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New scenarios for ozone depleting substances: Results from the WMO/UNEP Scientific Assessment of Ozone Depletion, 2010

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New scenarios of ozone depleting substances (ODSs) have been developed for the WMO/UNEP Scientific Assessment of Ozone Depletion, 2010. We will present the results of chapter 5 of this assessment and discuss the new scenarios, the reductions in emissions of ODSs already achieved, the options for policymakers to further reduce future emissions, and scenarios of hydrofluorocarbons (HFCs) as ODS substitutes. The effects of the scenarios on the future atmospheric chlorine and bromine loading will be discussed as well as the effects on radiative forcing of climate. We will show that the Montreal Protocol on Substances that Deplete the Ozone Layer is working. It has protected the stratospheric ozone layer from much higher levels of depletion by phasing out production and consumption of ODSs. It has also made large contributions toward reducing global greenhouse gas emissions because many ODSs are potent greenhouse gases. In 2010, the decrease in annual ODS emissions under the Montreal Protocol is estimated to be about 10 GtCO2-eq per year, which is about five times larger than the annual emissions reduction target for the first commitment period (2008-2012) of the Kyoto Protocol. HFCs are being used more and more to replace ODSs in refrigeration, air conditioning and foam blowing applications. HFCs do not deplete the ozone layer but, along with most ODSs, are greenhouse gases which contribute to the radiative forcing of climate. Therefore, growth in HFC use and emissions will offset at least part of the climate benefits already achieved by the Montreal Protocol Due to the ongoing success of the Montreal Protocol in reducing the production, emissions, and abundances of controlled ODSs, other compounds and activities not controlled by the Montreal Protocol are becoming relatively more important to stratospheric ozone levels. For example, the anthropogenic ODP-weighted emission of nitrous oxide is larger than that of any current halogenated ODS emission.