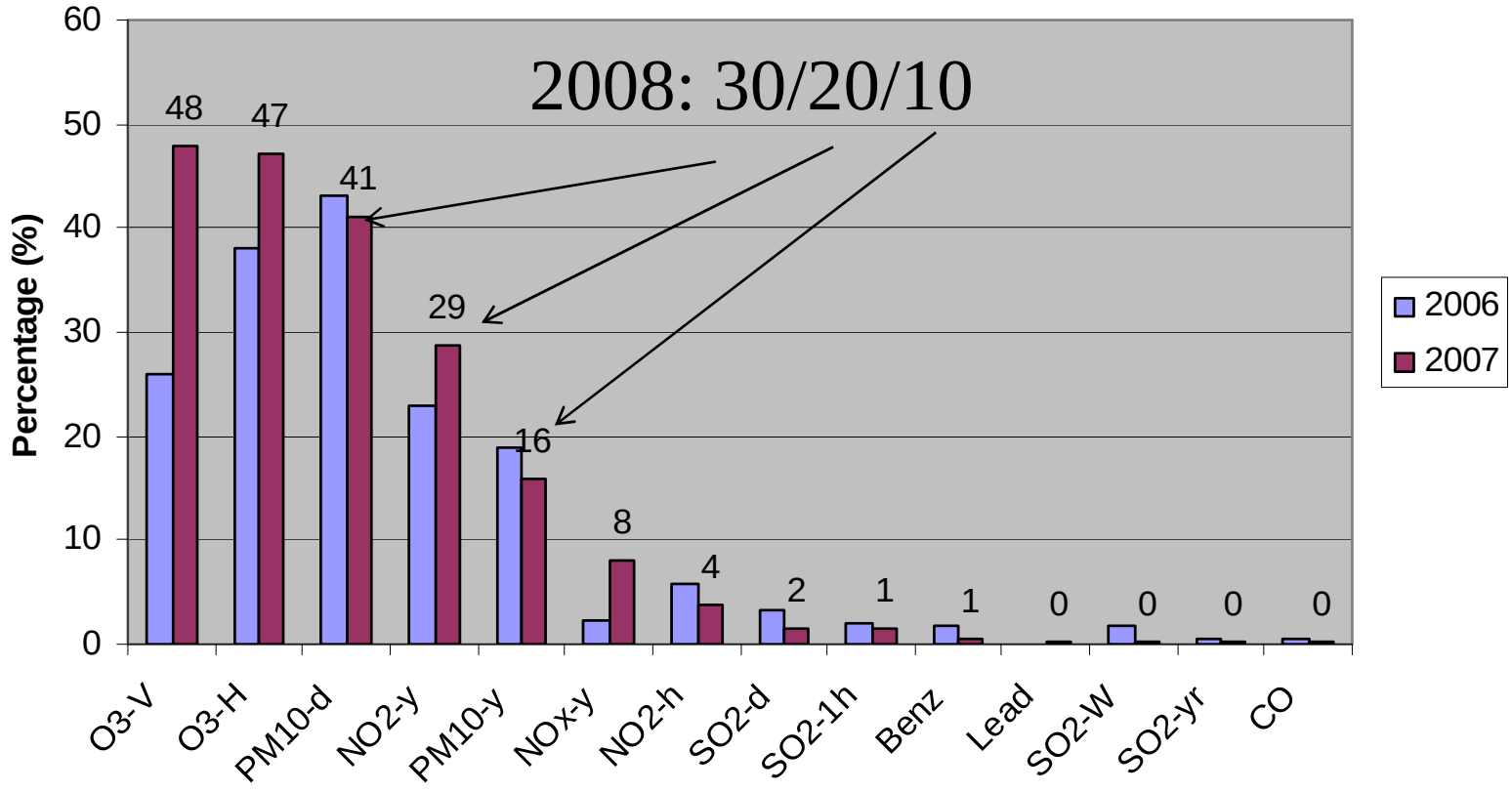
Percentage of zones in exceedance 2006-2008 (Source: annual report, Q461)



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Principal implementation activities

- **Addressing PM10 compliance**
  - ➔ AQ plans developed/updated throughout EU
  - ➔ Application of 2008/50/EC Art 22 (time extension up to June 2011) notified by almost all Member States
    - Most applications objected to by the Commission, arguments accepted
  - ➔ Infringement cases against 21 Member States
- **NO2 annual limit value : widespread problem**
  - ➔ Wave of Art 22 (time extension max. up to 2015) applications expected in autumn 2010
- **Support the efforts of Member states by**
  - ➔ Exchange of practices (AQ management database)
  - ➔ Reporting and information exchange
  - ➔ Guidance documents
  - ➔ Meetings and Workshops

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NO2 Workshop 14-15 April 2010

- **Addressing the competent authorities**
  - ➔ Facilitate exchange of latest information and best practices in relation to abatement measures taken to comply with NO2 limit value
  - ➔ Support preparation of quality notifications under Art.22
- **Relevant conclusions**
  - ➔ Modelling a necessary tool for management
  - ➔ New emission factors for diesel – include at all scales!
  - ➔ Local scale : issue of primary NO2 emissions
  - ➔ NOx to NO2 conversion – getting it right
- **Presentations, minutes available on CIRCA**
  - ➔ http://circa.europa.eu/Public/irc/env/ambient/library?l=/events/workshop_14-15_2010&vm=detailed&sb=Title

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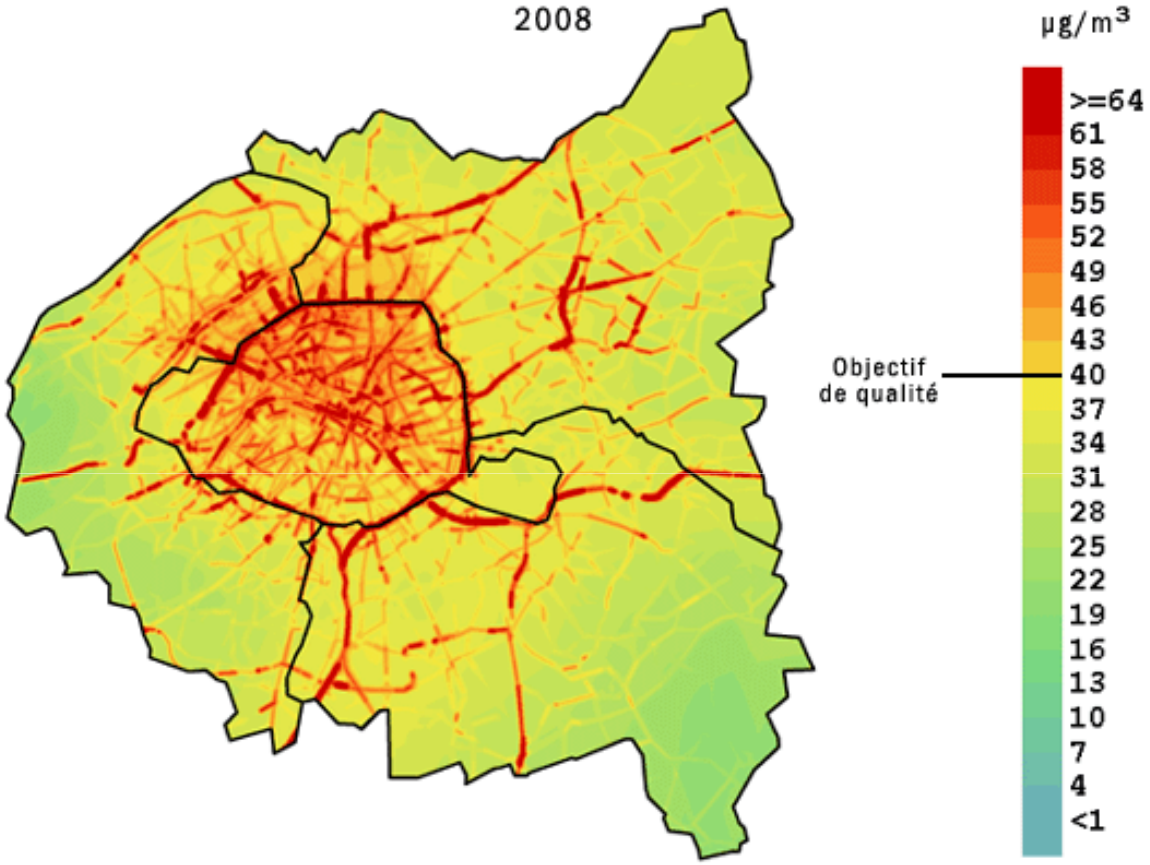
Fit for purpose (I)

- **Use in assessment under EU legislation**
  - ➔ Respect Data Quality objectives, validate through measurements relevant to scale of the model
    - Physical consistency of model important, but even more is the comparability with meas. reference method
  - ➔ When using to determine natural contributions, winter sanding, positive identification and quantification of individual events required
  - ➔ Interpretation is crucial; e.g. limitations of scale, model or model input must be acknowledged by the user

Modelled: NO2 annual concentration



Source: airparif

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Fit for purpose (II)

- **Use in AQ management under EU legislation**
  - ➔ No specific requirements in the Directive
    - AQ plans also in public domain: information must consistent with assessment information
  - ➔ Different uses may require different performance
  - ➔ Critical dependence on input data such as emissions, again issues of scale
  - ➔ Dynamic performance: right data for right reasons; pivotal in projection work
  - ➔ Transferability: why models generally perform best in their original setting?
  - ➔ Framing and documentation
    - ability to use external work (e.g. nesting) and compare with other results

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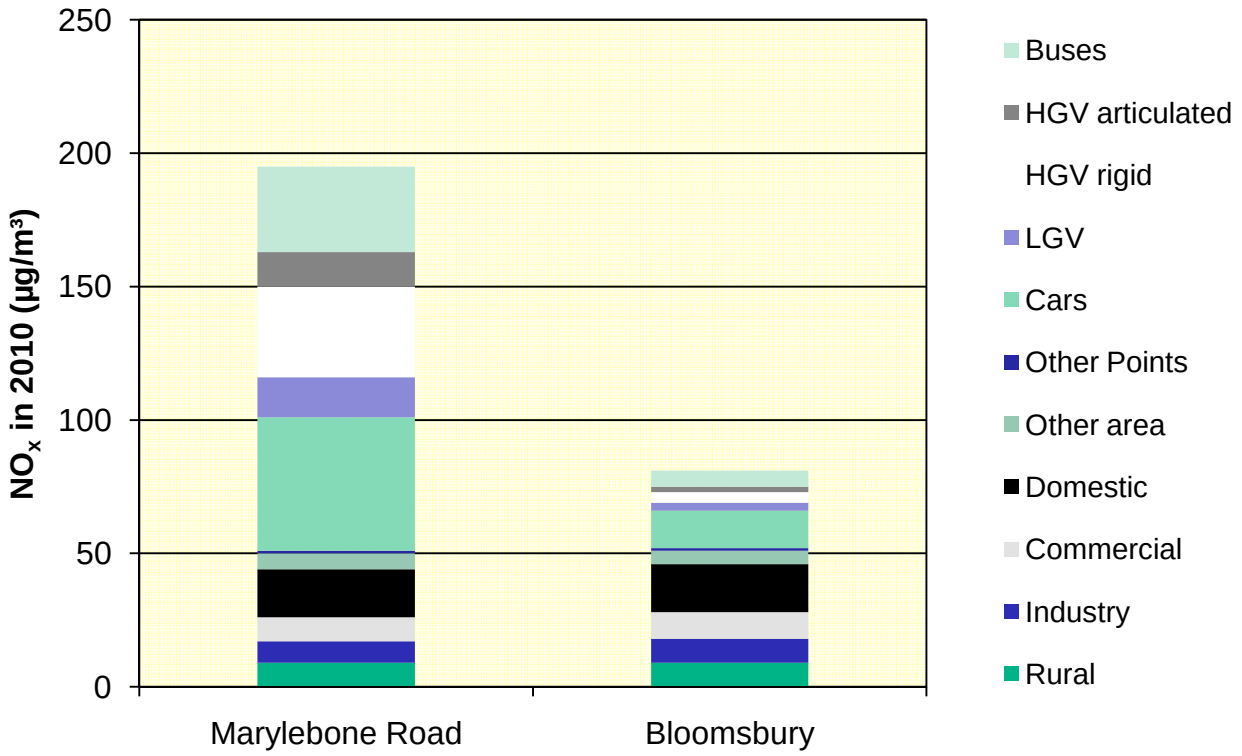
Modelled: Source apportionment, NO2, London



Source: DEFRA

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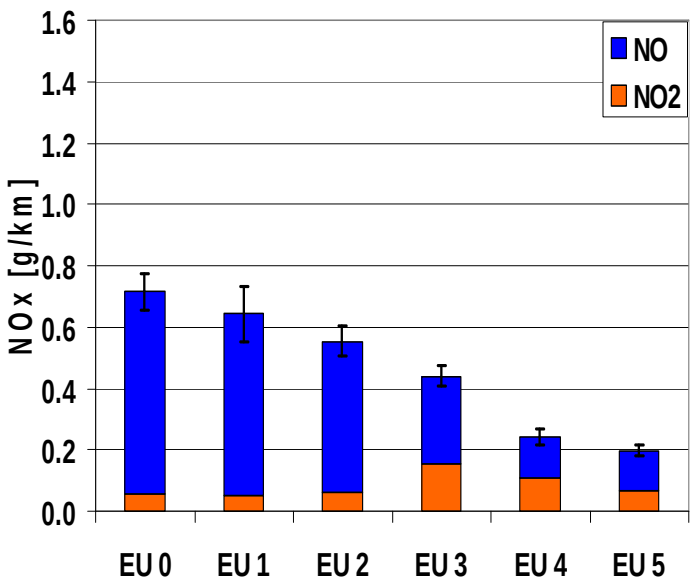
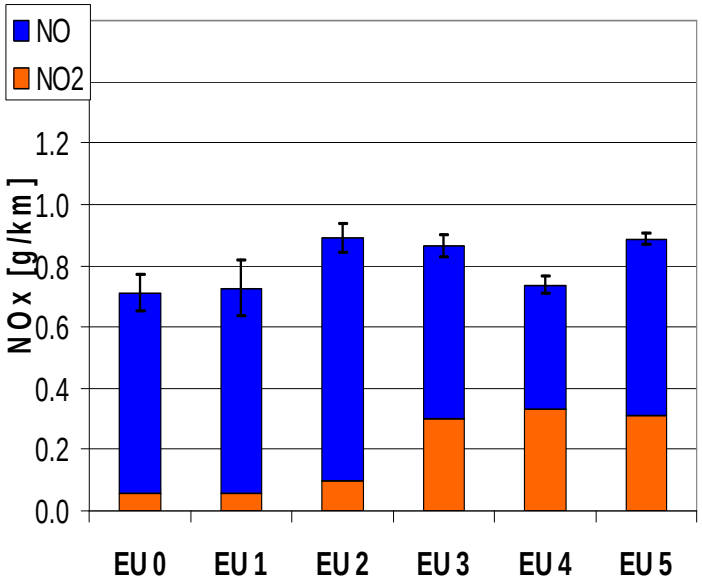
Emission coeficients, diesel

Diesel NEDC



Diesel CADC (hot start)



Source: S.Hausberger , TU Graz

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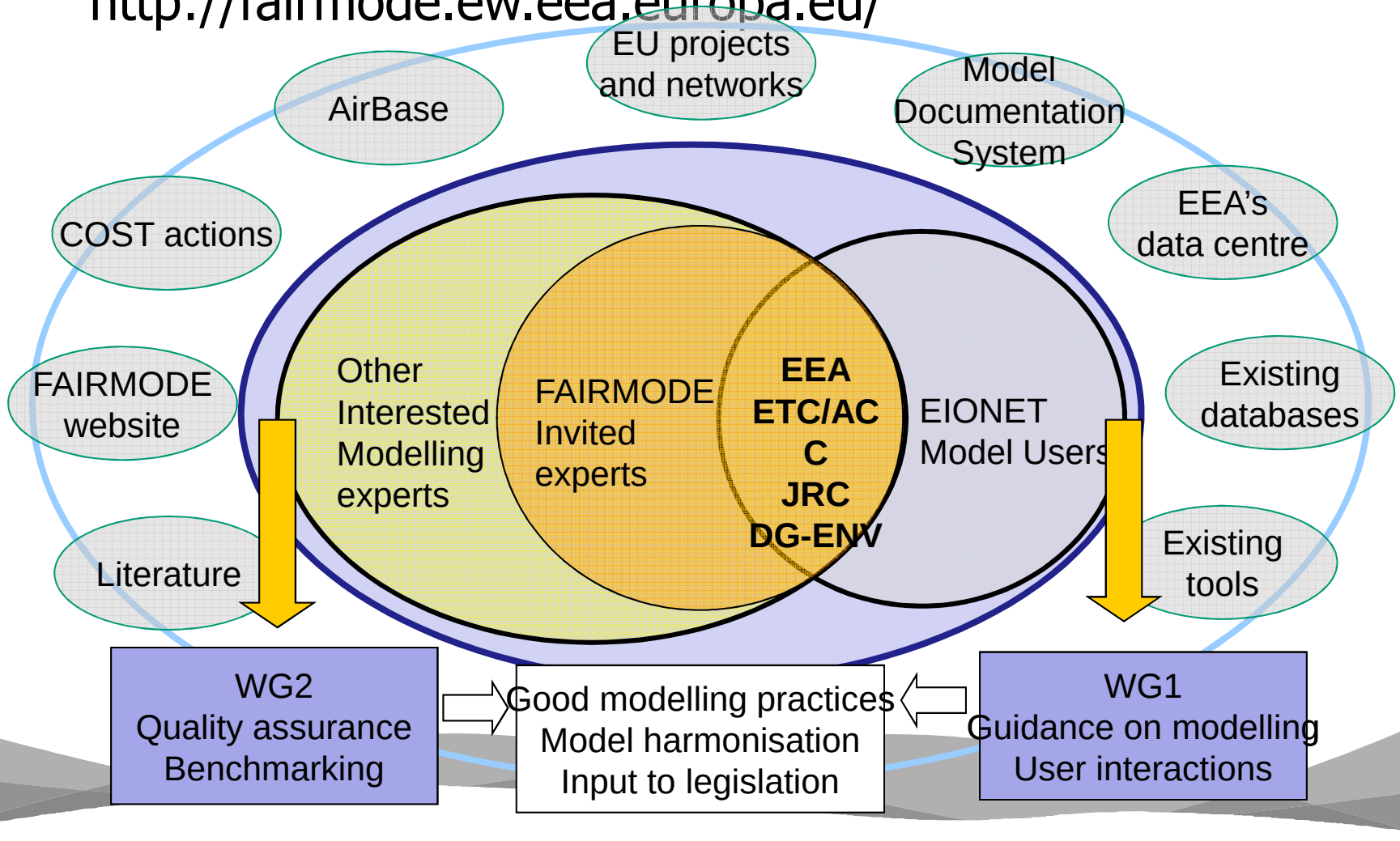
FAIRMODE

http://fairmode.ew.eea.europa.eu/



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Terms of reference of FAIRMODE*

- To provide a permanent European forum for AQ modellers and model users
- To produce guidance on the use of air quality models for the purposes of implementation of the AQ Directive and in preparation for its revision
- To study and set-up a system (protocols and tools) for quality assurance and continuous improvements of AQ models
- To make recommendations and promote further research in the field of AQ modelling
- **As agreed at the 2˚plenary in Nov 2009 in Ispra*
- **3rd Plenary – Planned for 15-17 Sept.2010, Oslo**

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GMES

- **User oriented operational service**
- **Space, in-situ, data assimilation and modelling**

- **MACC project to cover ‘core service’**
  - ➔ www.gmes-atmosphere.eu
  - ➔ Free and accessible products at EU scale
    - Eye on Earth EEA/Microsoft uses MACC product
- **‘Downstream services’ already starting**
  - ➔ PASODOBLE
- **Up to 2014 pre-operational, financed under FP7**

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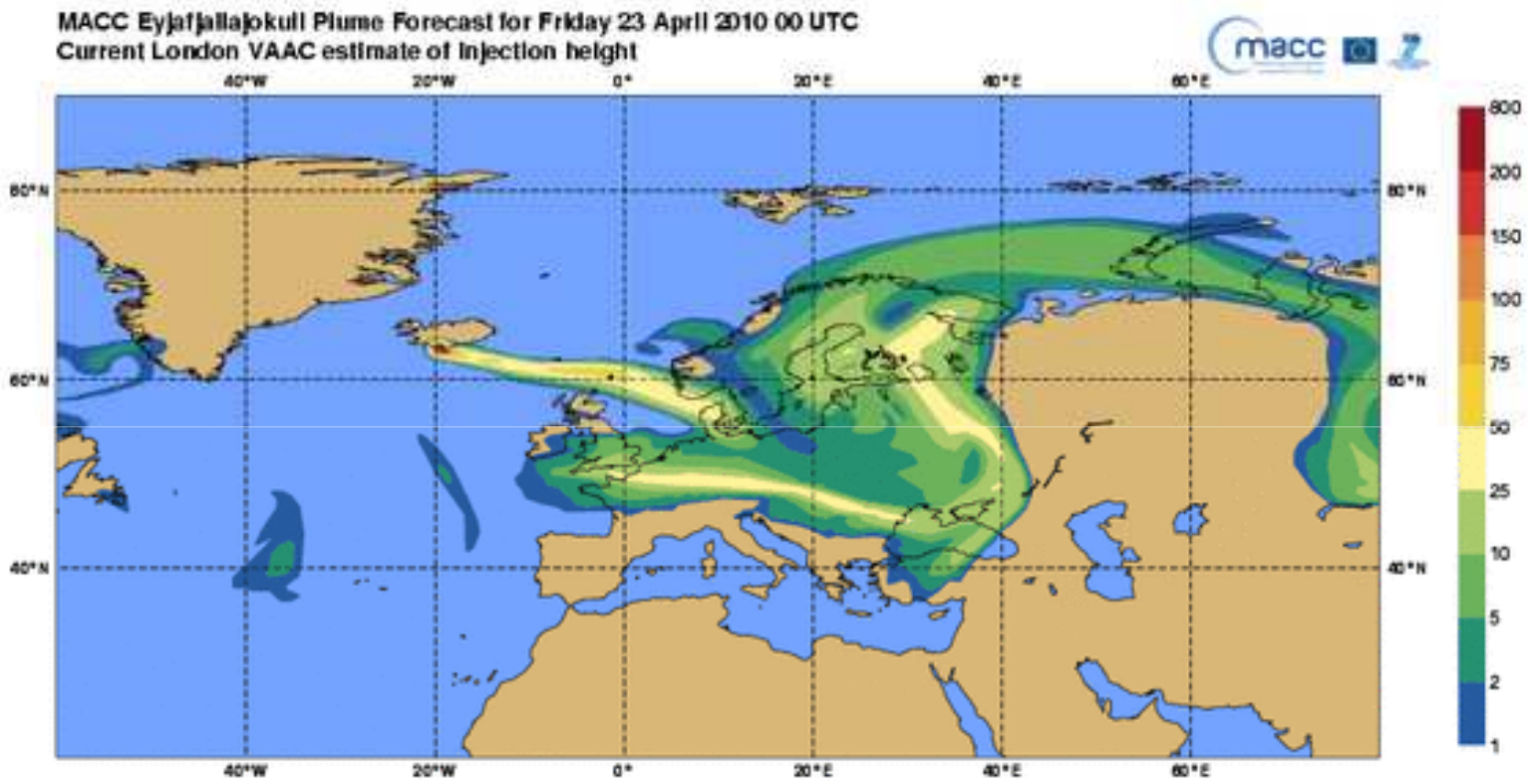
MACC – forecasting the volcanic plume



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Implementing Provisions on Reporting

- To replace all existing reporting under AQ Directives
  - ➔ Assessment and management, also Exchange of Information
- Faster availability (Near Real Time)
- Spatial dimension of AQ
  - ➔ Establishing vehicle for exchange of modelling information
- Multiple use, link assessment/management
- Use/compilations also covered in IPR
  - ➔ Current Airbase for monitoring, in future expansion to all assessment modes considered
- To be discussed at AQ Committee on 7 June 2010
  - ➔ Adopted still in 2010

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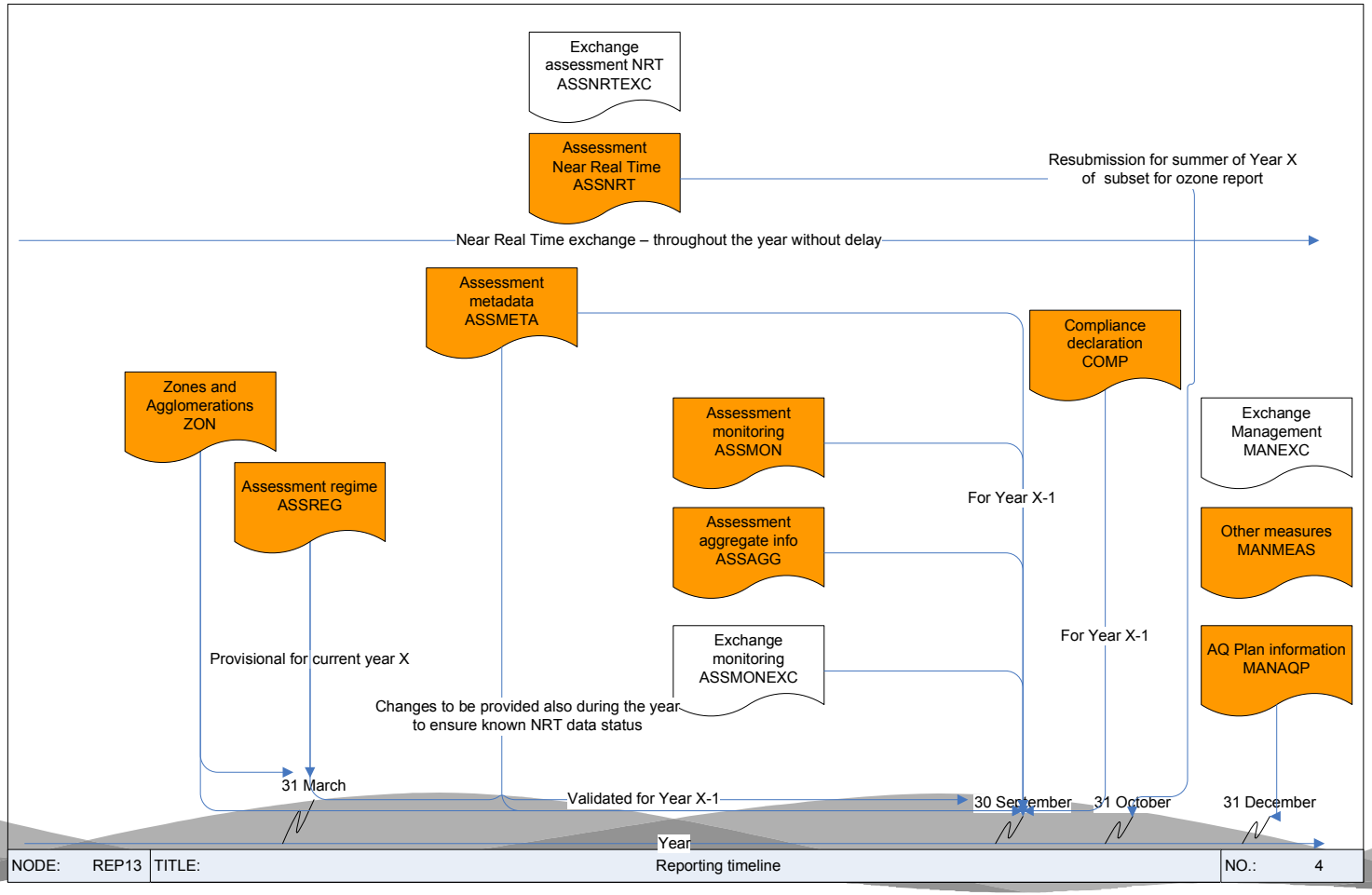
Implementing Provisions on Reporting



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In summary…

- Modelling continuously increasing in importance as integral part of AQ assessment and management
  - ➔ Increased liability; transparency and interpretation required!
  - ➔ Critical appraisal of all inputs and the methodology required at all times
- GMES Atmosphere major development at EU level; products to be used directly or as input to further modelling by the Member states
- FAIRMODE is the principal forum working on responsible use of modelling
  - ➔ Support users and developers, provides recommendations to the Commission
  - ➔ Scrutinize new EU products such as of GMES, where appropriate promote common solutions
  - ➔ Feedback by the Community encouraged!
- Revision in 2013 to reflect modelling state-of-the art in updated provisions of EU legislation

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Thank you

http://ec.europa.eu/environment/air/index.htm

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Time extension - conditions

- All appropriate measures must have been taken before the original attainment date
- The exceedance must be due to site-specific dispersion characteristics, adverse climatic conditions or transboundary contributions
- The air quality plan must demonstrate that compliance will be achieved at the expiry of the exemption period

Assessment by Commission confirmed 'subsidiarity principle' embedded in the Directive

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