



Tropospheric ozone variations during heatwaves at the Mt. Cimone high mountain station (Italy, 2165 m a.s.l.).

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Tropospheric ozone is a global air pollutant, a key species controlling the oxidizing capacity of the troposphere and an important greenhouse gas. For these reasons and with the aim to better characterise the background conditions of the Mediterranean basin/South Europe free troposphere, since 1996 continuous measurement of tropospheric "surface" ozone have been carried out at the Mt. Cimone GAW-WMO station (44.18N, 10.70E; 2165 m a.s.l.).

In this work, we present an analysis concerning the investigation of ozone variations at Mt. Cimone during heatwaves which affected the North Italy over the period 1996 – 2006. Heatwaves have been identified by analysing the Mt. Cimone air temperature data collected by the Italian Air Force Meteorological Service since 1964. In particular, by applying a revised version of the ECA&D-KNMI, we defined as heatwave each 5-days period characterised by maximum daily temperature exceeding the Climatic Normals (calculated over a 30-years period).

Preliminary results showed that during the period 1996 – 2006, several heatwaves affected the measurement site located in the North Italian Apennines. On average, during the identified events, a significant ozone increase has been recorded in comparison with "background" summer mean values. In particular, high ozone levels were recorded during August 2003 while the highest ozone increase (+45%) occurred during July 2006, when very intense heatwaves affected North Italy and central Europe. However, due to the typical synoptic conditions which can occur during North Italy heatwaves (i.e. high pressure systems over Mediterranean basin), mineral dust transported from North Africa can significantly limit the ozone increase, as deduced by analysing the correlation between mineral coarse particle and ozone concentration at Mt. Cimone during the identified episodes.