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*Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purpose*

## **Report on the 9<sup>th</sup> conference on *Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes***

The 9th International Conference on *Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes* took place in Garmisch-Partenkirchen, June 1-4, 2004.

This series of conferences was initiated in June 1991 at the Joint Research Centre of the European Commission. An international Steering Committee of the "Initiative for Harmonisation within Atmospheric Dispersion Modelling for Regulatory Purposes" is regularly appointing host-countries for the conference, while an international Scientific Committee is ensuring the high quality of research presented at the conferences.

The aims of the Harmonisation Conferences are to be a platform for increased cooperation and standardisation within regulatory modelling in Europe in respect to modelling approaches and model evaluation tools, as well as to improve "modelling culture" in Europe in general.

The *Institute for Meteorology and Climate Research (IMK-IFU)* hosted the 9th conference, and Dr. Peter Suppan acted as the main local organiser.

### **Work at the conference**

There were around 200 registered participants at the conference, which makes the 9th conference the largest of the Harmonisation conferences until now.

The conference accommodated 100 oral presentations and around 60 posters. Several special meetings took place during the conference, such as a COST 715 meeting, a meeting in the context of the Street Emission Ceilings activity, a special session for CLEAR (Cluster of European Air Quality Research), and a special session on ADA (Advanced Distributed Architecture for Tele-monitoring Services focusing on Environment).

The distribution of contributions by conference topics was as follows (the numbers include both oral and poster presentations):

- 38 accepted abstracts for Topic 1: Validation and inter-comparison of models: Model evaluation methodology
- 11 accepted abstracts for Topic 2 and topic 3 together:  
(*Regulatory models: country review* and *Review of experiences using models when implementing the EU directives*)
- 25 accepted abstracts for Topic 4: Short distance dispersion modelling
- 40 accepted abstracts for Topic 5: Urban scale and street canyon modelling: Meteorology and air quality
- 28 accepted abstracts for Topic 6: Mesoscale meteorology and air quality modelling
- 20 accepted abstracts for Topic 7: Environmental impact assessment: Air pollution management and decision support systems.

## Availability of conference materials

At the conference, all participants received a set of printed proceedings (in two volumes), consisting of extended abstracts. These extended abstracts are now also available through the Web, [www.harmo.org](http://www.harmo.org) (except for abstracts whose author did not want his paper published on the Web).

Furthermore, a PDF version of many of the PowerPoint presentations of the conference is also available on the web.

Finally, a number of the papers presented at the conference are being prepared in a full-length version. After peer review these papers will become published in a special issues of the International Journal of Environment and Pollution (IJEP).

## Highlights from the conference

EU air quality policy forms the background for much of the daily work of the conference participants. A new "Thematic strategy" on air pollution is presently being defined by the European Commission, and is due to be published in July 2005. Therefore, a presentation given by Stefan Jacobi of the European Commission on the Clean Air For Europe (CAFE) programme was received with great interest.

Otherwise, two themes of the conference were identified as central by the chairman of the Harmonisation initiative, H. R. Olesen in his introductory address:

- How can we pool experiences and encourage re-use of our work?
- Which measures can we take in order to assure that assessments based on modelling are considered trustworthy?

## Pooling of experiences

Evidently, an important means for pooling of experiences is the Web. In particular, the web site of the Harmonisation initiative, [www.harmo.org](http://www.harmo.org), was referred to as a useful information hub concerning issues discussed at the conference.

It is also evident from the experience of the present as well as previous harmonisation conferences, that COST actions are useful to promote the sharing of information. During the 9th conference, the COST action 715 on Urban meteorology played a prominent role with many interesting presentations. Also of relevance for the conference is a new COST action (COST 728) on mesoscale meteorology. Furthermore, a topic under discussions was a proposed COST action (initiated by M. Schatzmann) on Quality Assurance of of Micro-Scale Meteorological models.

### *Experimental datasets*

During the conference, the availability of several interesting new experimental data sets were announced. In particular, the following datasets were mentioned:

- MUST. Involves an array of 120 shipping containers at Dugway Proving Ground (Hanna)
- Kit Fox. Billboard obstacle array at Nevada Test Site (Hanna)
- Urban tracer studies (Venkatram)
- Krypton-85 database (Hill)
- DAPPLE (ongoing study; Robins)

### *Street Emission Ceilings exercise*

Embedded in the conference program was a special session on a common exercise in the context of the Street Emission Ceilings activity. In this exercise, a variety of models were applied to the same scenario, and the results intercompared.

This special session was a good demonstration of how useful it can be when several groups work on the same problem, and then convene to exchange experiences. The discussion triggered questions on emission factors, vehicle types, slope of the road, working days versus weekends, difference between the two sides of the street, contribution from the background, etc. In the course of the session, probably most of the participants in the exercise became aware of one or several problems they hadn't considered before.

### **Measures to increase trust in models**

Increasing trust in models was another central theme underlying the conference. Two main instruments to achieve increased trust in models are

- To improve quality assurance of models
- To improve guidance on model use

There were several discussions and presentations addressing quality assurance. In particular, the following can be mentioned:

- Model intercomparison data archive (Hall)
- Model intercomparison exercises: the CityDelta activity; the Street Emissions Ceilings exercise.
- A new VDI guideline on evaluation of prognostic microscale wind field models (Schlünzen; Eichhorn)
- Proposed COST action on micro-scale meteorological models (Schatzmann)
- John Irwin's work on model evaluation. It is central that stochastic effects will preclude prediction of *actual time series*, but that models can be made that predict the *statistical characteristics* of the distribution of values. A model's ability to replicate statistical characteristics of spatial and temporal patterns can be used to evaluate its performance.

Guidance on model use was also a subject for several presentations, e.g. those related to

- AIR4EU: A project which shall formulate a guidance document on best practices for integrated air quality assessments (Buitjes)
- The activities of the National Centre on Atmosphere Climate and Emissions in air (CTN-ACE) in Italy, which will formulate modelling guidelines and prepare a model intercomparison exercise (Deserti).

As an overall conclusion, it can be stated that there is a continued need for standards and data sets to be defined within the field of model evaluation. "Round robin tests" – common exercises – can be very fruitful.