Ozone Profiles Measured at South Pole Station During the 2005 Ozone Hole

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Vertical profiles of ozone and temperature have been measured for 20 consecutive years at Amundsen Scott South Pole Station using balloon-borne electrochemical concentration cell (ECC) ozonesondes. The measurements have made an important contribution to understanding and monitoring the yearly development of the springtime ozone hole over Antarctica. Balloon flights are done each week during the entire year, with 2 to 3 per week flown during the ozone hole period in September and October. The severity of ozone depletion depends on active chlorine concentrations in the stratosphere, wintertime stratospheric temperatures, and the stability of the polar vortex. Each year, in early September, ozone declines rapidly in the peak region of the ozone layer from 12-24 km. Comparing to the 20 year record, the 2005 springtime Antarctic ozone hole was the 10th lowest in minimum total column ozone, dropping to 110 Dobson Units (DU) on September 28, 2005. This represents a 59% loss compared to the August 7th pre-ozone hole value of 266 DU. The main similarity of the 2005 measurements to other severe ozone hole years was that the 14-21 kilometer layer once again showed nearly complete ozone destruction.

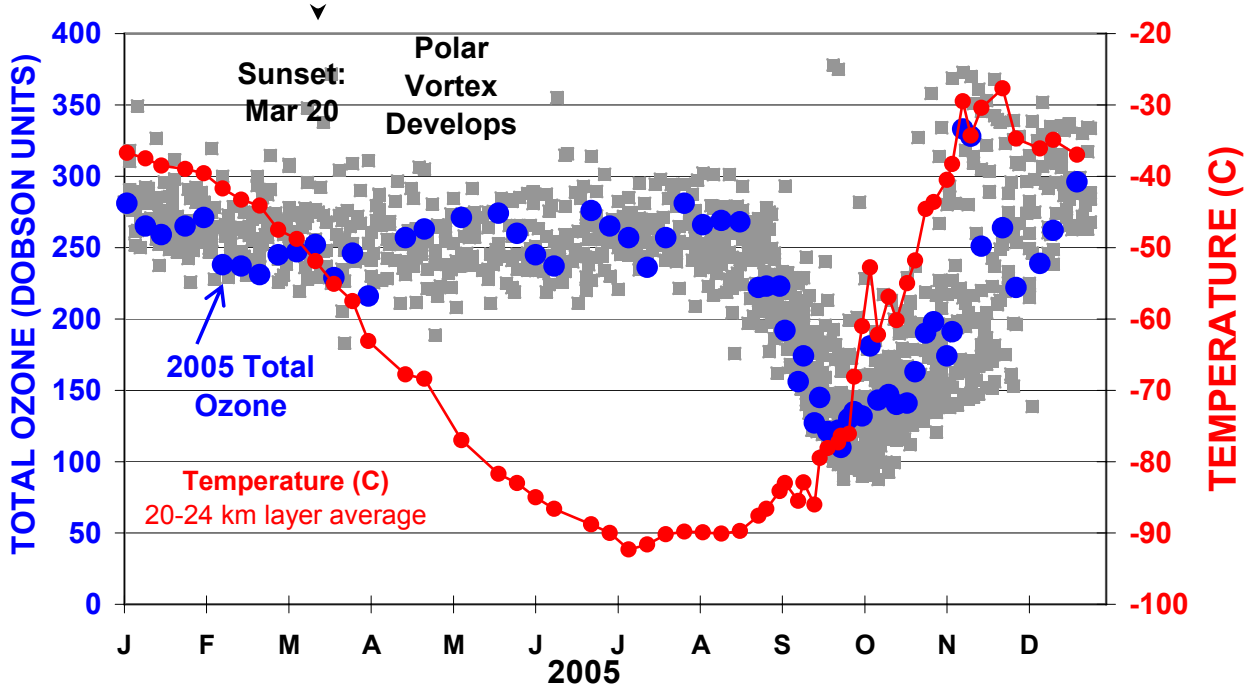

Figure 1. Summary of 2005 ozonesonde total column ozone measurements and stratospheric temperatures measured in 2005. Gray blocks show the 1986-2004 total column ozone observations.