

Chair's Summary of the HTAP 2010 Report Content Workshop

1. This report summarizes the outcomes of the Task Force on Hemispheric Transport of Air Pollution's (TF HTAP's) *HTAP 2010* Report Content Workshop held 11-13 November 2009 in Toronto Canada.
2. The workshop was hosted by Environment Canada and was attended by 77 experts including those from the following Parties: Austria, Belgium, Canada, Czech Republic, European Community, France, Germany, Italy, Norway, Russian Federation, Spain, Switzerland, United Kingdom, and United States. In addition, experts from the following countries not Party to the Convention attended: the People's Republic of China, India, Japan, Pakistan, and Thailand. Representatives of the EMEP Chemical Coordinating Centre (CCC), Meteorological Synthesizing Center East (MSC-E), Meteorological Synthesizing Center West (MSC-W), and the European Commission's Joint Research Centre (JRC) participated.
3. Mr. T. Keating (United States) and Mr. A. Zuber (European Community), Co-Chairs of the TF HTAP, chaired the workshop. The presentation materials are available at <http://www.htap.org/>.
4. The main objective of the workshop was to plan the content of the *HTAP 2010* assessment report. The report is divided into 4 main parts: A. Ozone and Aerosols, B. Mercury, C. POPs, and D. Synthesis. A parallel structure of 5 chapters comprise each of the parts A,B, and C: 1. Conceptual Overview, 2. Observations, 3. Emissions, 4. Modeling, and 5. Impacts. Coming into the workshop, the lead authors for each chapter were asked to produce outlines or initial drafts of their chapters. Discussions during the workshop were intended to:
 - Address gaps and overlaps in the outlines of parts A,B, and C
 - Harmonize the content of the chapters across parts A,B, and C
 - Set out writing assignments for the different chapter
 - Agree on timelines and procedures for developing the report.

Plenary Conclusions

5. **Consistency of Climate Change Discussion.** The impacts of climate change will be addressed in several chapters in each part of the report, but with different degrees of detail depending on the amount of information available. The editors will need to check these discussions for consistency.
6. **Harmonization of Treatment of Uncertainty.** There is a need to harmonise the terminology that we use to describe uncertainty or levels of confidence throughout the report. One possibility is to adapt the terminology used by the IPCC. The issue will be discussed further at the HTAP March workshop.
7. **Harmonization of Common Terms.** There is a need for the author team to develop an internal glossary to promote consistency in the terminology used across the different parts of the report. Some terms that need to be defined are: background, baseline, inflow, source apportionment, source receptor relationship, re-emission, legacy pollution and emissions, biomass, and emission source category. A glossary was produced for *HTAP 2007* and this can serve as a starting point. This glossary will be posted on the HTAP wiki and authors will be asked to contribute terms and definitions.

8. Priorities for Future Scenario Multi-Model Experiments. A set of new multi-model ozone and aerosol experiments have been proposed to examine future emission (FE) and future climate (FC) scenarios. Given the limited amount of time available to complete these experiments to inform *HTAP 2010*, the list of FE and FC runs were prioritized.

- a) For the FE series, two runs are needed to test the change in S/R relationships (as compared to SR1 and SR6Global):
 - FE1: SR1 with anthropogenic emissions and methane concentrations increased equal to the changes tabled below for 2030 MESSAGE 8.5 RCP. Note that applying the % reductions to the source regions is preferred to using the actual RCP emissions.
 - FE3Global: FE1 with -20% of NO_x/VOC/CO/PM emissions globally. (If SR6Global was not run during the SR series, then another SR6X regional reduction would be more useful.)
- b) For the FC series, we are most interested in detecting changes in transport patterns due to changes in climate. Therefore, the FC2 scenario is the most important, followed by the regional sensitivity runs. We have listed them below in order of decreasing priority:
 - 1) FC2: SR1 with “2100” A2 Climate (5 years simulation with annually-varying SSTs & Sea Ice representative of 2100)
 - 2) FC4NA: FC2 with -20% of NO_x/VOC/CO/PM emissions from North America
 - 3) FC4EU: FC2 with -20% of NO_x/VOC/CO/PM emissions from Europe
 - 4) FC4EA: FC2 with -20% of NO_x/VOC/CO/PM emissions from East Asia
 - 5) FC4SA: FC2 with -20% of NO_x/VOC/CO/PM emissions from South Asia
 - 6) FC4Global: FC2 with -20% of NO_x/VOC/CO/PM emissions globally

9. Chapter Findings and Recommendations. In each of Chapters 1-5 in Parts A-C, key findings and recommendations should be articulated and clearly identified with the heading of FINDING: or RECOMMENDATION: These findings and recommendations can be placed at relevant points throughout the text of the chapter, at the end of each chapter section, or at the end of each chapter. These findings and recommendations will be carried forward to a new Chapter 6 for each Part and to Part D and the Executive Summary.

10. Chapter 6 (Summary) of Parts A-C. A sixth chapter is needed in Parts A-C to summarize the findings and recommendations from Chapters 1-5, to address issues and recommendations that cut across Chapters 1-5, and to discuss the policy-relevant implications of the findings. Since the workshop, the chairs have proposed the following generic outline for each Chapter 6:

- a) Introduction
- b) Key Findings from Chapters 1-5
- c) Cross Cutting Issues
- d) Recommendations for Future Work
- e) Policy-Relevant Implications

11. Organization of Part D (Synthesis). Part D will synthesize the findings of Parts A-C and is intended to be organized around policy-relevant science questions (based on the 7 questions originally identified to guide the TF HTAP). Below is an initial suggestion for framing of those questions:

- What is the **contribution** of intercontinental or global flows of air pollutants to concentrations, deposition, and environmental impacts? How does this differ by pollutant? How does it differ by source or receptor region?
- What are the processes that affect this transport and how well do we understand them?
- How will changes in emissions in one region affect air pollution and its impacts in another region?
- How may the source-receptor relationships change over the next 20 to 50 years due to changes in emissions?
- How may the source-receptor relationships change due to climate change?
- What efforts are needed to develop an integrated system of observation data, emissions, and models?

12. Text Formatting. A standard template will be circulated for use for all chapters, including conventions to follow for formatting references. References will be compiled using the software Endnote. EC/R, Inc., under contract with the US EPA, will provide editorial and formatting assistance. If the need for assistance with graphics is identified early, then it is likely that assistance with producing graphics can be arranged.

13. Parallel Structure of Parts A, B, and C. To the extent possible, Parts A, B, and C should have a similar structure to make it easier for the reader to find similar information/issues in corresponding chapters of the Parts A-C. Some deviation from the parallel structure will be necessary to accommodate the specific issues for each pollutant.

14. Schedule for Report Development.

20 Nov 2009	Revised report and chapter outlines
20 Jan 2010	Drafts chapters posted on HTAP wiki (where available/with place holders)
20 Feb 2010	Internal review draft part A to D, ES
1-2 Mar 2010	Major review workshop (Chapel Hill North Carolina, US)
April 2010	External review draft
May 2010	Revision based on received comments
June 2010	Acceptance meeting for ES (TF HTAP)
July 2010	Finalisation of Parts A to D
Aug 2010	Printing

15. Chapter 1 Cross Cutting Issues.

- a) Chapter 1 needs to introduce themes, issues, concepts, and terms. It should set the policy context and provide the reader with an outline of the report.
- b) It should not try to summarize the findings or recommendations that should appear in later chapters.

16. Chapter 2 Cross Cutting Issues.

- a) Chapter 2 needs to define natural/pristine/background/baseline conditions. The concept of a baseline or background concentration is useful for some pollutants and not for others. For ozone, the concept of continental inflow may be more important than a baseline. For some species, though, a more typical low concentration condition exists in many areas (concentration deviations can run high or low, in the case of depletion events), and the baseline / background notion may be more useful. It may not be useful to attempt to use a unified definition of baseline for the different species under consideration by HTAP.

- b) Chapter 2 needs to make the case for long-range transport by use of observations, co-observations and supporting studies (modelling and campaigns). Observations from other media may be necessary to address specific issues, such as POPs recycling between environmental compartments.
- c) It will be important to build on existing networks, toward global monitoring networks. Co-location of POPs, mercury, PM, and O₃ monitoring is not very common, but is very powerful. Results from the Mt. Bachelor observatory are an example of the usefulness of this approach. Are existing networks and monitors well located to observe intercontinental transport of these species?
- d) The ground monitoring network community needs to coordinate better with field campaigns.
- e) Beyond co-location, coordination between measurements in other dimensions is important. POPs are not amenable to continuous monitoring, due to cost and sensitivity issues, so time-coordination is needed.
- f) In general, the study of intercontinental transport has proved very useful for establishing interdisciplinary connections between communities that are typically fairly separate.

17. Chapter 3 Cross Cutting Issues.

- a) Base year and scenario years covered: 2000, 2030, and 2050 (where available). Some long-lived pollutants (eg Hg, POPs) may require information on historical emissions.
- b) There is a need to further define biomass burning and to distinguish between anthropogenic, wildfires, and lightning induced.
- c) It will be important to link the discussion of driving forces of future emissions scenarios in the different parts, linking ozone and aerosol precursors, mercury, and POPs emissions for specific sectors. For example: the RCP scenarios contain info on coal use, industrial processes and abatement measures (e.g. SO₂) that might be relevant for mercury estimates.
- d) Need to look at the co-benefits of climate policies on emissions of ozone and aerosol precursors, mercury, and POPs (i.e., from combustion sources).

18. Chapter 4 Cross Cutting Issues.

- a) The 3 Chapter 4's seek to have similar structures with subsections on Introduction, Approaches, Current Ste of modelling LTT and ICT, Future and Uncertainty considerations.
- b) The Arctic should be a highlighted as a receptor and climate change should be discussed and assessed.
- c) Demonstrating the integration of the modeling with the monitoring (including specific field studies) and the emissions inventories will be a key in this chapter.

19. Chapter 5 Cross Cutting Issues.

- a) Chapter 5 will attempt to place the contribution of intercontinental transport of air pollution into the context of human, ecosystem, and climate impacts, including the reversibility (or irreversibility) of impacts
- b) Some parts will rely on the existing literature, while others will attempt new analyses.
- c) The policy implications of intercontinental transport, including such issues as controllability, should be addressed in Chapter 6, not chapter 5.