



## **Abnormally high carbonaceous aerosol loading at Pic du Midi during the August 2003 European heat wave**

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In August 2003, a severe heat wave has struck a major part of Western Europe. During the 2003 1-15 August period, the mountain site of Pic du Midi (2786 m) has displayed abnormally high particulate concentrations.

To explain such high loads, a modelling study has been run, encompassing the period, from April 2002 to the end of August 2003 with a focus on Pic du Midi. We have used the global CTM TM4 coupled with the aerosol sectional model ORISAM (Organic and Inorganic Spectral Aerosol Module) to analyze long-range transport peculiarities of this episode.

Weekly aerosol samplings are performed on a routine basis since Spring 2002 at Pic du Midi, an isolated peak in central Pyrenees. This mountain site, West of Europe, has a unique position for documenting air masses characteristics approaching the European continent. Aerosol speciation into major fractions, Black Carbon (BC) and Organic Carbon (OC) components are analyzed by the IMPROVE thermo-optical technique, whereas major ions are determined by ion chromatography and trace elements by ICPMS.

The model was found to simulate combustion BC particles at a 20% level during the whole August 2003 period. Analysis of OC in terms of primary organic carbon has shown that model underestimation could be attributed either to abnormally high regional forest fire emissions from Spain and Portugal during this period or to SOA formation (Secondary Organic Aerosols). Both possible causes are discussed with a

comparison too between similar periods, respectively in August 2002 and 2003. This discussion will be extended to other mountain site European stations.