Report of the Scientific Assessment Panel

28th Meeting of the Parties to the United Nations Montreal Protocol

10-14 October 2016

Kigali, Rwanda

Cochairs:

Bonfils Safari (Rwanda)

David W. Fahey (USA)

Paul A. Newman (USA)

John A. Pyle (UK)

- **Plan for the 2018 Scientific Assessment of Ozone Depletion**
- **Current science and emerging science issues**

The 2018 Science Assessment

Terms of reference from the parties at MOP27 (Dubai) November 2015

Decision XXVII/6 (Paragraph 7):

To request the Scientific Assessment Panel *"to undertake, in its 2018 report, a review of the scientific knowledge as dictated by the needs of the parties to the Montreal Protocol, as called for in the terms of reference for the panels, taking into account those factors stipulated in Article 3 of the Vienna Convention,*

- *including estimates of the levels of ozone-layer depletion attributed to the remaining potential emissions of ozone-depleting substances and*

- *an assessment of the level of global emissions of ozone-depleting substances below which the depletion of the ozone layer could be comparable to various other factors such as the natural variability of global ozone, its secular trend over a decadal timescale and the 1980 benchmark level"*

- **Topics for 2018 Assessment to be updates of those in previous assessments (e.g., trace gases, ozone, climate effects on ozone, policy implications)**

The 2018 Science Assessment

Fall 2016: Preparatory work has begun

- July meeting of SAP Co-Chairs in Vienna
- Communication from SAP Co-Chairs and UNEP to the Parties, seeking nominations of participants
- Replies requested by November 30, 2016
- Previous participants need not be renominated; they will be considered again
- Replies to be sent to UNEP
  (contact: Sophia.Mylona@unep.org)

The 2018 Science Assessment: Timeline

2017

- ❑ Discussion Paper circulated for comments by scientific community
- ❑ **Lead Authors and Chapter Editors established**

- ❑ Chapter author teams assembled, early preparation steps begin
- ❑ **Draft of Chapter outlines**
- ❑ 1st meeting of Lead Authors, Co-Chairs, Steering Cmttee, Chap. Ed.
- ❑ Individual Chapter team meetings

- ❑ Chapter summary bullets submitted for review

- ❑ **1st drafts of Chapters completed**
- ❑ Drafting of Executive Summary begins
- ❑ Chapter 1st drafts reviews due

The 2018 Science Assessment: Timeline

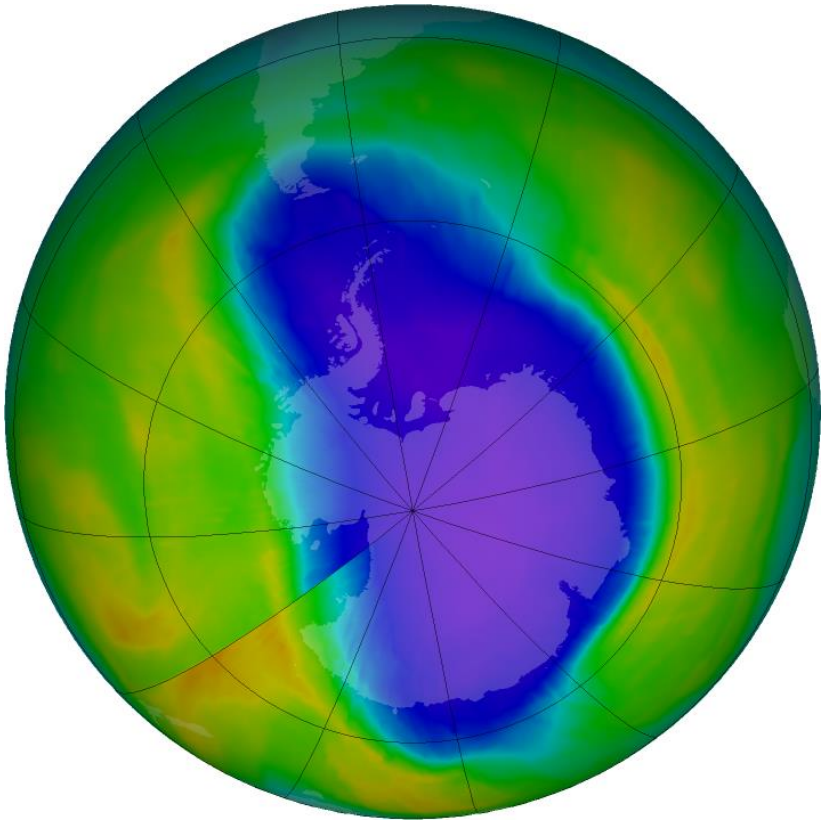
2018

- ❑ **2nd draft of Chapters completed**
- ❑ Open review meeting of 2nd draft
- ❑ **3rd and Final drafts of Chapters completed**
- ❑ Panel Review Meeting [Les Diablerets, Switz.]
- ❑ Executive Summary finished & Released to Secretariat
- ❑ Presentation to the MoP
- ❑ **Final submission**

Current science and emerging science issues

The Antarctic ozone hole reappeared in 2016

- **2016:** Area of 23 million km^2. Minimum value of 118 Dobson Units. Average area and depth.
- **1979:** No apparent ozone hole. Minimum value of 221 Dobson Units.
- Antarctic ozone will be back to 1979 values in approximately 2070.
- **Emerging science issue**: New research suggests that the ozone hole is improving. This topic will be a major focus of the 2018 Assessment.

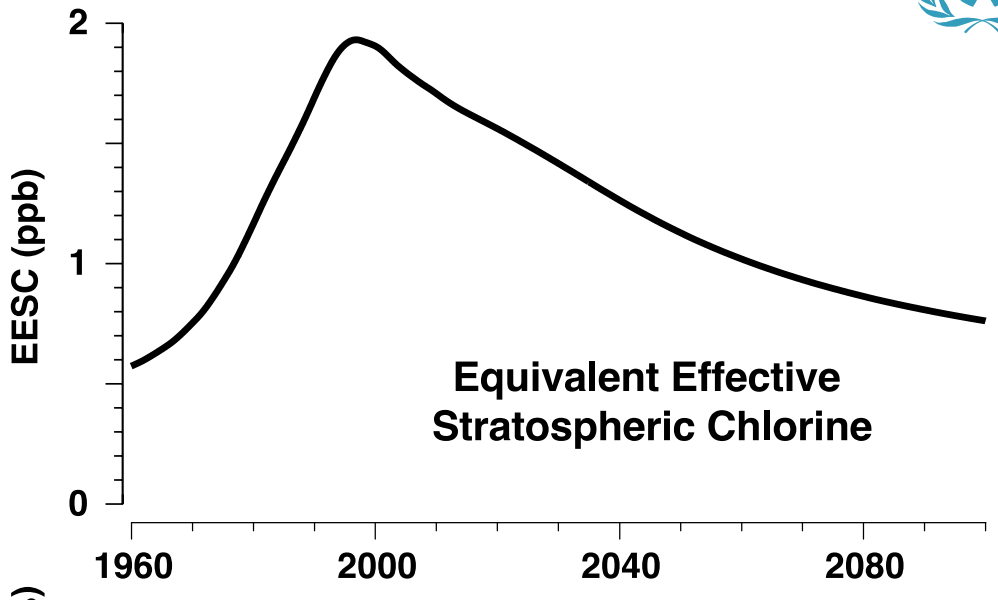


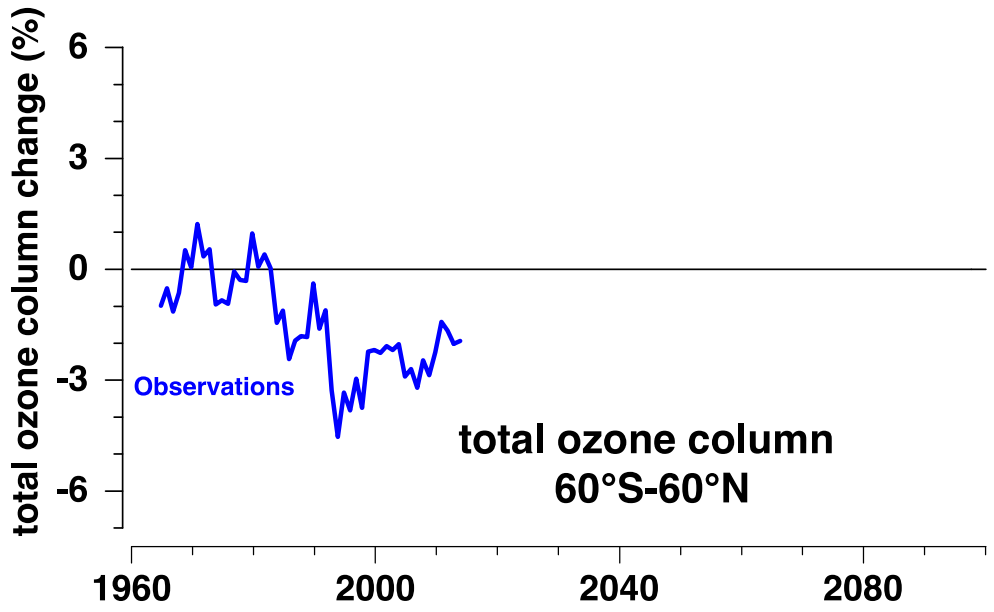
October 9, 2016

Global ozone is in recovery stage

Levels of ozone depleting substances are projected to decline through the 21st century

Ozone levels are generally following the ODS trends, with evidence of an upward trend

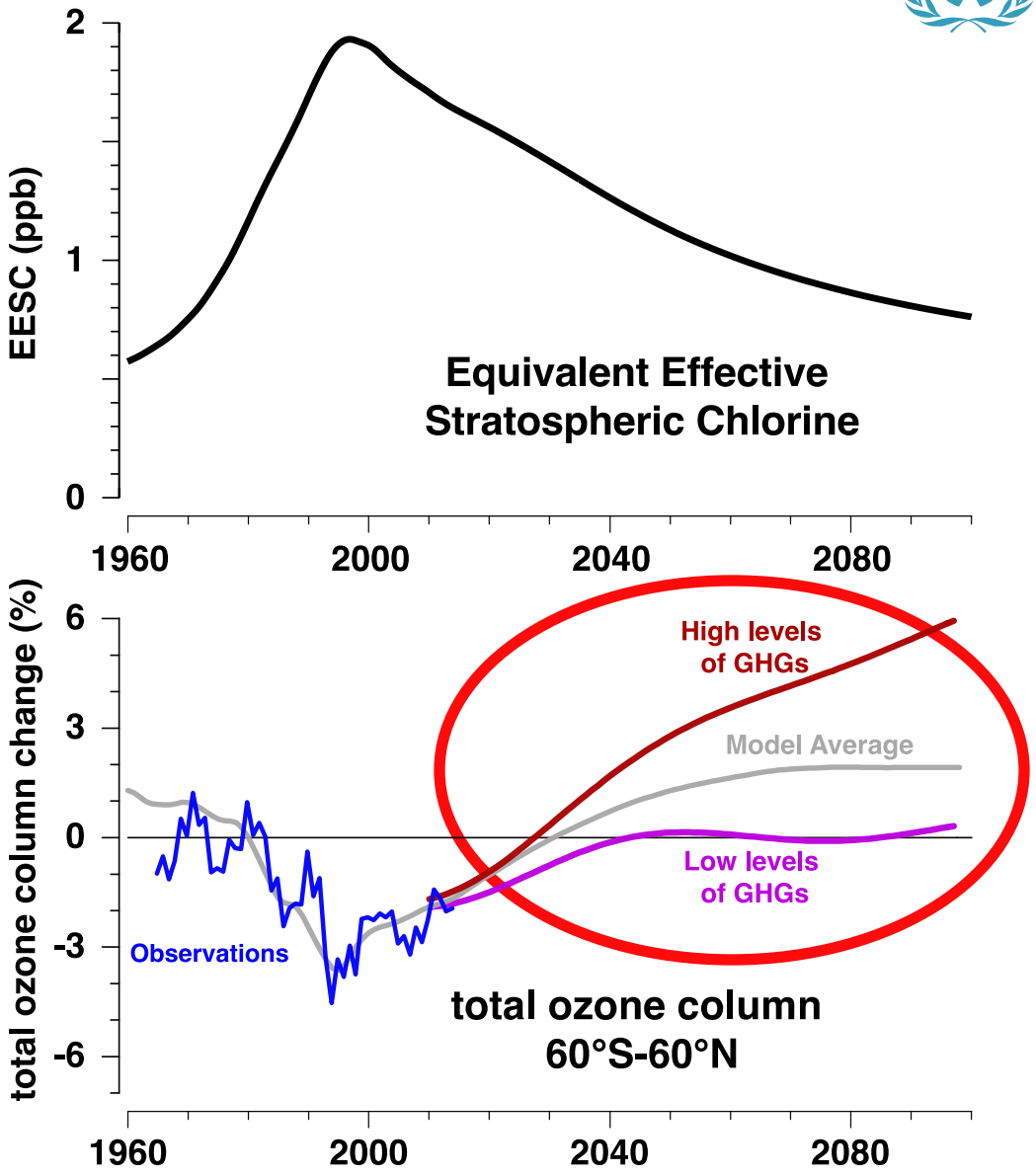




Global ozone is in recovery stage

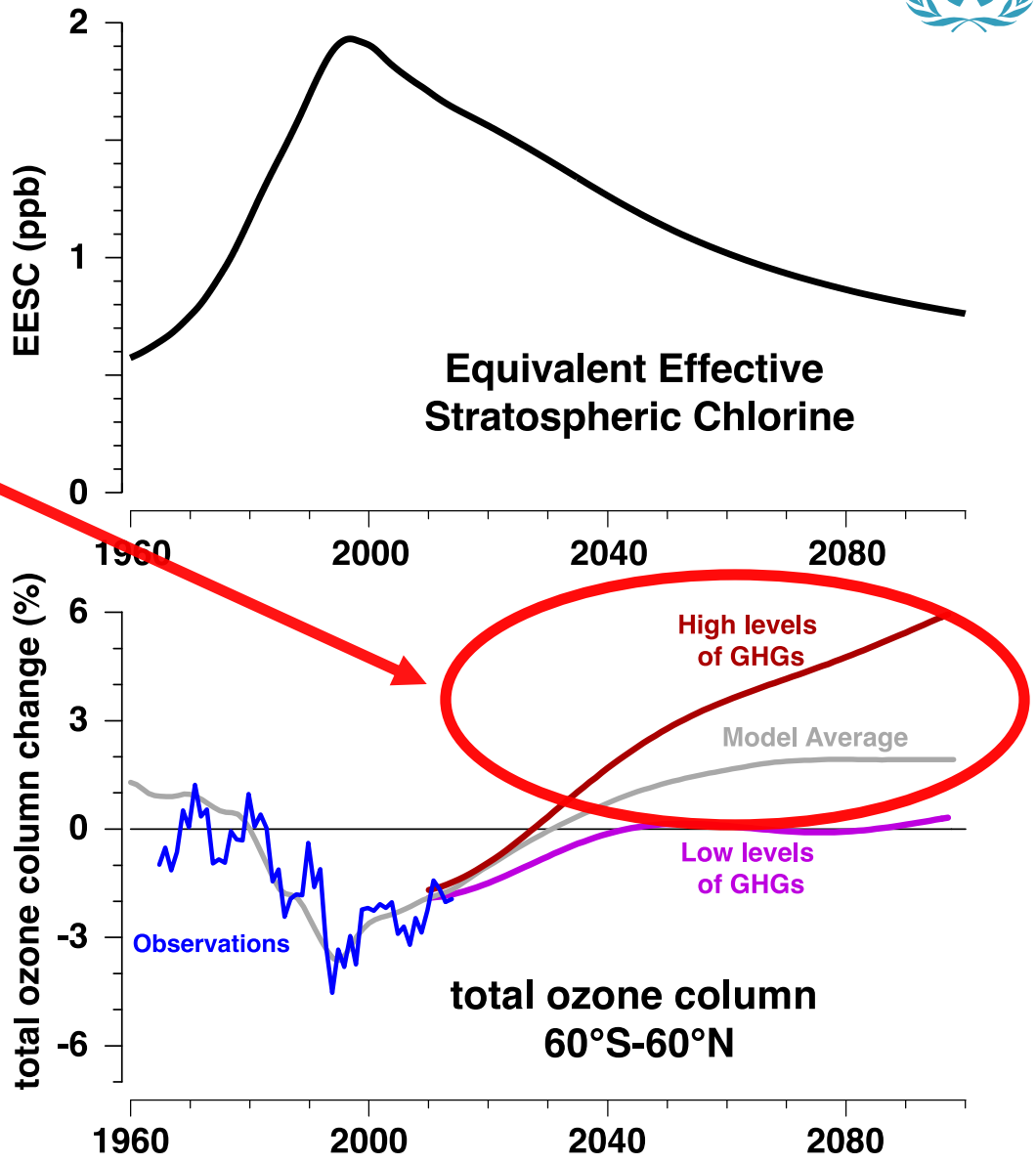
- The evolution of ozone in the 2nd half of this century will largely depend on changes in the abundances of CO_2, nitrous oxide (N_2O), and methane (CH_4)

- Models suggest that ozone will be recovered to 1980 levels by mid-century, but may overshoot 1980 levels: super-recovery.

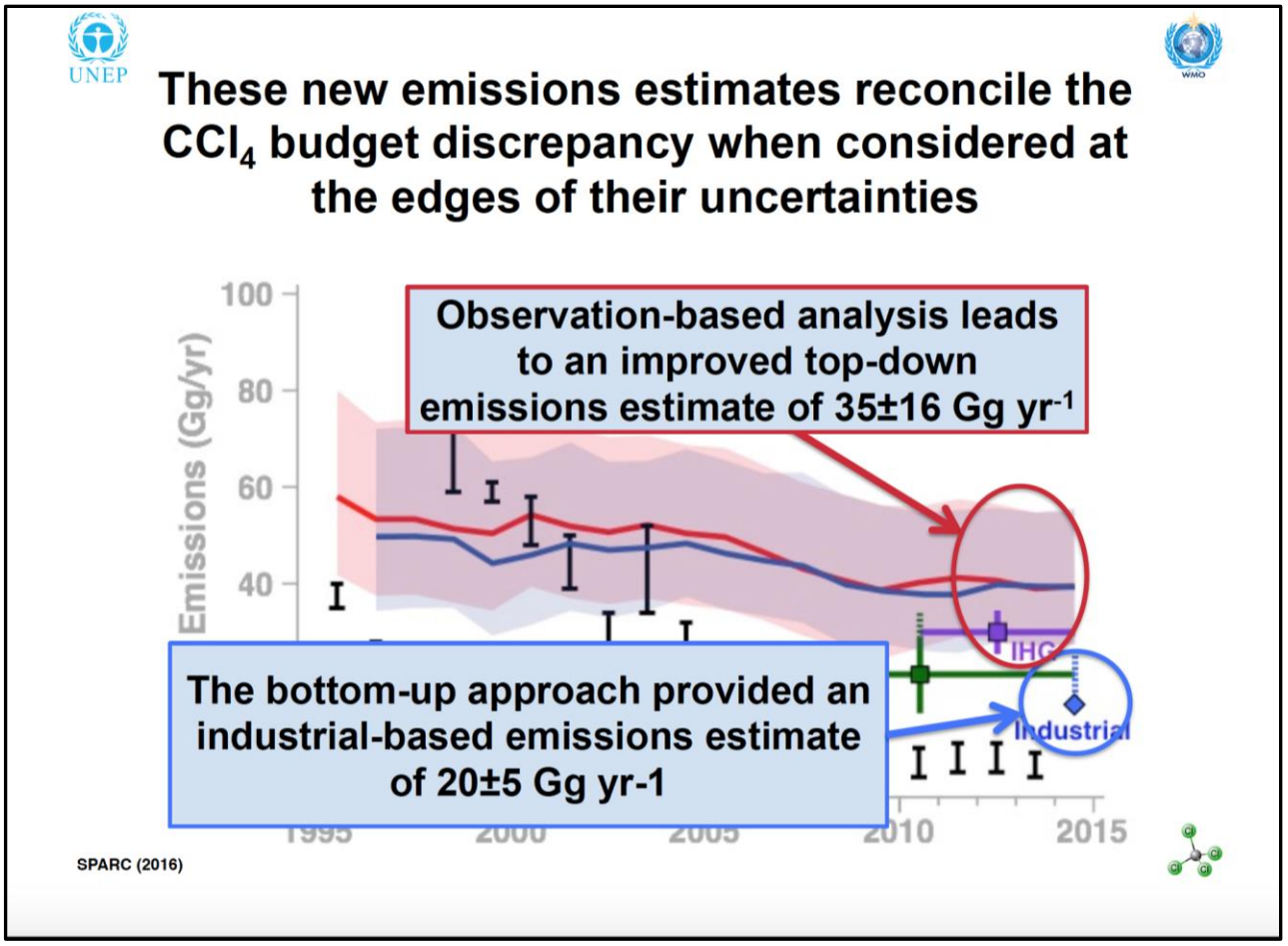


Global ozone is in recovery stage

- Global ozone increases will *reduce* UV exposure of humans and ecosystems, especially in the northern hemisphere.
- EEAP panel will address the effects of reduced UV exposure in EEAP assessment.



New TEAP-SAP carbon tetrachloride (CCl_4) budget analysis



- The TEAP-SAP CCl_4 budget analysis will be included in the 2018 Report

Some emerging science issues

- Recovery of global ozone and Antarctic ozone depletion
- Response of ozone to changes in GHGs
- Updated CCl_4 budget

- Assessing ODS and HFC budgets from atmospheric observations (e.g., CCl_4, methyl bromide)
- New projections of HFC emissions and the climate implications from phasedown proposals
- Changes in stratospheric circulation have been observed that could influence stratospheric ozone amounts

SAP assessment theme: Maintain vigilance of the scientific factors that affect global ozone.

SAP assessment report summary

- 2018 assessment is underway for delivery in December 2018
- Previous topics and emerging science issues will be addressed
- Parties will receive a letter with assessment plans and request for author nominations (Please support the participation of your authors.)

Thank you for your attention