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Towards a modelling network in support of the new Air Quality Directive

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Proposal for a new AQD

- New Air Quality Directive (AQD - COM(2005) 447 final), proposed by the European Parliament and the Council on ambient air quality and cleaner air for Europe
- The new proposed Directive and the corresponding amendments call for:
 - ◆ increased modelling use in air quality assessment
 - ◆ increased cooperation and exchange of information, problems and ideas between member states in a systematic manner that takes full advantage of modern electronic means of communication and data transfer



Direct quotes from the proposed AQD (1/2)

- **p.6** “*permit a greater use of modelling to assess AQ*” in particular “*if fewer than five years’ monitoring data are available*” (p.19)
- Also, in the proposed amendments of the new AQD proposal (P6_TA-PROV(2006)0362 - Amendment 16) “*Those fixed measurements shall be supplemented by modelling techniques*”
- Regarding exchange of information and synergy between member states, we read: “*moving towards a shared information system and electronic reporting*” (p.6)



Direct quotes from the proposed AQD (2/2)

- *“a common approach to the assessment of AQ” (p. 10)*
- *“standardised measurement techniques and common criteria” (p. 10)*
- *“Member States should consult with one another” (p. 12)*
- *“It is necessary for the member states to collect exchange and disseminate AQ information” (p. 12)*
- *“data should be made available to the Commission in a standardised form” (p. 12)*
- *“It is necessary to adapt procedures for data provision, assessment and reporting of AQ to enable electronic means and the internet to be used as the main tools to make information available” (p. 12)*



The use and limitations of modelling in Air Quality Management and Assessment

AQ Modelling	
Use	Limitations
<ul style="list-style-type: none">* Assessing potential environmental impacts of development plans* Evaluate potential future policies* Examine compliance with long-term standards* Mapping* Identify pollution sources* Quantify air pollution patterns in space and time	<ul style="list-style-type: none">* Inaccurate/unrealistic predictions* Not always easy to use* Input data not always available



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Previous and ongoing related activities

- Task Force on Measurements and Modelling
- European Intercomparison Exercises run by JRC
 - ◆ CITY-DELTA, EURO-DELTA, ...
- EEA's Model Documentation System (MDS)
- Relevant COST Actions, EUROTRAC, ACCENT
- EU funded "Air Quality assessment by monitoring and modelling for regulated pollutants in Europe" (AIR4EU) project
- Harmonisation conferences since 1992
 - ◆ Initiating meeting in JRC in 1991
 - ◆ JRC organised the one in Belgirate in 2001
 - ◆ Cambridge (June 2007)
- US-EPA Support Center for Regulatory Atmospheric Modelling



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Emerging needs for model use

Two different needs can be identified:

- ◆ Model evaluation and assessment so that suitable modelling tools can be identified for policy purposes
- ◆ Common infrastructure that will facilitate harmonised model use by regulators in all member states

Both needs have to be satisfied for an effective modelling infrastructure for EU policy use



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The ETC-ACC Modelling Network

- The EEA via the European Topic Centre on Air and Climate Change has formulated a task, in direct response to the new AQD
- Main aim of the task: the development of an **EIONET modelling network**
- Network aim: To promote the use of models in the context of **AQ assessment** by:
 - ◆ Exchanging scientific knowledge and experience which is expected to enhance awareness of model usefulness, reliability and accuracy,
 - ◆ Establishing the important role of modelling in the preparation of plans and strategies to improve urban air quality



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Detailed objectives of the Modelling Network (1/2)

- The **exchange of modelling results and maps** through suitable interfaces and electronic tools, as well as in a more conventional manner (through seminars and workshops).
- The **establishment and promotion of a common infrastructure** based on best practice for reporting and storing the information, results and maps in a standardised and harmonised manner to create an archive that will be readily available to authorities and scientists of the member states.



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Detailed objectives of the Modelling Network (2/2)

- The promote the **combination of modelling and monitoring** through data assimilation methods, a technique often used to improve model accuracy and representativity at the urban scale (AIR4EU)
- The promotion of **model validation** and **quality assurance** of model results (organisation of and participation in model validation and intercomparison exercises at national or European level). For this purpose, needs in terms of AQ assessment and model evaluation criteria will be defined at different scales (for example through benchmark tests following the relevant ACCENT activity on Model Benchmarking)



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<http://www.accent-network.org>



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Setting up a complete network

- The modelling network initiative by EEA was paralleled by a similar initiative by JRC, having a more science/research orientation
- A unified modelling network lead jointly by EEA and JRC is proposed, that will cover all stated needs
- EEA will focus more on the end-user, while JRC will emphasize more model validation and improvement
- The two activities are expected to continuously interact in a complementary manner



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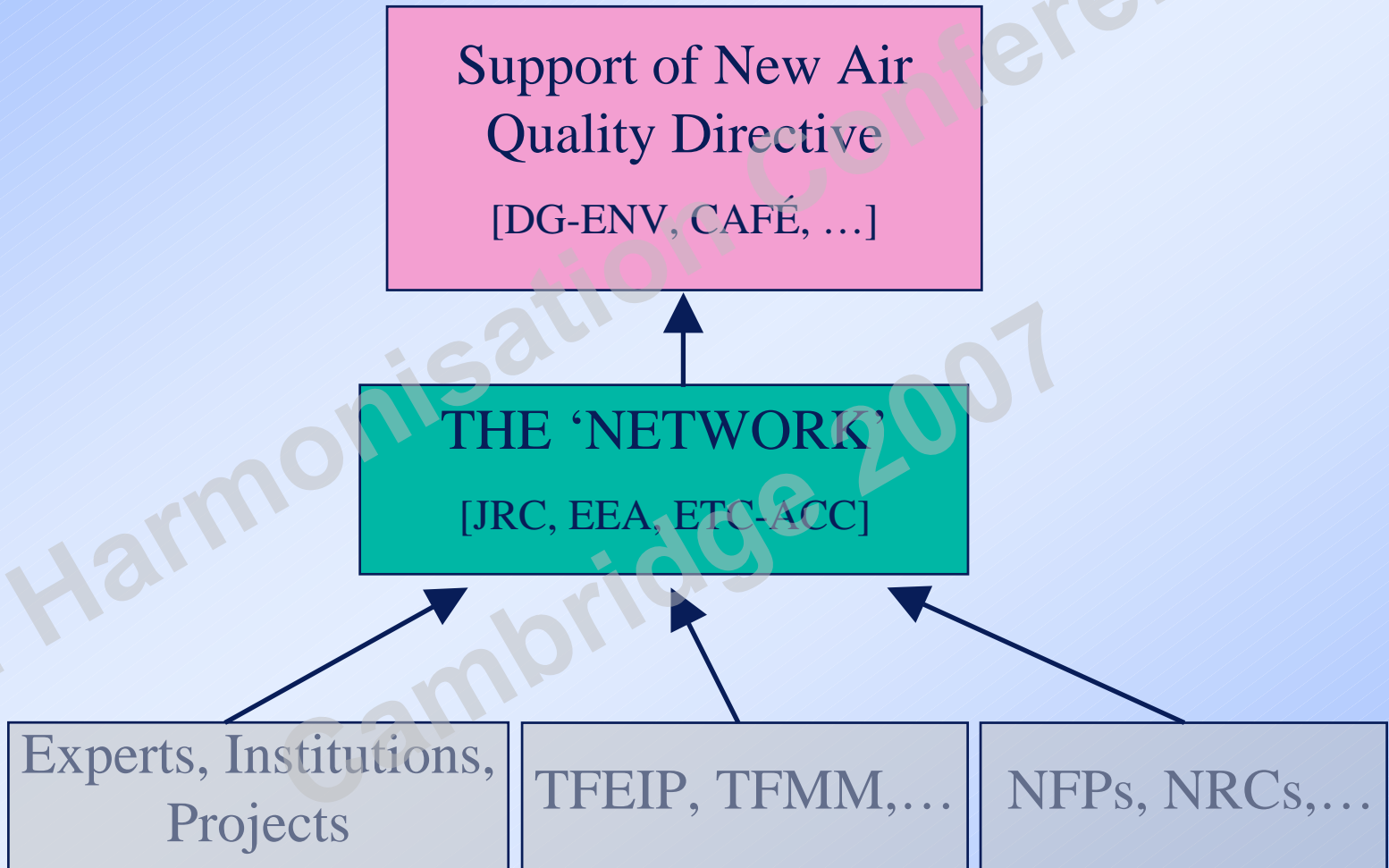
Network synthesis

- The network will be established by invitation according to a pre-selected list
- The network will consist of all countries in Europe required by legislation to report compliance with the AQD. Candidate and Accession countries will also be included
- Several stakeholders ought to be represented, both from the scientific community as well as the related authorities and legislative bodies
- Interactions between modellers and AQ managers from the various member states are considered essential
- Both end-users and modellers will be actively involved



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Who will be involved?





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Work Topics for the NETWORK:

	Topic	Lead Organisation
1	Networking and Exchange of Information (including training and education)	EEA ^[1]
2	QA/QC of models (including setting of quality objectives and standard reporting, harmonisation, intercomparisons)	JRC
3	Guidance and Documentation (including a models clearinghouse and a possible audit scheme)	JRC
4	Data and Information Exchange (including structural tools)	EEA/GMES
5	Review for compliance checking (in connection with the evaluation of the AQ Questionnaires)	EEA
6	Promote Relevant Research	JRC

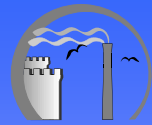
[1] EEA will provide guidance, logistic support. The EEA can not commit to finance travel expenses and per diems of EIONET participants to this activity.



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Suggested methodology (1/2)

- Establish and maintain the modelling network (network synthesis, communication tools, working document, meetings, workshops, dissemination)
- Develop/use structural tools for archiving and harmonisation (EEA's data centre, MDS, COST728 meta-database, COST728/732 Model inventory, AirBase)
- Perform a review on modelling and its application in the framework of the current legislation (guidance and example case studies, model assessment)



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Suggested methodology (2/2)

Engage in thematic activities:

- Model validation including uncertainty assessment and mapping
- Model intercomparison studies and model ensembles, e.g. a Street-Delta exercise in the steps of the “Euro-Delta” and “City-Delta” initiatives where JRC will take on the leading role
- Investigate through modelling exercises and common case studies:
 - ◆ Data assimilation and representativity
 - ◆ Scenarios, abatement and source apportionment with the use of models
 - ◆ Model types and process descriptions



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Deliverables and timeline (1/2)

■ D1. Network concept and structure

- ◆ Objectives: to develop overall concept and network organisational structure (i.e. who should represent the modelling community and the users, relations to NFPs and NRCs), and to plan communication with network members. Things to learn from the AQUILA network
- ◆ Timeline: August 2007

■ D2. Start-up meeting

- ◆ Objectives: Ideas concerning the aims of the network, a brief presentation of existing tools that will support these aims and the planning of activities for the next 3 years should be discussed. The best way to approach country/city representatives should also be defined through the experience of EEA and JRC.
- ◆ Timeline: September 2007

Deliverables and timeline (2/2)



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- D3. Define connection to the EEA's data centre
 - ◆ Objectives: to plan demonstration activities related to tools that might prove useful to the network, thus providing potential input to discussions on the data centre's future functionalities
 - ◆ Timeline: August 2007, also linked to the start-up meeting mentioned above

- D4. JRC's contribution
 - ◆ Assessment and improvement of AQ models at all relevant scales (Hemispheric, Regional, Urban, Hot-spots)
 - ◆ Guidance for use of AQ models in compliance and projections
 - ◆ Model Intercomparison exercises
 - ◆ Establish an AQ model clearinghouse

- D5: Establish common network
 - ◆ Timeline: October 2007



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Thank you for your attention!

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