INTERCONTINENTAL TRANSPORT OF AIR POLLUTION
MODELING INTERCOMPARISON ORGANIZATIONAL WORKSHOP

Report and conclusions of a workshop held 30-31 January 2006, Washington, DC USA

Prepared by the Co-Chairs with the assistance of the Secretariat

1. A workshop to organize model intercomparison and evaluation took place on 30-31 January 2006 in Washington, D.C. It was organized by the Task Force on Hemispheric Transport of Air Pollution and hosted by the United States Environmental Protection Agency.

2. The workshop was attended by nearly 100 experts from the following Parties to the Convention: Canada, Czech Republic, Denmark, Finland, France, Germany, Italy, the Netherlands, Russia, Spain, Sweden, the United Kingdom and the United States. Experts from India, Japan, Republic of Korea and the Philippines also participated. Representatives of the European Commission (Environment Directorate-General and the Joint Research Centre (JRC)) attended. Representatives of the EMEP Meteorological Synthesizing Centre-West (MSC-W), Meteorological Synthesizing Centre-East (MSC-E), Chemical Coordinating Centre (CCC) were present. Representatives of the World Meteorological Organization (WMO) attended and a member of the secretariat was present. .

3. Mr. T. Keating (United States) and Mr. A. Zuber (European Community), Co-Chairs of the Task Force, chaired the workshop.

A. Objectives, background information and organization

4. At its first meeting, the Task Force had adopted a number of policy relevant science questions to guide its work (EB.AIR/GE.1/2005/12). The workshop was the first in a series to address the questions. A background document, prepared by a small group of experts led by the Co-Chairs and JRC, was used at the workshop as a starting point.

5. The objectives of the workshop were to:

(a) Develop recommendations about the methods and metrics for quantifying intercontinental source-receptor relationships and characterizing the level of confidence in such estimates. Encourage the development and publication of new comparable research results;

(b) Identify activities or analyses that will facilitate access to data and tools useful for all Task Force participants and for achieving the objectives of the Task Force;

(c) Identify specific coordinated multi-model studies that would explore important differences in model formulations and results;

(d) Develop a plan for the identified studies, including identifying individuals responsible for leading activities and mechanisms for coordination as well as proposing a schedule for producing new research results to feed into a 2009 assessment report.

6. More than 30 poster papers summarizing recent scientific developments in the modelling and monitoring of the intercontinental transport of air pollutants were on display throughout the workshop for viewing and discussion between sessions.

7. The background documents, presentations, posters and a list of participants are available at www.htap.org.

8. The Co-Chairs of the Task Force welcomed the participants and presented the background and objectives of the workshop. The workshop began with a series of plenary presentations and discussions followed by breakout groups to address specific questions. A final plenary session discussed conclusions and recommended further work to be done.

B. Summary of main discussion points

9. The first plenary session, entitled “Lessons Learned from Previous Work”, was led by Mr. F. Dentener (JRC), who made a presentation on a previous model intercomparison project ACCENT Photocomp. The workshop took note of the following presentations: Mr. M. Schulz (Germany?) on the Intergovernmental Panel on Climate Change AEROCOM intercomparison; Mr. G. Carmichel (United States)on the Asian MICS intercomparison; Mr. S. Dutchak (MSC-E) on MSC-E’s persistent organic pollutants (POPs) and mercury model intercomparisons; and Ms. L. Tarrason (MSC-W) on the EuroDelta intercomparison.

10. The second plenary session, “Identifying Key Issues for Intercomparison and Assessment”, was led by Mr. Zuber. The session was divided into 5 segments each consisting of an overview presentation and plenary discussion of sets of issues or future tasks identified in the background document. The workshop took note of the following presententations: Mr. R. Derwent (United Kingdom) on source-receptor metrics and methods; Mr. D. Jacob (United States) on scale issues in modelling intercontinental transport; Mr. Carmichael on model diagnostic and performance metrics; Mr. K. Torseth (CCC) on observations available for comparison to models; and Mr. Keating on the availability of emissions information. The workshop agreed to carry over issues identified during each topic discussion to the breakout sessions for further consideration.

11. The first set of break out sessions consisted of two discussion groups. One was led by Mr. Derwent and Ms. T. Holloway (country) and considered methods that should be used to establish intercontinental source-receptor relationships. The other group, led by Mr. Carmichael and Ms. A. Fiore (country), discussed physical and chemical processes that should be addressed in assessing uncertainties in model estimates of intercontinental transport. Discussions resulted in recommendations for specific modelling experiments that were presented for further discussion in the final plenary session.

12. The second set of break out sessions consisted of two discussion groups. One, led by Mr. Zuber, considered the outlines for the planned 2007 and 2009 assessment reports. The other led by Mr. Dentener, considered organizing future collaborative studies. The latter built upon reports from the first set of break out sessions and the overview of studies proposed in the background document.

13. The final plenary session considered the reports from the break out sessions and agreed conclusions and recommendations.

C. Conclusions and recommendations

14. The workshop participants agreed:

(a) The workshop was a useful first step towards a concrete workplan for the intercomparison of models and for deriving source-receptor relationships for intercontinental transport of air pollution;

(b) The background document and workshop presentations and discussions had identified the key issues that needed to be addressed as cooperative work was organized. The issues included the strengths and limitations of methods for deriving source-receptor relationships, the air quality metrics of interest for policy analysis and for model evaluation and development, the role of emissions and meteorological information and the need for observational data for model evaluation;

(c) There was significant interest from experts in participating in cooperative intercomparison and evaluation activities and in contributing to assessment reports.

(d) The details of a workplan for intercomparison and evaluation activities should be developed further with the aim that the plan would be completed for circulation prior to and discussion at the next Task Force meeting scheduled for June 2006.

(e) Specific next steps for the intercomparison and evaluation activities should include:

(i) Calculate regional inflow and outflow budgets for North America, Europe, and East Asia using existing global and regional models, with a goal of providing input to a 2007 interim assessment report;

(ii) Conduct comparative diagnostic and tracer studies to help interpret the differences in the regional budgets derived in (i);

(iii) Organize future detailed studies focused on specific pollutants, processes, or issues, including inter-annual variability, long-term trends, and climate change;

(f) The organization of model evaluations and intercomparisons requires information integration tools and infrastructure to enable sharing of model input data (emission inventories,

monitoring data, etc) as well as for the sharing and analyzing the model output results. Several tools had been developed to support previous model intercomparisons, such as the JRC tool developed for EuroDelta. To support the work of the Task Force, a flexible system that is independent of a specific user or model is needed.

(g) An assessment by the Task Force of the transcontinental transport and relevant source-receptor relationships should be finalized by 2009. This was thought timely for providing the Executive Body with answers to the policy-relevant science questions adopted by the Task Force. There was also a need also to provide the EMEP Steering Body with interim reports, especially for the review of the Gothenburg Protocol that was planned to be completed by the Executive Body in December 2007. By 2007, the results of the modelling activities discussed at the workshop may not be available;

(h) Workshops on emission inventories and projections, planned for October 2006, and the use of integrated observations, planned for January 2007, would be closely linked to the organization of the model evaluation and intercomparison activities;

(i) The outreach activities to countries outside the UNECE region were part of the Task Force's activities and would be pursued by continuing to invite experts from countries outside UNECE as well as through organizing workshops and Task Force meetings outside the region.

(j) Communication and transparency were important components for exchange of information between the experts participating in the Task Force. The Task Force website (www.htap.org) would be updated regularly to ensure it held the most recent information.

(k) The results of the workshop would be communicated for consideration at the next meeting of the Task Force scheduled for 6 to 8 June 2006 in Moscow.