

Climate Altering Trace Gases at Mt. Cimone, Northern Apennines, Italy

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Mt. Cimone (44°12'N, 10°42'E, 2165 m a.s.l.) is the highest peak of northern Apennines and with its 2165 m height, enjoys a 360° free horizon. The research station is located on the mountain top and, due to its altitude, is above the atmospheric boundary layer for most of the year and it is therefore considered representative of Southern European background conditions. Being located to the south of the Alps and overlooking the highly polluted Po Valley north of the Mediterranean Sea, Mt. Cimone represents a suitable site to investigate atmospheric processes related to regional and long-range transport of polluted air masses, mineral dust transport from North Africa as well as stratospheric intrusion events. Moreover, as other similar high mountain areas, Mt. Cimone is an ideal site where atmospheric background conditions and environmental change processes can be studied. As far as climate altering gases are concerned, the following research activities are carried out at the Station: i) continuous surface ozone measurements conducted since 1996 within the Global Atmospheric Watch (GAW) programme of the World Meteorological Organization; ii), continuous measurements of 27 halogenated greenhouse gases carried out since 2001 within the EU funded project SOGE (System for Observation of halogenated Greenhouse gases in Europe), aimed at assessing atmospheric trends and identifying source regions.

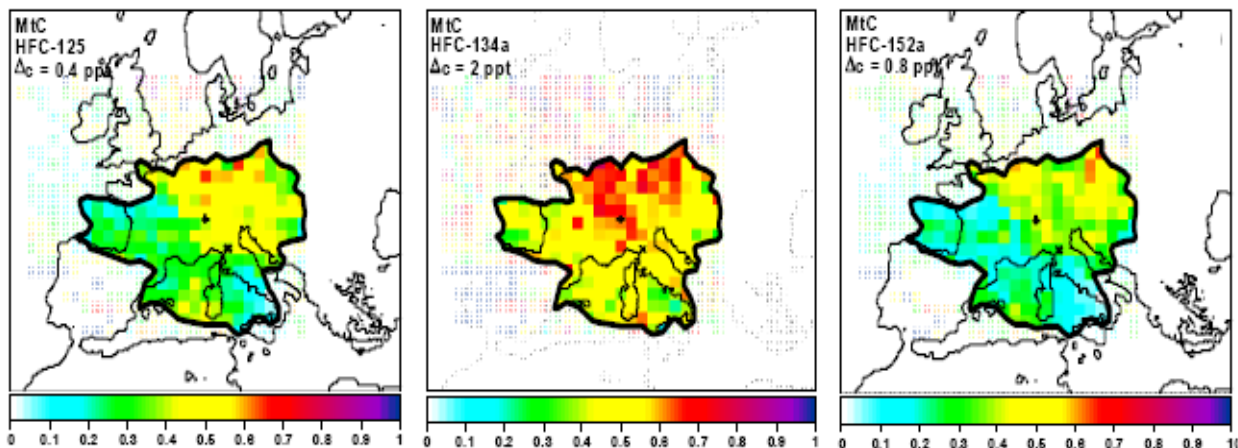


Figure 1. Maps of conditional probability of potential sources of HFC-125, HFC-134a, and HFC-152a. The map is obtained using concentration data collected at Mt. Cimone from January 2002 to September 2006. Continuous black line encloses grid cells whose PBL has been visited by at least 20 back-trajectories over the entire data set.

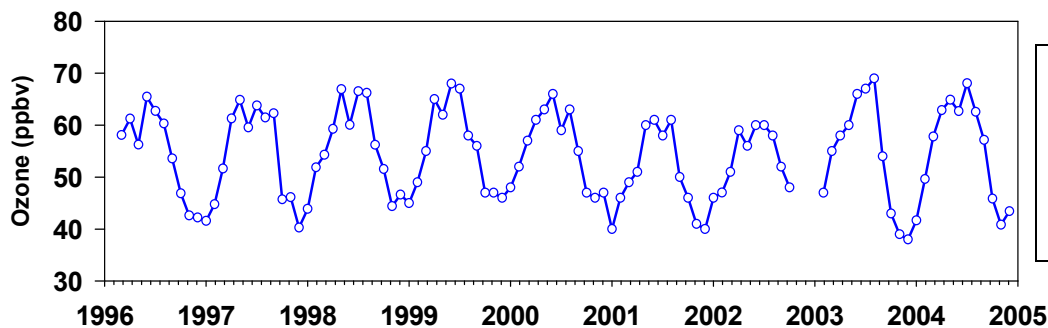


Figure 2. Monthly values of surface ozone concentrations at Mt. Cimone (1996 – 2004)