



**Task Force on Hemispheric  
Transport of Air Pollution**

# **Introduction to the TF HTAP and Workshop Objectives**

**17-19 October 2007  
Juelich, Germany**

Task Force Co-Chairs

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European Commission

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<http://www.htap.org>

# **Purpose and Participation in TF HTAP**

- Created in December 2004 by the UNECE Convention on Long-Range Transboundary Air Pollution
- To improve the scientific understanding of intercontinental transport and hemispheric air pollution in the Northern Hemisphere.
- United States and European Community are the Lead Parties.
- TF HTAP is organized under EMEP and engages with the EMEP Centres and other EMEP Task Forces.
- Participation is open to all interested experts. Countries (inside and outside the ECE region) are encouraged to nominate national focal points.

# **Policy-Relevant Science Questions**

1. How does hemispheric transport affect air pollution?
2. How much do emissions in one country or region affect air pollution in another country or region?
3. How confident are we of the results and what is our best estimate of the uncertainties?
4. How will changes in emissions in one country or region affect air pollution in another country or region?
5. How may the source-receptor relationships change over the next 20 to 50 years due to changes in emissions?
6. How may the source-receptor relationships change due to climate change?
7. What efforts are needed to develop an integrated system of observation data and models?

# A Path to a 2009 Assessment

**Focused Workshops**

*Building Consensus*

**TF Meetings**

*Reviewing Results, Planning*

2005 June

Science Questions,  
*Brussels*

2006 Jan

New Research

Modeling, *Washington*

June

& Report Writing

Hg/POPs, CH<sub>4</sub>, *Moscow*

Oct

Emissions, *Beijing*

2007 Jan

Integrated Observations,  
*Geneva*

May-  
June

Interim Report to Protocol  
Review, Climate, *Reading*

Oct

*Modeling, Jülich*

2008 April

Hg/POPs, *Rome*

June

*U.S.*

Oct

[Tropics, *Asia*]

2009 Feb

[w/ TF MM, AC&C]

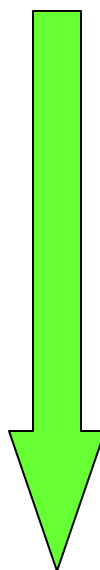
June

?

Oct

Assessment Report

?



## *Progress to Date*

# **2007 Interim Report**

- Focus on Ozone and Aerosols
- Final Draft Available
  - [http://www.htap.org/activities/2007\\_Interim\\_Report.htm](http://www.htap.org/activities/2007_Interim_Report.htm)
- Executive Summary Finalized June 2007, presented to EMEP SB, Sept 2007
- Presentation to LRTAP Executive Body, Dec 2007
- Serves as Foundation for 2009 Report

# Major Findings

- “Observations from the ground, aircraft, and satellites provide a wealth of evidence that ozone and fine particle concentrations in the UNECE region and throughout the Northern Hemisphere are influenced by intercontinental and hemispheric transport of pollutants.”
- “The processes that determine the overall patterns of transport at this scale are relatively well understood and our ability to quantify the magnitude of transport is improving.”

## **Major Findings**

- “The HTAP model intercomparison has provided the first set of comparable estimates of intercontinental source-receptor relationships from multiple models.”
- “For ground-level ozone, there is a hemispheric background concentration of 20-40 ppb that includes a large anthropogenic and intercontinental component. ...changes in intercontinental transport can have small, but significant, impacts on surface concentrations.”
- “For fine particles, the impact of intercontinental transport on surface air quality is primarily episodic, especially associated with major emission events such as fires or dust storms. The intercontinental transport of both ozone and fine particles has large impacts on total atmospheric column loadings, which have significant implications for climate change.”

## 2007 Interim Report

# Recommendations

- “Improving our assessment of intercontinental and hemispheric transport will require an integrated approach where the best available knowledge from observations, emissions, and models is combined.”
  - Improving the modeling of transport processes using existing and new field campaign data.
  - Improving emissions inventories using local information and inverse modeling.
  - Identifying and explaining long-term trends by filling gaps in the observing system and improving model descriptions.
  - Developing a robust understanding of current source-receptor relationships using multiple modeling techniques and analyses of observations.
  - Estimating future source-receptor relationships under changing emissions and climate.
  - Improving organizational relationships and information management infrastructures to facilitate necessary research and analysis.

## *Future Work*

# **Structure of 2009 Assessment**

- Part 1: Ozone, Aerosols, Deposition
  - Update of 2007 Interim Report
- Part 2: Mercury
  - Building on UNEP F&T Partnership Report
- Part 3: POPs
- Part 4: Synthesis
  - “Summary for Policy Makers”
- Executive Summary
  - Official Document to the LRTAP Convention

## *Progress to Date*

# Major Work Areas

- Emissions and Projections
  - Workshop Beijing, 18-20 October 2006
  - European Commission is funding a JRC-Ispra effort to improve existing global inventories for assessing hemispheric transport of air pollution
    - including development of an EDGAR-HTAP inventory that will incorporate data from the national and regional scale
- Integration of Observational Evidence
  - Workshop, Geneva, 24-26 January 2007
  - European Commission is funding a project by NILU to create a database of surface observations to support evaluation of models of intercontinental transport.
  - US EPA is planning further efforts to support model evaluation using aircraft and satellite data.

## Progress to Date

# Major Work Areas

- HTAP Model Intercomparison and Evaluation
  - 27 Models Participating To Date
  - 4 Phases of Experiments
    - Regional Emission Sensitivities (*results still being analyzed*)
      - *Additional Sensitivities Planned with AeroCom, Hg, POPs?*
    - Artificial Tracers (*work is underway*)
    - Pollutant/Process Specific Experiments (*being designed*)
    - Uncertainties/Future Scenarios (*being designed*)
  - JRC-IES & FZ Jülich coordinating data exchange
    - <http://aqm.jrc.it/HTAP/>
    - HemiTAP: Further development of JRC's visualization tool
    - Jülich Data Server & Wiki
  - Standard naming convention for atmospheric chemistry
    - Building upon existing NetCDF/CF convention

## *Future Work*

# **This Workshop**

- **Objectives**

- Review Progress
- Design Future Experiments
- Identify Task Leaders and Concrete Work Plan

- **Process**

- Presentations and Posters to be posted on [www.htap.org](http://www.htap.org)
- Session Chairs will be asked to summarize major conclusions and recommendations on Friday
- TF Chairs, with the help of the Session Chairs, will draft a Workshop Summary which will be posted on the web

## *This Workshop*

# Issues to be Discussed

- Presentation and discussion of the model experiments performed as part of the HTAP intercomparison to date.
- Regional Scale Modeling and Hemispheric Transport
  - Addressing differences in process parameterizations and influence of resolution on S/R estimates
- Future Source-Receptor Relationships: Climate Change and Emission Scenarios
  - What scenarios/possible changes should we examine?
- Benchmark Datasets and Multi-Species Analysis
  - What data is needed for model evaluation?
- Planning and prioritization of future experiments in the HTAP intercomparison
  - How best to leverage other efforts (AC&C, MICS-Asia, EuroDelta, ...)?

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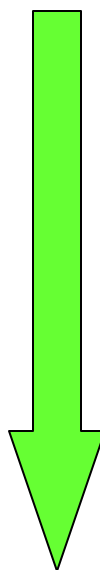
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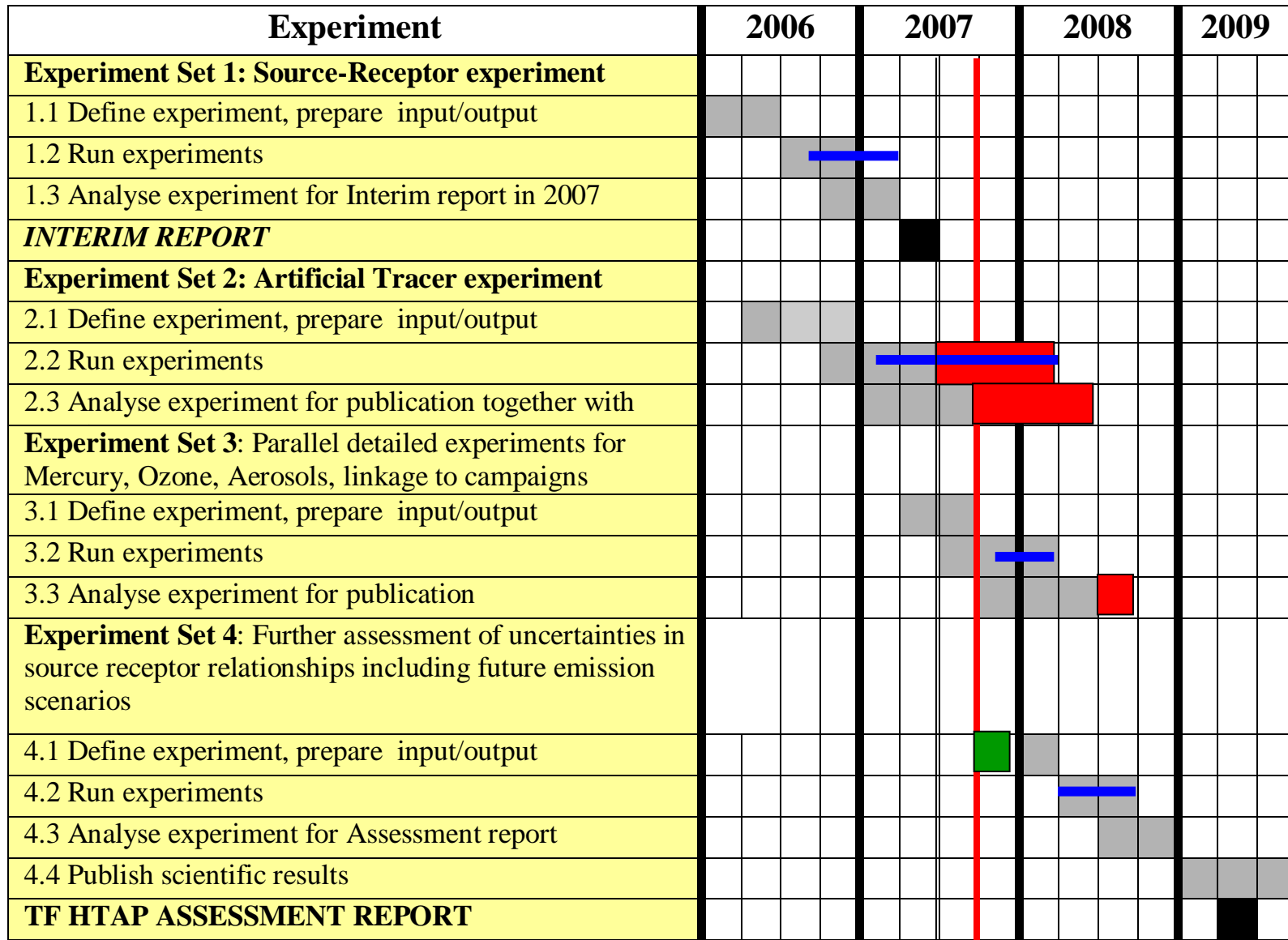


## Future Work

# A road map to the 2009 assessment

- Mar 2008 Invitation to participate
  - Jun 2008 Final plan and list of authors
  - Aug 2008 First Annotated Outline
  - Nov 2008 Revised Annotated Outline
  - Feb 2009 Internal Draft of Parts 1-3
  - May 2009 First Review Draft of Parts 1-4,ES
  - Jun 2009 Major Review Meeting
  - Aug 2009 Revised Review Draft of Parts 1-4,ES
  - Sep 2009 Finalize Executive Summary
  - Nov 2009 Finalize Parts 1-4
  - Jan 2010 Printing
- TF Meetings
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# Timeline for Coordinated Model Studies



**June 2009 is last opportunity for new analysis to be included.**