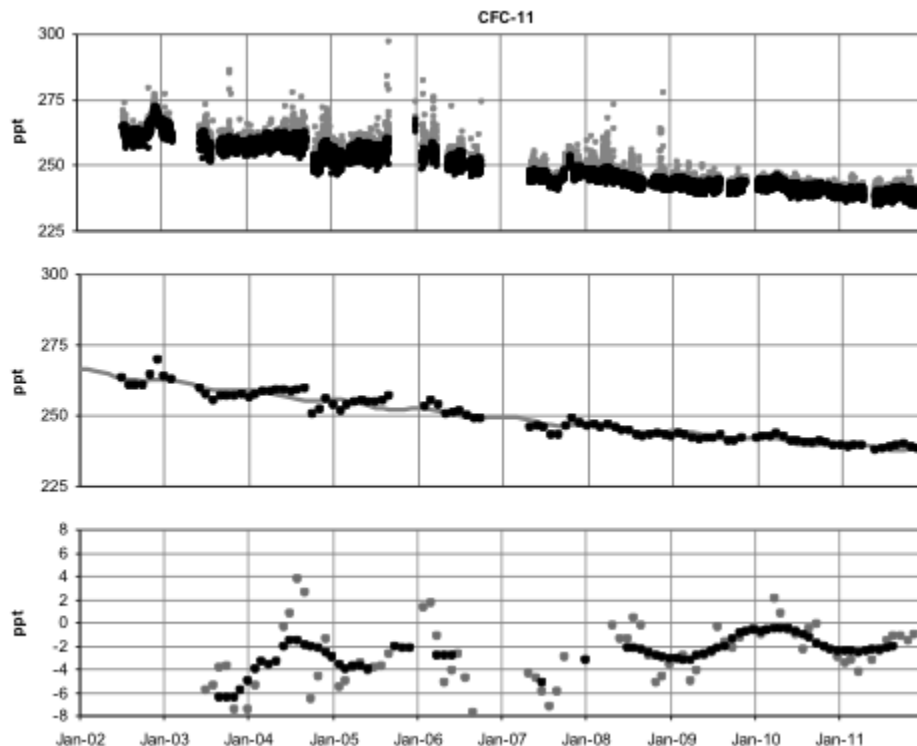


## Ten Years of Observations of Ozone-depleting Substances at Monte Cimone (Italy) for Deriving Trends and Regional Emissions.

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Man-made halogenated gases that are potentially harmful for the stratospheric ozone layer are regulated under the United Nations Environment Programme Montreal Protocol on substances that destroy the ozone layer. The Protocol is a good example of how international agreements can be effective in tackling environmental issues of global significance. In fact, as a consequence of the implementation of the Protocol and subsequent amendments, tropospheric abundances and emissions of most ozone depleting substances (ODSs) started to decrease in the mid-nineties. However, the enhancement polar vortex strength and decrease in stratospheric temperatures in the Arctic, likely to be due to change in global climate, have been recognised as responsible of an unprecedented ozone loss observed over the Arctic in the Spring 2011. Therefore, notwithstanding the effectiveness of the Montreal Protocol, the attention on tropospheric levels of ODSs is still high. Through direct observations it is possible to correctly evaluate the global atmospheric budget of ODSs. Here will be presented the results of ten years of continuous measurements of ODSs carried out at the World Meteorological Organization-Global Atmosphere Watch Italian Climate Observatory "O. Vittori" on the top of Monte Cimone (Italy), an Advanced Global Atmospheric Gases Experiment affiliated station. As an example the time series for CFC-11 is reported in Figure 1.



**Figure 1.** CFC-11 at ICO-OV. Top Panel: time series, black dot baseline values, grey dots pollution events. Middle Panel: best fit. Bottom Panel: annual growth rates.