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THIRTEENTH MEETING OF THE PARTIES
TO THE MONTREAL PROTOCOL ON
SUBSTANCES THAT DEPLETE THE
OZONE LAYER
Colombo, 16-19 October 2001

Item 3 of the annotated provisional agenda
for the High-level segment

REPORT OF THE CO-CHAIRS OF THE SCIENTIFIC ASSESSMENT PANEL ON THE PROGRESS OF THE 2002 SCIENTIFIC ASSESSMENT OF OZONE DEPLETION

The Scientific Assessment Panel of the Montreal Protocol as per Article 6 of the Montreal Protocol on Assessment and review of control measures and Decision XI/17 of the Eleventh Meeting of the Parties to the Montreal Protocol is preparing its 2002 Scientific Assessment of Ozone Depletion.

The Co-chairs of the Scientific Assessment Panel are presenting for information of the Parties, the attached summary on the scope, approach, the Lead Authors and Co-authors and estimated time table for the 2002 Scientific Assessment of Ozone Depletion.

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The 2002 UNEP/WMO Scientific Assessment of Ozone Depletion
Summary of Scope and Timetable

August 2001

Co-chairs, Scientific Assessment Panel:
A.-L. Ajavon
D. Albritton
G. Mégie
R. Watson

I. Scope of the 2002 Assessment

The 2002 UNEP/WMO Scientific Assessment of Ozone Depletion will be a focused update of the state of understanding regarding the ozone-depletion issue, based on the scientific literature. The approach will build upon the broad-scoped 1998 report and will focus on topics for which substantial advances in scientific understanding have occurred over the past few years (e.g., Arctic ozone). The basis of the assessment scope is the information requested by the Parties to the Montreal Protocol (see Attachment A). The 2002 assessment will contain five detailed chapters (see section III below); an Executive Summary with the major conclusions; and an augmented list of questions and answers in the "Frequently Asked Questions about Ozone" section. The timetable for the process is given in Attachment B.

II. Approach of the 2002 Assessment

Rather than split "past trends" and "future projections" into separate chapters as has been done in the past, the 2002 assessment will wrap both of these into the subject of a chapter, thereby having the full update on a topic in one place. For example, controlled substances will include updated observed trends AND projected future behavior, as will be the case with ozone itself and with ultraviolet radiation. This approach has required that a broader mix of researchers (e.g., observations and modeling) be involved in each chapter.

The Parties are interested in the understanding of the impact of climate change on ozone depletion and explicitly asked that the assessment include the status of that understanding. The interactions between the ozone layer and the climate system are varied, e.g., direct radiative forcing by HFCs, cooling of the stratosphere by carbon dioxide, and the changes in the formation rate of polar stratospheric clouds. Consequently, the relevant information will fall in many parts of the assessment. The Executive Summary of the 2002 assessment will explicitly pull this information together into a single description of the current understanding of climate – ozone interactions. The major focus will be on the impact of climate change on the ozone layer, since the Intergovernmental Panel on Climate Change (IPCC) has recently assessed the impact of ozone change on climate: *"Climate Change 2001. The Scientific Basis"*.

The Panel Cochairs requested nominations from the Parties of scientists who could be potential contributors to the assessment process. In addition, the Cochairs sought from the international scientific community further advice about potential contributors, recent research advances, and the structure of the assessment report. All of the above information was input to the resulting contents, Lead Authors, and Coauthors of the 2002 assessment, as summarized below. Furthermore, this information from the Parties and the scientific community will continue to be input to future steps in the process, i.e., compiling the lists of the numerous international scientists who could be invited to serve as mail reviewers of draft chapters or panel reviewers for the full report and its summaries.

III. Chapters, Lead Authors, and Coauthors

Chapter 1: Controlled Substances and Other Source Gases

Lead Authors: Paul Fraser (Australia) and Steve Montzka (USA)

Coauthors: J. Butler (USA), P. Connell (USA), D. Cunnold (USA), J. Daniel (USA), D. Derwent (UK), S. Lal (India), A. McCulloch (UK), D. Oram (UK), E. Sanhueza (Venezuela), P. Steele (Australia), G. Velders (Netherlands), R. Zander (Belgium)

Focus: Controlled substances with which the Protocol has dealt (CFCs, HCFCs, methyl bromide, etc., with HFCs included) and ozone/climate-related constituents. Topics addressed will include trends and budgets (including methyl bromide, carbon dioxide/methane); estimates of the radiative cooling of the stratosphere caused by greenhouse gases; future scenarios for emissions of controlled substances expected under the Protocol and other assumptions; updated (where needed) Ozone Depletion Potentials (ODPs), Global Warming Potentials (GWPs), and lifetimes.

Chapter 2: Very Short-Lived Substances

Lead Authors: Malcolm Ko (USA) and Gilles Poulet (France)

Coauthors: D. Blake (USA), O. Boucher (France), J. Burkholder (USA), M. Chin (USA), T. Cox (UK), C. George (France), H. Graf (Germany), J. Holton (USA), D. Jacob (USA), K. Law (UK), M. Lawrence (Germany), P. Midgley (Germany), P. Seakins (UK), D. Shallcross (UK), S. Strahan (USA), D. Wuebbles (USA), Y. Yokouchi (Japan)

Focus: Evaluation of the ozone-layer impacts of a category of substances for which the classical concept of a single number for an Ozone Depletion Potential (ODP) does not apply: those with lifetimes of a few days or less and having few atmospheric observations, requiring three-dimensional modeling of the atmospheric concentrations of the compound as a necessary condition. Emphases of the chapter will include: (i) the gases of current discussion for which scientific journal publications exist (e.g., n-propyl bromide and CF_3I); (ii) a characterization of a general approach to classification of such substances relative to the ozone layer (since there will likely be a growing list of these compounds through the years), including a focus on degradation products and their ozone-related properties; (iii) short-lived radiation-related gases, such as sulfur dioxide, which relates to the stratospheric aerosols (and hence ozone changes); and (iv) sources of stratospheric particles, both volcanic and non-volcanic.

Chapter 3. Polar Ozone: Past and Future

Lead Authors: Paul Newman (USA) and John Pyle (UK)

Coauthors: J. Austin (UK), G. Braathen (Norway), P. Canziani (Argentina), K. Carslaw (UK), P. Forster (UK), S. Godin (France), B. Knudsen (Denmark), K. Kreher (New Zealand), H. Nakane (Japan), S. Pawson (USA), V. Ramaswamy (USA), M. Rex (Germany), R. Salawich (USA), D. Shindell (USA), A. Tabazadeh (USA), D. Toohey (USA)
Focus: Polar ozone/temperature trends, processes, and possible future behavior (paralleling the following chapter). The Arctic will be a major emphasis, building upon recent extensive field studies and theory. An important part will be the growing number of studies that are projecting future Arctic ozone behavior based on the temperature changes associated with greenhouse gases, climate, and linkages to the troposphere. The Antarctic section will be similar to that above, but will also underscore near-term expectations of the ozone "hole" as well as the expectations for coming decades.

Chapter 4. Global Ozone: Past and Future

Lead Authors: Martyn Chipperfield (UK) and Bill Randel (USA)

Coauthors: G. Bodeker (New Zealand), M. Dameris (Germany), V. Fioletov (Canada), R. Friedl (USA), N. Harris (UK), J. Logan (USA), R. McPeters (USA), N.J. Muthama (Kenya), T. Peter (Switzerland), T. Shepherd (Canada), K. Shine (UK), S. Solomon (USA), L. Thomason (US), J. Zawodny (USA)

Focus: Updated status of the observations and rationalization of the temporal and spatial variations (all scales) of the observations and future projections, including the potential roles of climate change and other non-halogen effects. Topics of the chapter will include: assessment of the differences between different satellite data sets; the possible role of large-scale, longer-term dynamics in the ozone changes of the lower stratosphere; projected future behavior/scenarios, considering the separate components of halogen decline, possible volcanic activity, greenhouse gas scenarios, and climate change; changes in water vapor and temperature, past and future; and other possible influences on the stratosphere, such as rocket systems and aviation. (For the latter, the chapter will draw heavily from the IPCC Special Report, *"Aviation and the Global Atmosphere 1999"*). The radiative effect of ozone loss or recovery on the tropospheric climate system will be a small section, but it will utilize the extensive information in the IPCC report, *"Climate Change 2001. The Scientific Basis*".

Chapter 5. Surface Ultraviolet Radiation: Past and Future

Lead Authors: Jim Kerr (Canada) and Gunther Seckmeyer (Germany)

Coauthors: A. Bais (Greece), M. Blumthaler (Austria), S.B. Diaz (Argentina), N. Krotkov (USA), D. Lubin (USA), S. Madronich (USA), R.L. McKenzie (New Zealand), A.-A. Sabzipavar (Iran), J. Verdebout (Italy)

Focus: Surface ultraviolet trends, processes, and possible future behavior (paralleling the preceding chapters). This chapter will update the current understanding of long-term trends in surface ultraviolet radiation, making use of both ground-based and satellite observations. It will use input from the preceding ozone chapters with regard to future ozone changes. Temporal and spatial variability and the role of aerosols, clouds, and other non-UV parameters will be assessed. Comparison of observations to calculations will give an indication of the level of understanding and confidence. Past behavior, as well as expected future behavior, will be discussed. Observations in polar regions will be updated, and advances in discerning trends at midlatitudes will be described.

Frequently Asked Questions About Ozone

Lead Author: David Fahey (USA)

Focus: This popular section will be updated (e.g., an expansion of the ozone layer – climate change connection). New questions that are matched to today's public information needs will be added, e.g., "Is the Antarctic ozone hole getting any bigger?"

Attachment A. Request from the governments (Decision XI/17.5(a), Parties to the Montreal Protocol)

"To request the Scientific Assessment Panel to include the following in the 2002 scientific assessment:

(a) An evaluation of the observed trends in controlled substances and their consistency with reported production of ODS;

(b) A quantification of the ozone-depleting impacts of new (e.g., short-lived) halogen-containing substances;

(c) A characterization of methyl bromide sources and sinks and the likely quantitative implications of the results for the ozone layer;

(d) A characterization of the known relations between ozone depletion and climate change, including feedbacks between the two;

(e) A description and interpretation of the observed changes in global and polar ozone and ultraviolet radiation, as well as set future projections and scenarios for these variables, taking into account also the expected impacts of climate change."

Attachment B. Estimated Timetable

Draft outline of the assessment report completed	January 2001
Lead Authors of the chapters established	March-April
Chapter Coauthors established; chapter outlines drafted; early preparation steps begin	April-June
Lead Authors Planning Meeting, chapter coordination issues identified and resolved (London, UK)	June 27-28
First drafts of chapters completed; distribution to Lead Authors for intra-Chapter comments	mid-October
Lead Authors Drafting Meeting, discussion of draft chapter contents; identification of the improvements needed for the second draft (Washington, DC, USA)	November 28-30
Second draft of chapters completed; mail peer review begins	late February 2002
Mail peer-review comments due	early April
Third draft of chapters completed and distributed to Panel Reviewers	mid-May
Panel review; establishing the final conclusions; identification of the final changes of the chapters; completion of the Executive Summary (Les Diablerets, Switzerland)	June 24-28
Executive Summary released	early July
Final chapter text completed	late August
Preprint volume to UNEP for distribution to governments	30 December 2002
