



Observations of North African forest fire plumes over North Italy

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Elevated levels of CO, black carbon, ozone and other aerosol and trace gases are emitted or related to biomass burning events. These processes are considered one of the major sources of atmospheric pollutants able to influence directly and indirectly the earth climate. The atmospheric pollutants produced by biomass burning can be transported over long distances thus affecting the air-quality and climate parameters of regions far away from emission source areas. In this work, we investigate the influence on atmospheric background composition of North African forest fire emissions which, together with Saharan dust, affected the North Italy during August 2007. In particular, we analysed continuous measurement of black carbon, surface ozone, CO, aerosol size distribution and scattering coefficient at the Regional GAW Station of Mt. Cimone (2165 m a.s.l., Italy) during August 2007, when emissions from several wildfires were transported from North Africa (Algeria and Tunisia) to North Italy and Po Basin, as shown by air-mass back-trajectory analysis. From 28 to 31 August 2007, a cloud composed by smoke emissions and mineral dust strongly influenced the concentrations of black carbon, CO, ozone, aerosol size distribution and scattering coefficient at the Mt. Cimone Station. Besides contributing to increase the concentration of pollutants on the North Italy, this cloud composed by smoke emission and mineral dust, influenced considerably the radiative budget at the surface in the underlying Po-Basin, as confirmed by solar radiation measurements and AOD retrievals carried out at the ISAC Institute in Bologna.