



Long term study (2002 - 2012) of Saharan dust transport at the Mt. Cimone WMO/GAW Global Station, Italy (2165 m a.s.l.)

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The variability of long-range dust transport events was investigated at Mt. Cimone (2165 m a.s.l., 44°11'N, 10°42'E), the highest peak of the Italian northern Apennines. This measurement site, which can be considered well representative of the Mediterranean basin/southern Europe background conditions, represents one of the first mountain ridges that Saharan air masses run into along the northward displacement towards Europe.

Dust transport events (DTEs) have been identified since August 2002 by analysing in-situ coarse particle number concentrations as a function of numerical outputs from a lagrangian model(FLEXTRA).

A number of 380 DTEs were identified in the period 2002–2012, corresponding to 15% of the investigated period, with a peak of frequency in spring-summer.

The impact of the dust transport on aerosol optical properties have been also investigated. On average, both scattering and absorption coefficient showed an increase in presence of dust, while the total aerosol particle number concentration showed a decrease.

In this work we will provide hints about long-term variability of DTE frequency and intensity at CMN. The analysis of 3D air-mass back-trajectories allows to provide information about the variability of transport patterns and source regions for the mineral dust at CMN, also permitting to obtain a statistical climatology about the optical and microphysical properties of the aerosol as a function of the air-mass origin.