

Latest of Long-term Monitoring of Stratospheric Ozone for Global Ozone Depletion

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The NOAA Dobson Spectrophotometer network was established in the early 1960s for long-term monitoring of the stratospheric ozone and currently has 15 stations in operation distributed globally. The measurements from the ground-based stations are essential to validate satellite ozone climate records and ensure their long-term stability. A long-term record of NOAA network measurements is provided for trend detection of stratospheric ozone recovery in response to the Montreal protocol regulations of ozone depleting substance (ODS) production and the use of alternative chemicals for ODS replacements as outlined in recent amendments.

As an example, Figure 1 shows the long-term ozone change measured by Dobson instrument at the South Pole for over the 60 years. The anomaly in % is plotted relative to ozone values observed in the 1960s. A record ozone depletion of about 60% was observed for 3 years consecutive in the springtime after 2020. Effective Equivalent Stratospheric Chlorine index (EESC-A) is indicating to be in the recovery level range over Antarctica. Ozone Depleting Gas Index (ODGI-A) is defined by the observed decrease in halogen abundance over Antarctica from its peak in 2000 (by <https://gml.noaa.gov/odgi/>). We will also present poster of long-term ozone trends in the Northern Hemisphere mid-high latitudes and tropics.

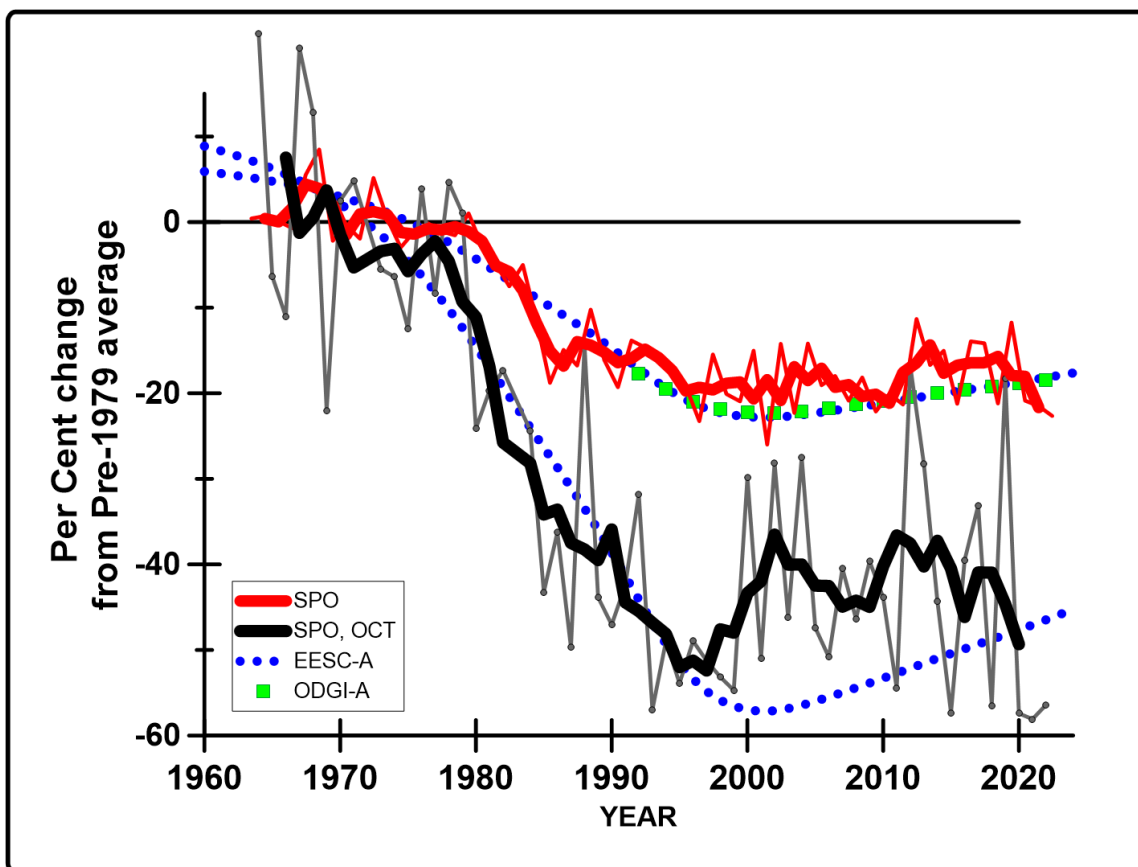


Figure 1. Annual and springtime long-term ozone trends for 1963-2022 in the South Pole. The red line is the annual average, and the thick red line is the 3-year average. The black line is the half-month average from October 15th, and the thick black line is the three-year average. Percentage change is the pre-1979 average. Blue dots are EESC-A values in the Antarctic stratosphere, and green dots show the ozone depleting gas index (ODGI-A). The scale is normalized from the linear slope between 1979-1998.

