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Chemistry and Dynamics of the Unusual 2015 Antarctic Ozone Hole

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The Global Atmosphere Watch of the World Meteorological Organization includes several stations in Antarctica that keep a close eye on the ozone layer during the ozone hole season. Observations made during the unusually large ozone hole of 2015 will be compared to ozone holes from 2003 to 2014 and interpreted in light of the meteorological conditions. Satellite observations will be used to get a more general picture of the size and depth of the ozone hole and will also be used to calculate various metrics for ozone hole severity. In 2003, 2005 and 2006, the ozone hole was relatively large with more ozone loss than normal. This is in particular the case for 2006, which by most ozone hole metrics was the most severe ozone hole on record. On the other hand, the ozone holes of 2004, 2007, 2010 and 2012, 2013 and 2014 were less severe than normal, and only the very special ozone hole of 2002 had less ozone depletion when one regards the ozone holes of the last decade. The South Polar vortex of 2015 was unusually stable and long-lived, so ozone depletion lasted longer than seen in recent years. The ozone hole area, i.e. the area where total ozone is less that 220 DU, averaged over the worst 60 consecutive days was larger in 2015 than in any other year since the beginning of the ozone hole era in the early 1980s.