



Analysis of the weak Antarctic Ozone Hole of 2012

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The Antarctic ozone hole of 2012 turned out to be the weakest ozone hole since the vortex split in 2002. This is the case if one measures the severity of the ozone hole by the commonly accepted metrics, i.e. ozone hole area and ozone mass deficit. The ozone hole area is defined as the area of the region where total ozone is less than 220 DU. The ozone mass deficit is defined as the amount of ozone (measured by mass) that has to be added to those regions where total is less than 220 DU so that the total ozone column reaches 220 DU. Both these metrics suffer from the shortcoming that they are based on total ozone and do not take the vertical distribution of ozone into account. During the 2012 Antarctic ozone hole there was transport of ozone rich air from lower latitudes that formed a lid of ozone rich air above the altitude range where ozone depletion took place. This caused regions with more or less normal ozone depletion in the 15-20 km altitude range to display a total column superior to 220 DU. These regions would therefore not be counted as being part of the ozone hole, despite the fact that the degree of ozone destruction in the 15-20 km range was similar to that seen in recent years. In this study the severity of the 2012 ozone hole will be assessed and compared to recent years by quantities that take into consideration the vertical distribution of ozone. In that way one will get a more true image of the degree of ozone depletion.