



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

Introduction to the LRTAP Convention, TF HTAP, and this Workshop

**TF HTAP Workshop Focusing on
Eastern Europe, Central Asia, and the Arctic**

**Part of *Atmosphere 2009*
St Petersburg, Russia, 1 to 3 April 2009**

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<http://www.htap.org>

Outline

- Introduction to the LRTAP Convention & TF Hemispheric Transport of Air Pollution
- Overview of TF HTAP Assessment & Cooperative Research Activities
- Objectives and Structure of This Workshop

CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION

- Adopted in 1979, the first multi-lateral agreement on air pollution
- Created a framework on which has been built eight Protocols, all in force as of May 2005.
- The Protocols have aimed to increase ambition levels in a stepwise manner.
- Day to day activities supported by a Secretariat at the UN Economic Commission for Europe
- <http://www.unece.org/env/lrtap/>



Protocols to the Convention

- **1984 EMEP Protocol**
 - Established permanent funding for monitoring and modeling program.
- **1985 Sulphur Protocol**
 - Reduce 1980 annual sulfur emissions by at least 30 percent
- **1988 NOx Protocol**
 - Reduce and hold NOx emissions below 1987 levels by 1993
- **1991 VOC Protocol**
 - Reduce 1984 annual VOC emissions by 30 percent by 1999
- **1994 Sulphur Protocol**
 - Reduce emissions by 50 to 80 percent by 2000/2005
- **1998 Protocol on Heavy Metals**
 - Cadmium, Lead and Mercury
- **1998 Protocol on Persistent Organic Pollutants (POPs)**
 - Pesticides, PCBs, Dioxins/Furans (16 compounds).
- **1999 Gothenburg Protocol to Abate Acidification, Eutrophication and Ground-level Ozone**
 - NOx, VOCs, Sulphur, Ammonia

CONVENTION ON LONG-RANGE TRANSBOUNDARY AIR POLLUTION

51 Parties in Europe, North America and Central Asia



CLRTAP Organigram

Executive Body — **Implementation Committee**

Working Group on Effects

- ICP Forests Task Force — Programme Coordinating Centre
- ICP Integrated Monitoring Task Force — Programme Centre
- ICP Modelling and Mapping Task Force — Coordination Center for Effects
- ICP Materials Task Force — Main Research Centre
- ICP Vegetation Task Force — Programme Centre
- ICP Waters Task Force — Programme Centre
- Task Force Health

E MEP Steering Body

- Task Force on Emission Inventories and Projections
- Task Force on Measurement and Modelling
- Chemical Coordinating Centre
- Meteorological Synthesizing Centre-West
- Centre for Emission inventories and projections
- Meteorological Synthesizing Centre-East
- Task Force on Integrated Assessment Modelling
- Centre for Integrated Assessment Modelling
- Task Force on Hemispheric Transport of Air Pollution

Working Group on Strategies and Review

- Task Force on Reactive Nitrogen
- Task Force on Heavy Metals
- Network of Experts on Benefits and Economic Instruments
- Expert Group on Techno-economic Issues
- Task Force on POPs
- Expert Group on Particulate Matter



Task Force on Hemispheric Transport of Air Pollution

The Task Force is charged by the CLRTAP to “plan and conduct the technical work necessary to:

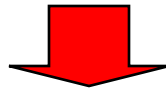
- develop a fuller understanding of the hemispheric transport of air pollution ...
- estimate the hemispheric transport of specific air pollutants for the use in reviews of protocols to the Convention
- prepare technical reviews thereon for submission to the Steering Body of EMEP”
- The chair(s) are encouraged to invite individuals with expertise relevant to the work of the Task Force and experts from non-Convention countries in the northern hemisphere.

Participation in the TF HTAP

- Participation is open to all interested experts
- All countries in the Northern Hemisphere have been invited to nominate “National Focal Points”
- Task Force reports are developed by consensus, but are officially reports of the Co-Chairs to the LRTAP Convention.
- Experts from 22 countries outside the UNECE have participated in at least one of the Task Force’s past meetings.

Relationship to Other Regional and Global Initiatives

- TF HTAP seeks to build upon the work of the EMEP centres and Task Forces
- Engage experts from other regional initiatives: AMAP, EANET, Malé Declaration, ASEAN, ABC-Asia, ...
- Engage experts from the global atmospheric science community and leverage joint efforts: IGAC, Atmospheric Chemistry & Climate Initiative, IPCC
- Engage experts and leverage activities under other global forums: Stockholm Convention on POPs, UNEP Mercury Program and Associated Partnerships, GEO



- To build a common understanding of intercontinental transport of air pollution in the Northern Hemisphere

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?

Where We Have Been

<i>Dates</i>	<i>Locations</i>	<i>Partners</i>	<i>Topics Discussed</i>
2005	June	Brussels	Science Questions
2006	Jan	Washington	Model Intercomparison
	June	Moscow	Hg, POPs, CH ₄
	Oct	Beijing	Emissions and Projections
2007	Jan	Geneva	w/ WMO, GEO Observational Evidence
	May	Reading	Climate, HTAP 2007 Review
	Oct	Jülich	Model Intercomparison
2008	April	Rome	w/ UNEP Hg F&T Hg, POPs
	June	Washington	w/ NAS, AC&C Survey State of Science, Plan Cooperative Analyses
	Oct	Hanoi	w/EANET SAC Focus on East and South Asia

Major Work Areas

- **Emissions and Projections**
 - JRC/IES is developing an EDGAR-HTAP Inventory, incorporating data from the national and regional scale.
 - US EPA is analyzing new scenarios developed for IPCC AR5 for use in HTAP multi-model experiments.

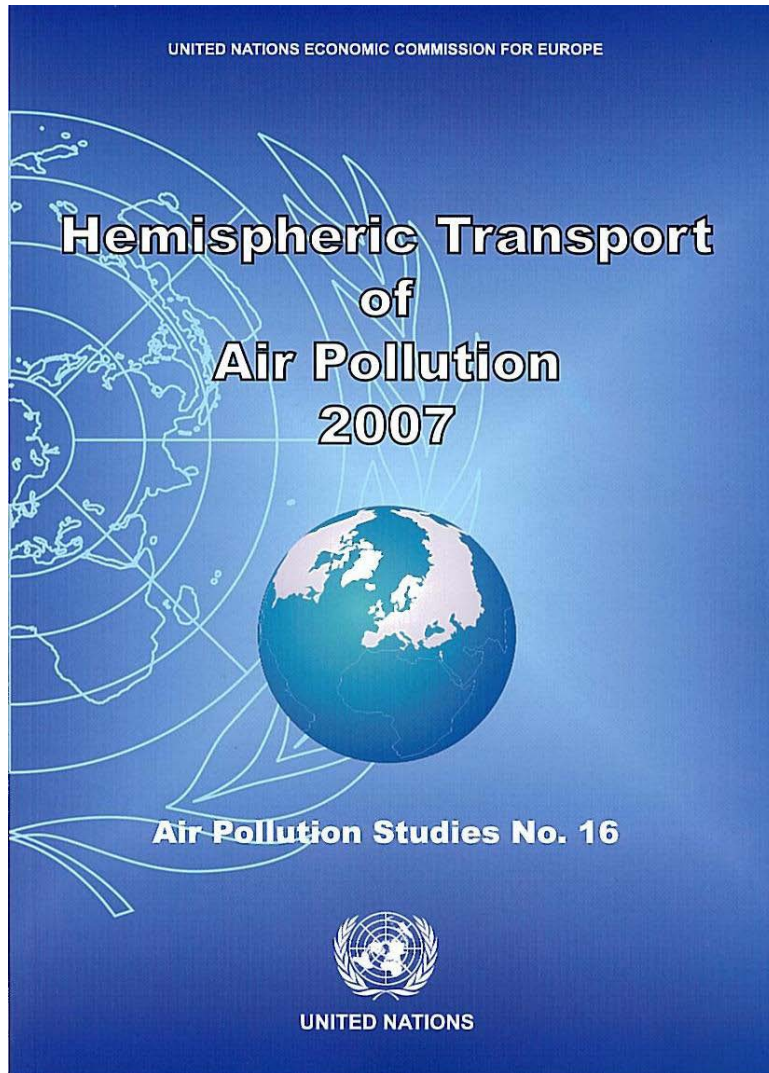
Major Work Areas

- **Emissions and Projections**
- **Integration of Observational Evidence**
 - NILU is developing a database of surface observations to support the assessment of intercontinental transport, including for use in model evaluation.
 - NASA is developing a database of relevant observations from aircraft campaigns and guidance on how to compare the observations to models.
 - NASA is developing a specific interface for its GIOVANNI system to facilitate access and comparison to some satellite observations.

Major Work Areas

- **Emissions and Projections**
- **Integration of Observational Evidence**
- **HTAP Multi-Model Experiments**
 - 35+ Models Participating To Date
 - Phased Experiments
 - SR: Source-Receptor Sensitivity Simulations
 - TP: Passive and Artificial Tracer Simulations
 - ES: Event Simulations (focusing on ICARTT observations)
 - FC: Future Scenarios (Climate and Emissions)
 - Infrastructure
 - Data Server at FZ Juelich
 - Data Processing and Visualization Tools (HemiTAP) at JRC-IES
 - Wiki at FZ Juelich
 - Model descriptions using EU COST 728/732 Model Inventory
 - Standard naming convention built upon netCDF/CF convention

HTAP 2007: An Interim Report



- **Presented to EB December 2007 to inform the review of the Gothenburg Protocol**
- **In Print as of April 2008**
- **Focused on Ozone and Aerosols**
 - **Transport Processes**
 - **Observational Evidence**
 - **Emissions Inventories & Projections**
 - **Regional & Global Modeling**
 - **Summary Answers to Policy-Relevant Science Questions**
- **> 125 Experts from > 25 Countries Participated in the Process**
- **Reports initial results of HTAP Multi-Model Experiments**

Structure of *HTAP 2010*

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

Schedule for *HTAP 2010*

- Invitation to participate Apr 2009
- Final plan and list of authors May 2009
- First Annotated Outline Jun 2009
- Revised Annotated Outline Sep 2009
- Internal Draft of Parts 1-3 Nov 2009
- First Review Draft of Parts 1-4,ES Jan 2010
- Major Review Meeting Feb 2010
- Revised Review Draft of Parts 1-4,ES Apr 2010
- Acceptance Meeting, Finalize ES Jun 2010
- Finalize Parts 1-4 Jul 2010
- Printing Aug 2010

Future Work Plan

Where We Are Going

Dates	Locations	Partners	Topics Discussed
2009 Apr	St Petersburg	w/ SRI Atmosphere	Eastern Europe, Central Asia, Arctic, Hg/POPs Assessment
15-19 June	Paris	w/ TFMM	Regional-Global & Climate-AQ Linkages
<i>Nov</i>	<i>North America</i>		<i>2010 Assessment Authors</i>
<i>2010 Feb</i>	<i>?</i>		<i>2010 Assessment Review</i>
<i>Jun</i>	<i>?</i>		<i>2010 Assessment Acceptance</i>

After 2010, we expect the TF HTAP to continue its scientific work to inform the LRTAP Convention and other international policy forums that have similar information needs on the role of intercontinental transport of air pollution.

This Workshop

Focusing on Eastern Europe, Central Asia, and the Arctic

- The status of emission inventories and projections for air pollutants in Eastern Europe, Caucasus, and Central Asia.
- The sources and transport processes that are responsible for air pollution in the Arctic
- The assessment of the intercontinental transport of Persistent Organic Pollutants
- The assessment of the intercontinental transport of Mercury