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Ozone and temperature trends at Hohenpeissenberg in the light of a recovery of the ozone layer

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The German Weather Service (DWD) at Hohenpeissenberg has been running a comprehensive ozone measurement program for 37 years. Since 1967 balloon soundings and Dobson observations are taken on a routine basis. These long and consistent data sets are an important tool for the evaluation of long- and short term behaviour of the ozone layer at northern mid-latitudes. Ozone and temperature in the upper stratosphere are monitored by a lidar system since 1987.

Analyses of all ozone records reveal significant trends. However, the strong changes observed until the mid 1990s at nearly all altitudes, have not continued over the last years. In the lower stratosphere ozone has been slightly increasing since the distinct ozone minima after the Mount Pinatubo eruption. As expected, this is also clearly visible in the total column ozone record. In the upper stratosphere, at 40 km altitude, where CFC-induced trends on ozone are most pronounced, there also was a trend mitigation. However, newest observations reveal a series of lowest monthly means of the whole lidar record, continuing the strong long term trend. SAGE satellite data at 45˚N (latitudinal means) confirm these results.

These present low ozone values are expected to some degree from the current phase of solar cycle and QBO. Due to the limited record length these impacts cannot be quantified definitely. Several more years are required to establish that ozone recovery has been started.