Preliminary discussion of the new report on increased emissions of CFC-11

Scientific Assessment Panel
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The issue

The evidence for increasing emissions of CFC-11


https://doi.org/10.1038/s41586-018-0106-2
The decline in atmospheric CFC-11 has been unexpectedly slow recently (or since 2013)

Montzka et al. (2018)
Global emissions are easily derived from atmospheric concentration data

Preliminary 2017 result

13 ± 5 Gg/yr above 2002-2012 ave.

Expected with constant release fraction from bank

CFC-11 emissions have increased since 2012

Montzka et al. (2018)
Surface regions influencing measurements at Hawaii

- Backward tracing of air using meteorological data

**Lower** [HCFC-22] & [CFC-11]

**Higher** [HCFC-22] & [CFC-11]

- Elevated CFC-11 concentrations observed at Hawaii since 2013 are tied to surface emissions from eastern Asia
- Other evidence indicates that emissions from eastern Asia have increased since 2013

Montzka et al. (2018)
Montzka et al. Summary Points

1. Since 2013, the annual decline in CFC-11 concentration has been only half as fast as it was over the previous decade (2002-2012). → a very robust result

2. Emissions of CFC-11 increased after 2012 and have remained elevated in all years since. → 2017 emission is also high

3. Emissions of CFC-11 from eastern Asia have increased since 2012. → exact country not identified by these data

4. The observations suggest unreported production of CFC-11 after the 2010 global phase-out. → but we don’t have proof

• Detecting and diagnosing atmospheric composition change depends on a global network of high quality measurements, and analysis tools.
CFC-11 response

• The results from Montzka et al. are included in the “Scientific Assessment of Ozone Depletion: 2018”
  – The Source Gas Chapter 1 affirms the Montzka et al. results, with consideration of additional observational evidence
  – The Scenarios and Information for Policymakers Chapter 6 shows the implications of these emissions → sustained CFC-11 emissions delay ozone layer recovery

• The Executive Summary (ES) will be written by scientists next week; it will include the assessed understanding of CFC-11 by the international science community
  – This ES will be available to the Parties in the Fall prior to the MOP,
  – SAP co-chairs will present the main findings at the MOP.
  – The complete assessment will be published by 31 Dec. 2018.

• More work has been set into motion by the Montzka et al. paper → this will take time, and we estimate that new papers should become available sometime in 2019