

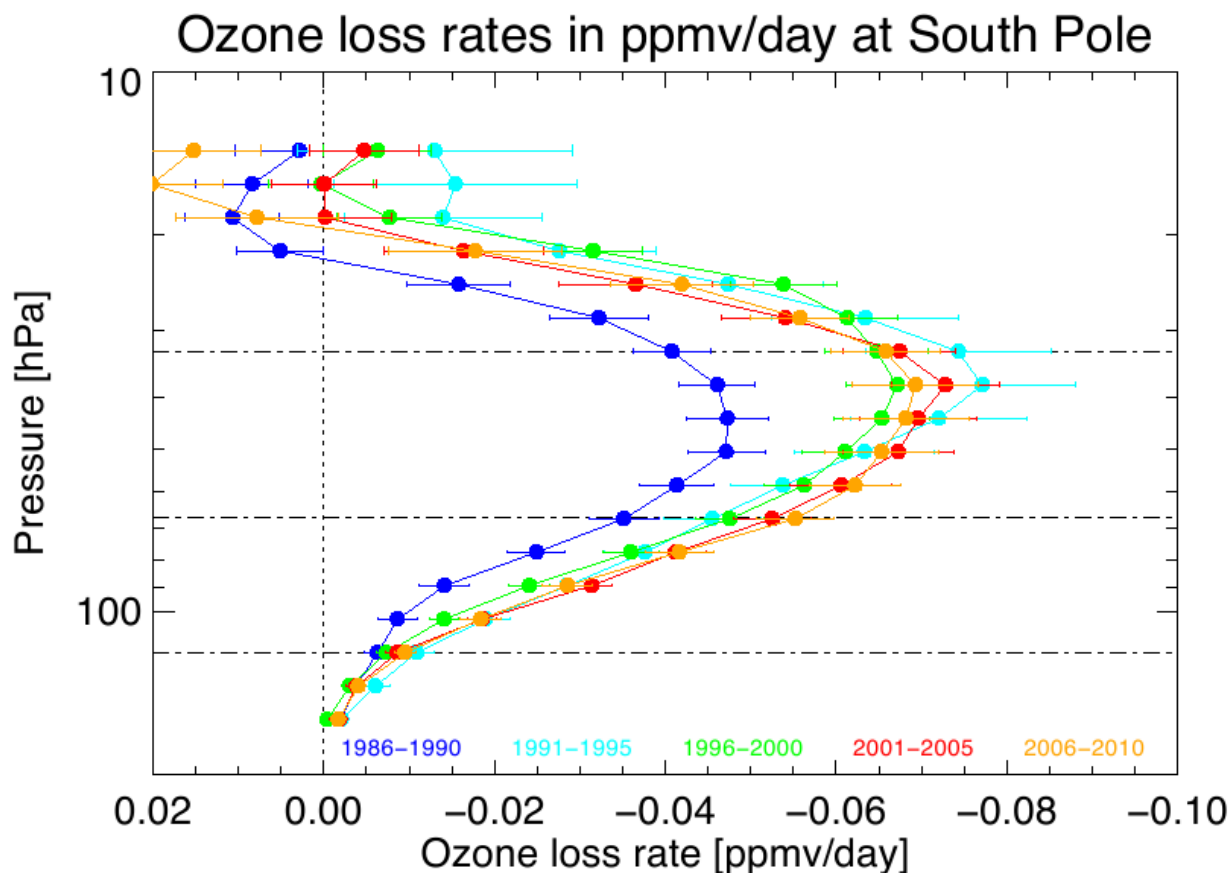
## Twenty-Five Years of Ozone Soundings at South Pole: An Assessment of Changing Loss Rates

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In 2010, 25 years of continuous, year-round ozone soundings at South Pole station, Antarctica, were completed. These measurements provide unique documentation about the seasonality, trends, and variability of ozone depletion in the polar stratosphere at high vertical resolution. We have analyzed these ozone mixing ratios on pressure levels from about 200 to 15 hPa and have found that the onset of ozone loss at South Pole has moved forward by approximately 15 days during these 25 years. The onset of ozone destruction is earlier and not as severe at a lower latitude station (Georg-Forster/Neumayer station). We have found the highest loss rates at around 50hPa to 30hPa (see Figure 1). The loss rates have also changed over time: they grew from the late 1980s to the late 1990s and have remained roughly stable since then. During the early 1990s, loss rates were enhanced because of additional stratospheric aerosol due to the eruption of Mt. Pinatubo in 1991. We have normalized the estimated loss rates to the concentrations of equivalent effective stratospheric chlorine present at the same time. These are then used to estimate when loss rates are expected to be measurably lower than their peak values.



**Figure 1.** Profile of loss rates for five time periods (1986-1990, 1991-1995, 1996-2000, 2001-2005 without 2002, 2006-2010) at South Pole, as determined by a linear fit to all available data for each pressure level between day 235 and day 270. Loss rates are given in ppmv/day. Error bars represent  $1\sigma$  uncertainties.